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Industrial Controls

Catalog IC 10 · 2012



SIRIUS

Answers for industry.

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Related catalogs

Industrial Controls IC 10 AO
SIRIUS

E86060-K1010-A191-A1-7600
(available only as PDF)



Safety Integrated SI 10
Safety Technology for
Factory Automation

E86060-K7010-A101-A2-7600



Industrial Communication IK PI
SIMATIC NET

E86060-K6710-A101-B7-7600



SIMATIC ST 70
Products for
Totally Integrated Automation
and Micro Automation

E86060-K4670-A101-B3-7600



Products for Automation and Drives CA 01
Interactive Catalog

DVD: E86060-D4001-A510-D1-7600



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Add-On to Catalog IC 10 · 2012
for chapters 3, 4, 5, 7 and 8
Controls • Protection equipment • Load feeders

Detecting • Evaluation / Communication • Reacting

PROFINET / Industrial Ethernet • PROFIBUS • SIMATIC ET 200 Distributed I/O • SIMATIC Ident Identification Systems • AS-Interface • IO-Link • Industrial Wireless Communication • Industrial Remote Communication • ECOFAST

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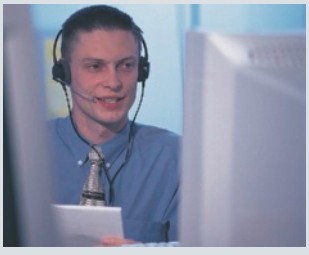
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Expert technical assistance for Industrial controls:
Tel.: +49 (911) 895-5900
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The products and systems listed in this catalog are manufactured/distributed using a certified quality management system which complies with EN ISO 9001 (for the Certificate Register No. see the Appendix). The certificate is recognized in all IQNet countries.

Supersedes:
Catalog IC 10 · 2011
Catalog News IC 10 N up to 09/2011

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The products contained in this catalog can also be found in the interactive catalog CA 01.
Order No.:
E86060-D4001-A510-D1-7600 (DVD)

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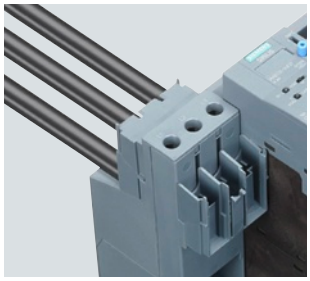
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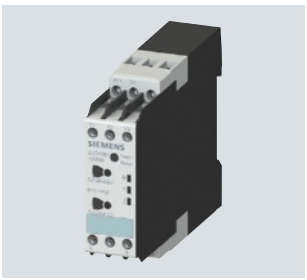
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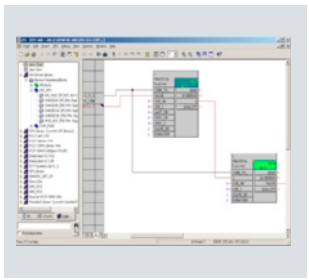
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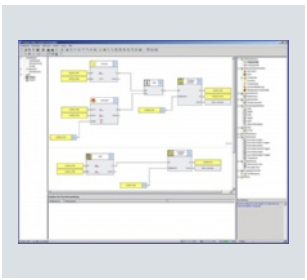
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Price group changes



Code conversion table

Starting Oct.01, 2011 there will be new price groups for the SIRIUS industrial control products.

To help you with the changeover, the code conversion table below shows the former price groups alongside those which come into force on Oct.01, 2011.

Previous price group	Price group in force from Oct.01, 2011	Product	Chapter
101	**41A**	Contactor relays	5
	41B	Contactors and contactor assemblies	3 and 4
	41C	Solid-state contactors	6
	41D	Load feeders	8
	41E	Motor starter protectors	7
	41F	Thermal overload relays	7
	41G	Solid-state overload relays	7
	41H	Relays	4, 5 and 10
102	**41J**	Pushbuttons and indicator lights	13
	41K	Position and safety switches	12
	41L	Safety relays	11
104	**4M1**	Transformers and power supplies	15
121	**42A**	Communication-capable safety products	12 and 13
	42C	AS-Interface /IO-Link	2
	42D	Motor starters	8 and 9
	42E	Motor control units (MCU)	9
	42F	Compact feeders	8
131	**42B**	Modular safety system	11
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Much more than a catalog. The Industry Mall.

You have a catalog in your hands that will serve you well for selecting and ordering your products. But have you heard of the electronic online catalog (the Industry Mall) and all its benefits? Take a look around it sometime:

www.siemens.com/industrymall



Selecting

Find your products in the structure tree, in the new "Bread-crumb" navigation or with the integral search machine with expert functions. Electronic configurators are also integrated into the Mall. Enter the various characteristic values and the appropriate product will be displayed with the relevant order numbers. You can save configurations, load them and reset them to their initial status.

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Also available are FAQs, software downloads, certificates and technical data sheets as well as our training programs. In the image database you will find, depending on the product, 2D/3D graphics, dimension drawings and exploded drawings, characteristic curves or circuit diagrams which you can download.

Convinced? We look forward to your visit!

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Ordering notes

Things you should know about Catalog IC 10		
	Catalog IC 10 contains all selection and order-relevant data.	More information can be found on the Internet: for Internet addresses, see page 13.
Delivery time class (DT)		
► Preferred type A 1 or 2 working days B 3 to 5 working days C 6 to 15 working days D 16 to 30 working days X On request	Preferred types are available immediately from stock, i. e. are dispatched within 24 hours. Normal quantities of the products are usually delivered within the specified time following receipt of your order at our branch. In exceptional cases, the actual delivery time may differ from that specified.	The delivery times apply up to the ramp at Siemens AG (products ready for dispatch). The transport times depend on the destination and type of shipping. The standard transport time for Germany is 1 day. The delivery time classes specified here represent the state of 10/2011. They are permanently optimized. For more up-to-the-minute information, please visit our site at www.siemens.com/sirius/mall. Note: For delivery time classes for transformers and power supply units see page 15/6.
Price units (PU)		
	The price unit defines the number of units, sets or meters to which the specified price and weight apply.	
Packaging sizes (PS)		
	The packaging size defines the number, e. g. of units, sets or meters, for outer packaging. Only the quantity defined by the packaging size or a multiple thereof can be ordered!	For multi-unit packing and reusable packaging see Appendix.
Price groups (PG)		
	Each product is assigned to a price group.	
Dimensions		
	All dimensions in mm.	

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Symbols

In the Catalog IC 10 you will find the symbols and their explanations listed alongside.

They are use in conjunction with an orange background to mark and highlight special selection criteria (e. g. connections, types of coordination, etc.).

Connections	Combicon connection
	Insulation piercing method
	Fast Connect
	Spring-type terminals
	Flat connectors
	Solder pin connections
	Ring terminal lug connections
	Screw terminals
Types of coordination	Type of coordination "1"
	Type of coordination "2"
Distinguishing between units	Complete units
	Modular system
Support function	Configurator available in the Industry Mall

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UL and ATEX

The secrets of UL.

Our industrial control products are designed not only for the IEC market. Numerous devices have both UL and IEC approval. This makes it easier for manufacturers of switchgear and control-gear assemblies to enter the North American market.

Exports to North America require special approvals which differ from the IEC directives. On the IEC market, directives define only the essential functions of a system. The technical details are not listed. By contrast, directives on the American market go into the details of how to carry out the installation work etc.

For OEMs and machine manufacturers it is important to know the main differences between the two technical worlds and to work together respectively with manufacturers and suppliers who have the right products and know-how.

Siemens is a strong partner in this case. Our know-how extends from the production of UL-approved devices to the wiring of control cabinets according to UL directives.

These UL requirements are already taken into account when designing our industrial control devices. They are developed not only for the IEC market but also for the UL market.

We have been working with UL (Underwriters Laboratories Inc.®), the leading technical certification company in the USA, since 1969. We are also glad to share our knowledge with you in the form of training courses.

With our UL-certified products for industrial controls you are on the safe side and can build control cabinets according to UL standard easily and quickly.

In the Catalog IC 10 you will find for example the following UL-certified products:

- Controls, from motor-protective circuit breakers and starters to contactors and overload relays
- Circuit breakers for plant and transformer protection
- Detecting devices and command devices
- Transformers and power supplies



Take a look at our product range and convince yourself. Or simply click on

www.siemens.com/ul-europe

Here, you will find information on for example UL standards, UL classification and a number of technical particularities of UL.

Under "UL Overview/Standards and Approvals" we provide a summary of the available products and product groups. A table lists the UL standards to which the products conform and contains links to the corresponding UL reports.

Under "Portfolio" we round off with a list of the most relevant products for industrial control (including links to the respective Internet product pages).

Simply click on the navigation bar and go on a UL discovery tour!

ATEX explosion protection

In many industries the production, processing, transport and storage of combustible substances are accompanied by escaping gases, vapor or spray which find their way into the environment. Other processes result in combustible dust. Together with the oxygen in the air, the result can be an explosive atmosphere which will explode if ignited.

Serious injury to persons and damage to property can result particularly in the chemical and petrochemical industry, mineral oil and natural gas production, mining, mills (e. g. grain, solid materials) and many other sectors.

To guarantee the maximum possible safety in these areas, the legislators of most countries have drawn up requirements in the form of laws, regulations and standards. In the course of globalization, great progress has been made with regard to uniform directives for explosion protection.

With Directive 94/9/EC, the European Union laid the foundations for complete harmonization by requiring that all new devices as from 1st July 2003 have to be approved in accordance with this directive.

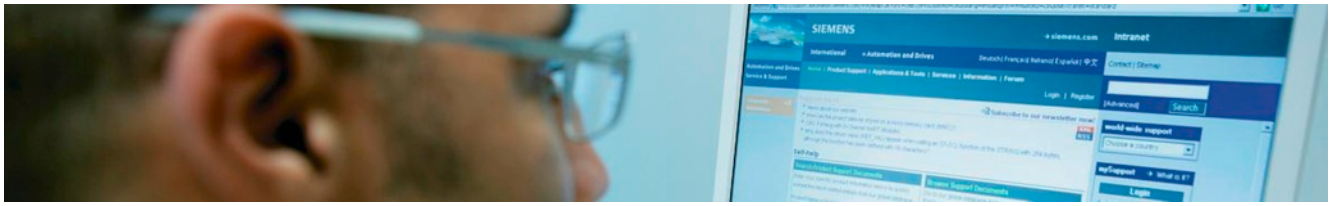
In this catalog, special attention is drawn to devices which comply with the ATEX Directive. However, it does not replace intensive study of the relevant fundamentals and directives when planning and installing electrical systems. You can find more information about ATEX at www.siemens.com/sirius/atex.





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Notes

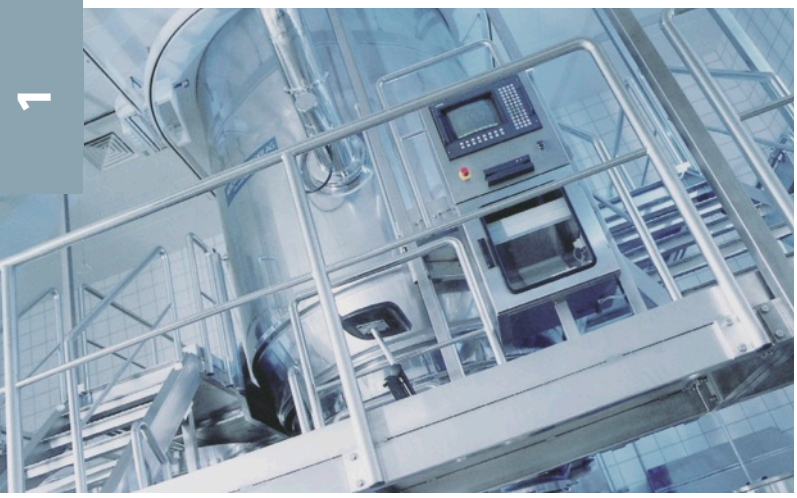
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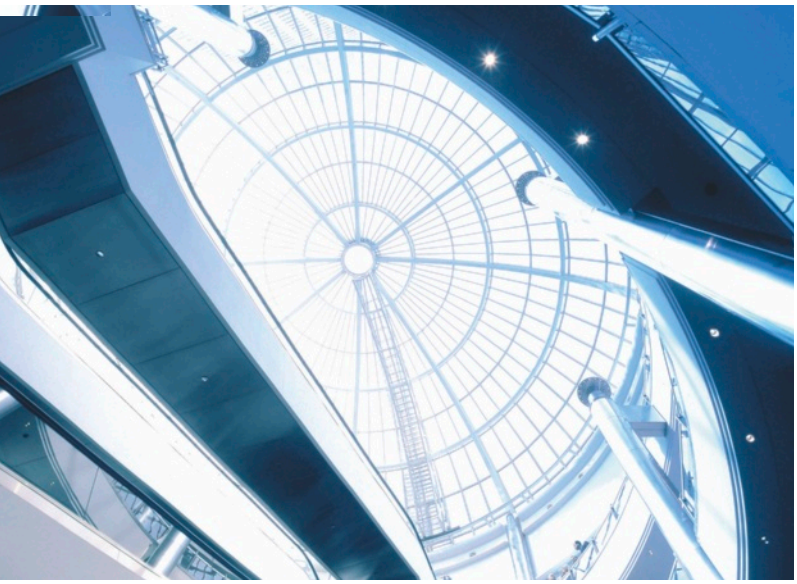
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1/4	**Energy efficiency – Benefits for the environment and for your competitiveness.**
1/6	**Industrial controls. The basis for innovative solutions.**
1/8	**Entering North America – You have our support with regards to UL/NFPA.**
1/10	**SIRIUS controls in the TIA portal and SIRIUS eAssistance.**

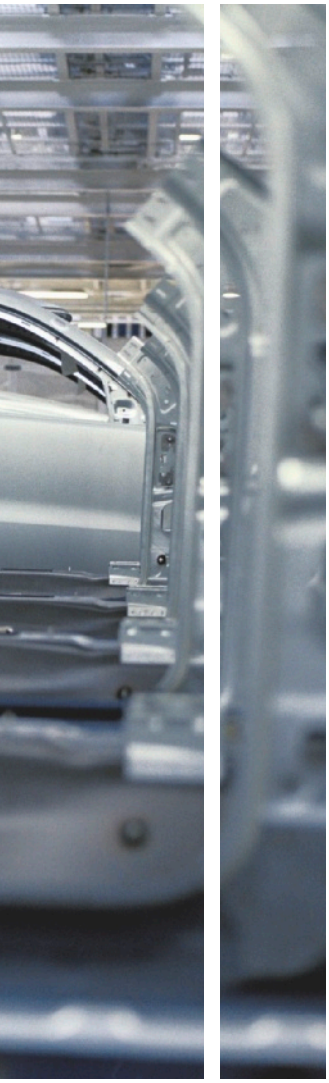
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Answers for Industry.

Siemens Industry answers the challenges in the manufacturing and the process industry as well as in the building automation business. Our drive and automation solutions based on Totally Integrated Automation (TIA) and Totally Integrated Power (TIP) are employed in all kinds of industry. In the manufacturing and the process industry. In industrial as well as in functional buildings.

Siemens offers automation, drive, and low-voltage switching technology as well as industrial software from standard products up to entire industry solutions. The industry software enables our industry customers to optimize the entire value chain – from product design and development through manufacture and sales up to after-sales service. Our electrical and mechanical components offer integrated technologies for the entire drive train – from couplings to gear units, from motors to control and drive solutions for all engineering industries. Our technology platform TIP offers robust solutions for power distribution.

The high quality of our products sets industry-wide benchmarks. High environmental aims are part of our eco-management, and we implement these aims consistently. Right from product design, possible effects on the environment are examined. Hence many of our products and systems are RoHS compliant (Restriction of Hazardous Substances). As a matter of course, our production sites are certified according to DIN EN ISO 14001, but to us, environmental protection also means most efficient utilization of valuable resources. The best example are our energy-efficient drives with energy savings up to 60 %.

Check out the opportunities our automation and drive solutions provide. And discover how you can sustainably enhance your competitive edge with us.

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Energy efficiency – Benefits for the environment and for your competitiveness.

Energy-efficient solutions and environmental technologies from the Siemens Environmental Portfolio have a two-fold advantage: for our customers, improving their bottom line through lower energy costs and higher productivity; for future generations, helping to maintain and improve the environment and living conditions.

A wide range of environmental technologies and energy-efficient solutions

Siemens has been supplying products and solutions for environmental protection and climate control since its earliest beginnings. Just one example: Werner von Siemens developed a technology to eliminate ash from factory emissions as early as 1873.

Today, we have the Siemens environmental portfolio in which we bundle those technologies which have been shown to help our customers with pollution control. These include the following:

Products and systems which are far more energy-efficient than comparable solutions, such as gas and steam turbines, low-energy light bulbs, and intelligent building management systems

Systems which use renewable sources of energy and their components, such as wind power plants and steam turbines

Environmental technologies which we harness for the provision of clean water and purer air

The Siemens environmental portfolio covers the entire energy conversion chain – from efficient power generation and energy distribution right through to usage – and green technologies. And countless products, each contributing to energy efficiency, e. g. the portfolio of industrial controls.

SIRIUS industrial controls

The industrial control components are fine-tuned to minimize power loss and thus provide both passive and active support in implementing efficient systems and applications.



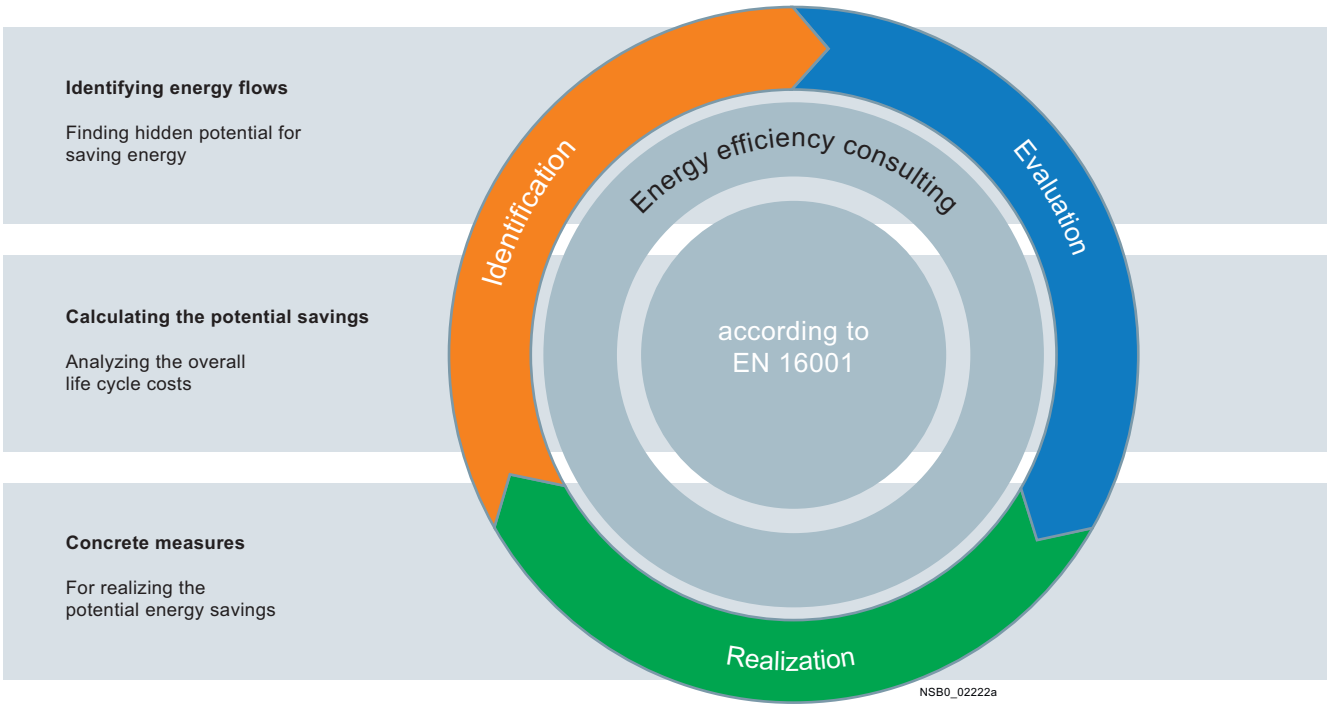
The components of SIRIUS Innovations perform at extremely low levels of inherent loss. The new generation heralded a further significant reduction of 10% on average. This means that not only is it possible to save on energy costs but also to reduce the amount of waste heat in the control cabinet. This then translates to a higher packing density in the control cabinet and a reduction in the required cooling efficiency.

SIRIUS reduces power loss

Here are a few examples from the industrial controls portfolio:

Thanks to the most advanced bimetal materials, our 3RV2 motor starter protectors perform at a level of inherent power loss which is up to 20 % lower than that of their predecessors.

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Our most energy-efficient contactors are fitted with an electronic coil control. This reduces the power loss by up to 92 %.

Our soft starters use intelligent, integrated current bypass circuits. This reduces the power loss during operation by up to 92 %.

Overload relays are fitted with an electronic release instead of a bimetal trip unit and boast not only a wider setting range but also a reduction of up to 98 % in no-load loss.

In comparison with conventional feeders, the power loss in the compact feeder has been reduced by up to 80 %. This is due to the combination of the most efficient technologies in one unit.

Energy management

Energy management is a further instrument for notably increasing the productivity of machinery and plant and thus bringing about a significant improvement to the competitive ability of a company – in all sectors of industry.

As a continuous process, a sophisticated concept will deliver a consistent reduction in energy consumption. Our energy management strategy is based on three phases: "Identification", "Evaluation" and "Realization".

Compatible hardware and software record the energy flux in the system, generating visual displays and analyzing the flows. The data thus obtained can be taken to make an initial evaluation of the potential savings and also form the basis for an intelligent and efficient energy management system.

With support from the PROFIenergy profile, our motor starters are particularly easy to integrate in such concepts.

Best drive solutions in terms of energy

Another important way to save energy lies in drive solutions: While frequency converters are specialized in dynamic processes, controls with direct-on-line, reversing, wye-delta or soft starters are the better solution in fixed-speed applications. For example, 2-point controllers can operate our efficiency motors at an optimum level of efficiency with the smallest inherent loss of the controls. In connection with our frequency converters it is also possible however to implement multi-motor cascades which combine the advantages of both drive concepts to optimum effect.

Communication-capable SIRIUS switching and protection devices deliver measured energy data

The communication-capable SIRIUS switching and protection devices can deliver energy values continually, without any additional installation expense and input, e. g. to a higher-level energy management system, and thus offer the required transparency in energy consumption.

Innovative Siemens technology –
answers for a green society!

We lead the field in terms of innovation and sustainable added value in industrial control engineering.

For more information see:
www.siemens.com/sirius/energysaving

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Industrial controls.
The basis for innovative solutions.



High demands are made in the field of industrial control: users want cost-effective solutions which can be easily integrated in control cabinets, distribution boards and distributed systems and which can communicate perfectly with each other.
Our response to their demands is SIRIUS industrial control.

SIRIUS industrial controls

The SIRIUS range has everything you need for switching, protecting and starting loads. Products for monitoring, control, detection, commanding, signaling and power supply round off the spectrum of industrial controls.

Building control cabinets should be quick, easy, flexible and space-saving. But how can all these requirements be met simultaneously? The answer lies in the unique SIRIUS modular system up to 250 kW / 400 V, where you will find everything that you need for switching, protecting and starting motors and industrial systems.

Furthermore, all components of the SIRIUS modular system are characterized by a space-saving design and high flexibility and are optimally coordinated with each other. Configuring, installing, wiring and maintenance are extremely easy and time-saving to perform.

Regardless of whether you want to build up your own load feeders with motor starter protectors/circuit breakers or overload relays, contactors or soft starters, or decide instead in favor of preassembled feeders: SIRIUS has the right product for every application.

Continuous further development and regular innovations ensure that our customers are optimally equipped with SIRIUS and benefit from efficient solutions - today and tomorrow.

Systematic further development – SIRIUS Innovations

SIRIUS has long been synonymous world-wide with industrial controls and has been a trendsetter in this field from the very beginning. The SIRIUS modular system with its components for the switching, starting, protection and monitoring of motors and industrial systems stands for the fast, flexible and space-saving construction of control cabinets.

With its latest innovations for the main and control circuit, the new SIRIUS modular system has underlined its leading position once again.

The consistent further development of SIRIUS takes even better account of current market requirements, particularly the call for fewer variants, greater flexibility and reduced cost and time. The advantages for you are: higher productivity and cost efficiency in your company.

Clicking replaces wiring

In the portfolio of the SIRIUS modular system you can trust on finding perfectly coordinated and flexibly combinable components which now are even easier to install: plug in place, connect, click and that's it! Complicated wiring is a thing of the past, as are wiring errors. For you this means a significant reduction of time and cost.

Innovative through and through

The SIRIUS modular system in sizes S00 and S0 up to 40 A has been completely revised – with respect to the main and control circuit. As the result, the innovative basic components such as motor starter protectors and contactors provide a host of advantages to optimize your plant, today and in the future. Often the innovation is to be found in the details. For example, more power in the same design and the bundling of functions in basic units for notable space savings.

At the same time the innovations enable the greatest flexibility. Be it direct starting, reverse starting or wye-delta starting for customer assembly, as a tested combination or an "all-in-one" solution complete with the compact starter,

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for soft starting or for frequent switching: the SIRIUS modular system has the answer to match.

Another aspect at the focus of the new developments was the enhancement of plant availability. In future, SIRIUS components from the modular system can also be used at minimum expense to monitor the application. Selective plant monitoring then becomes utterly simple – with current monitoring relays integrated directly in the load feeder or configured from the controller via the load feeder connection to AS-Interface or IO-Link.

These innovations are the perfect low-end supplement to today's S2-S12 modular system up to 250 kW/400 V and offer many new options for the construction of control cabinets.

More efficiency in control cabinet installation

The highlights of the new SIRIUS modular system are particularly numerous with regard to assembly and handling, application monitoring, connection to the controller, and customer support throughout the plant's lifecycle.

All these innovations add up to the many different possibilities of the new SIRIUS modular system as a whole – for the highest efficiency in control cabinet installation.

SIRIUS Safety Integrated

Combined with Totally Integrated Automation and Safety Integrated, our product portfolio can be bundled to create optimized systems. All in all, Siemens provides innovative controls with modern features, such as integrated communication and safety technology that work to your advantage: the basis for ground-breaking integrated solutions.

Safety Integrated by Siemens is the consistent implementation of safety technology in accordance with the concept of Totally Integrated Automation. Direct integration of safety-related functions in our standard products and the consistent integration of safety concepts in the standard automation environment offer many advantages for machine manufacturers and system operators.

Our SIRIUS Safety Integrated controls are a central element of the Siemens Safety Integrated concept. Whether for failsafe sensing, instructing and reporting, monitoring and evaluating or starting and reliable shutting down – our SIRIUS Safety Integrated controls are expert at performing safety tasks in your plant.

SIRIUS Safety Integrated uses failsafe communication using standard fieldbus systems, e. g. ASIsafe via AS-Interface and PROFIsafe via PROFIBUS, to solve even networked safety tasks of greater complexity. This opens the door for flexible safety solutions for compact machines or large-scale plants and for verification of compliance with the Machinery Directive up to SIL 3 /PL e with the Safety Evaluation Tool. The free, TÜV-approved online tool is a rapid and reliable aid for the evaluation of machine safety functions. The result is a report conforming to the relevant machine documentation standards.

For more information see:
www.siemens.com/sirius

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Entering North America – You have our support with regards to UL/NFPA.



Product liability laws in the USA are way stricter than in Europe. Whoever plans to export products to North America should have them UL-certified, particularly when it comes to electrical equipment. We can help you with our comprehensive know-how and broad portfolio of UL-certified low-voltage controls.

Who or what is UL/NFPA?

UL (Underwriters Laboratories Inc.®) is one of the world's leading organizations for testing and certification in the field of product safety. This independent, nonprofit US organization was founded in 1894 at the request of American fire insurance companies to analyze the fire hazards posed by electrically operated devices.

Today, UL tests and certifies the most varying materials, components and end products for their reliable operation, particularly with regard to potential personal injury and fire formation. The organization maintains subsidiaries in numerous European countries. Detailed information on the US organization as well as contact details for the various European subsidiaries are also available on the Internet at www.ul.com.

Definition of UL/NFPA and IEC

UL/NFPA and IEC differ fundamentally.

The IEC standards for the IEC market merely specify the minimum safety requirements of a device or system. Technical details of the safety requirements' constructional implementation are up to the manufacturers.

In contrast, the standards for the American market are far more detailed. Depending on the standard, the required process may be monitored from product design to product production down to application, mounting and operation.

NFPA79 is the electrical standard for industrial machinery outside the control cabinet. As such it differs from and is the counterpart to the control cabinet standard UL 508A.

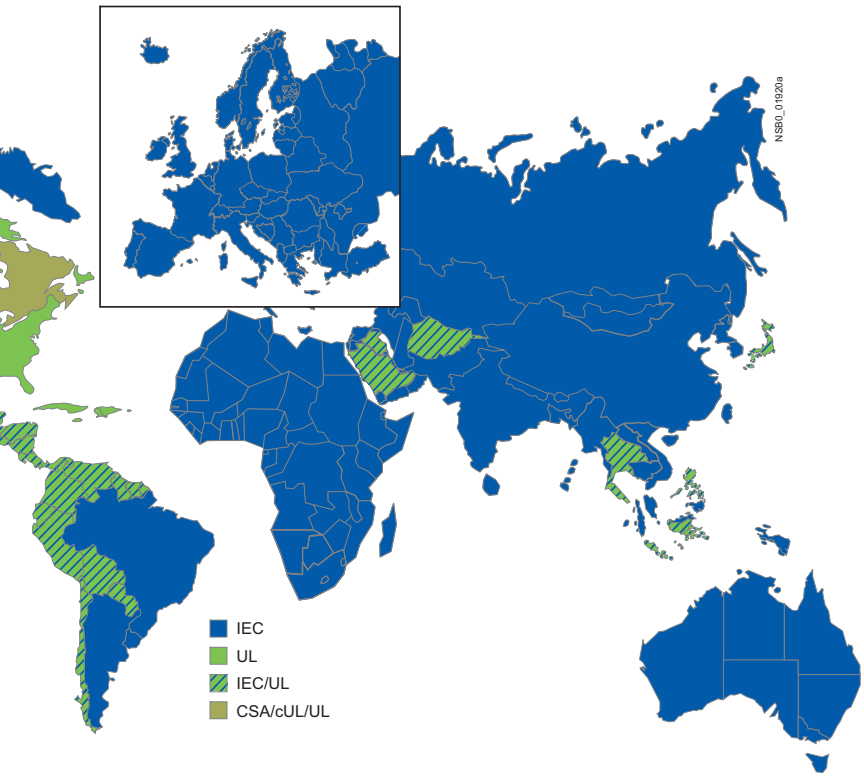
UL partner since 1969

To avoid unnecessary trouble and save time- and cost-intensive expenditures, it is recommendable to rely on a competent partner like Siemens.

Our production facility Amberg, where the complete diversity of our low-voltage controls and distribution portfolio is developed and produced, has been closely cooperating with Underwriters Laboratories Inc. already since 1969. We therefore offer comprehensive know-how on the subject of UL certification, ranging from production down to the wiring of control cabinets according to UL standards, and we would be pleased to share this knowledge with you within the scope of various training programs. Also the UL competence of our further sites, e. g. the Berlin switching plant and the Regensburg factory for electrical installation technology, should not be forgotten in this context.

Our consideration of both IEC directives as well as UL standards as early as in our products' development phase results in a broad portfolio of UL-certified products for low-voltage switching and protection technology. Our portfolio of low-voltage controls ensures your being on the safer side in terms of UL and facilitates the easy and fast assembly of control cabinets according to UL.

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Efficient construction of industrial control panels

Cost efficiency:

- Solutions of high flexibility through a comprehensive and coordinated product portfolio - from the infeed of the machine control system to the smallest actuator of the machine
- Easy stock keeping thanks to the universal usability of the products (IEC-UL/CSA)
- Uniform operating and maintenance concept based on our standard system

Safety:

- Comprehensive UL know-how from Siemens through many years of close cooperation with Underwriters Laboratories Inc.
- Assured UL connections through a strong and reliable product and system portfolio which already takes account of UL during development
- Easier and faster start-up through expert UL consulting

Efficient and safe operation of industrial control panels

Cost efficiency:

- Reduced costs through coordinated product interfaces
- Easy expansions and retrofits thanks to modular products and systems
- Minimum space required thanks to compact designs
- Easy local operation for user-friendliness and efficiency

Safety

- Comprehensive UL know-how and a service-proven UL portfolio through many years of close cooperation between Siemens and Underwriters Laboratories Inc.
- Easy expansions and retrofits through globally available products

For more information see:
www.siemens.com/ul-europe

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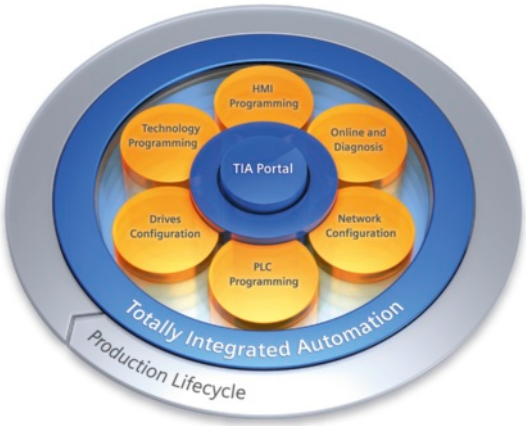
SIRIUS controls in the TIA Portal and SIRIUS eAssistance

Save time, cost and effort with the TIA Portal, the industry's first software project for all automation tasks.

Our SIRIUS eAssistance tools are there to support you around the clock.

From planning to start-up and right through to service.

SIRIUS controls in the TIA Portal



With the Totally Integrated Automation Portal (TIA Portal), Siemens has redefined engineering. TIA Portal is by far the most intuitive, efficient, and proven engineering framework, enabling you to design all your automation processes optimally, from a single computer screen, along the entire value supply chain.

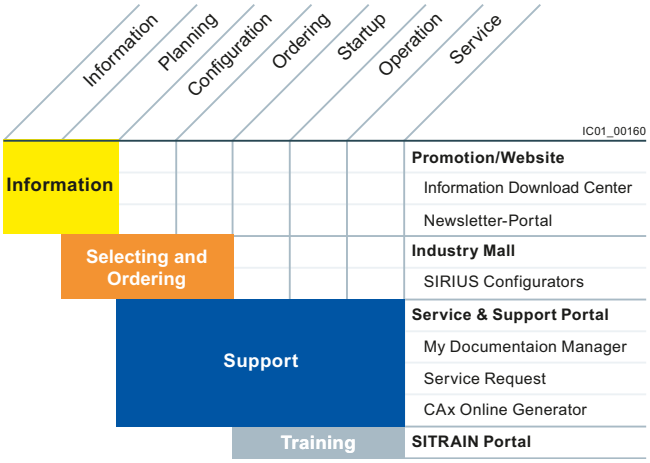
Not only does this groundbreaking innovation allow you to work more efficiently, it increases both your productivity and your competitive advantage. With the TIA Portal framework you can integrate SIRIUS controls in your automation solution easily and without additional tools. User-friendly and efficient parameterization with context-sensitive menus and graphic interfaces helps you reduce the time needed to configure SIRIUS controls. And with integrated diagnostics tools for SIRIUS controls you can also reduce plant downtimes.

Your advantages at a glance:
- Intuitive engineering from the word go
- Efficient tools for quick success
- A service-proven basis for innovative results

For more information see:
www.siemens.com/tia-portal

SIRIUS eAssistance

SIRIUS eAssistance stands for all the industrial control tools, portals and services which are provided to optimize your processes. From the initial information about your order to start-up and service – SIRIUS eAssistance provides you with electronic support in all project phases.



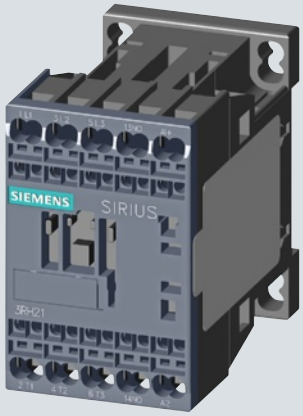
SIRIUS eAssistance offers for example:
- CAx data available at the press of a button
- Configuration of individual SIRIUS products or entire feeders – conveniently, quickly and error-free
- Individual compilation of your technical documentation

Your advantages at a glance:
- Optimization of your processes
- Reduced cost and time
- Improved cost efficiency
- Increased competitiveness

For more information see:
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Industrial Communication



Price groups
PG 5K1, 5K2, 5N3, 41B, 41H, 42C, 42D, 42F, 42J, 230, 250

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1) See Catalog DA 11.1

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Introduction

Overview

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AS-Interface: ASIsafe			
	ASIsafe enables the integration of safety-oriented components in an AS-Interface network, for example: • EMERGENCY-STOP pushbuttons • Protective door switches • Safety light arrays The simple wiring of AS-Interface, which is a major advantage, is maintained.		
 Modular safety system Basic central module	**Modular Safety System** Supplementing the service-proven concept of the safety monitors, the new 3RK3 modular safety system offers for example the following functions for ASIsafe: • Up to 50 enabling circuits incl. muting function • An unlimited number of monitoring modules • Expandable safe and standard inputs/outputs • Control of up to 12 ASIsafe outputs or 12 safe switch-off groups • Memory module for parameters, e. g. for device replacement • Optional PROFIBUS interface for diagnostics and parameterization • Intuitive graphic parameterization and diagnostics software MSS ES • AS-i Power24V capability Your advantage: Easy to configure safety functions up to Category 4, PL e, SIL 3	**3RK3**	Ch. 11
 Safety monitor	**AS-Interface safety monitors** • Key element of ASIsafe • For monitoring safe stations and for linking AS-Interface inputs and outputs • Ensures safe disconnection • Available with one or two release circuits with 2-channel configuration • All versions with removable screw terminals or spring-type terminals • All safety monitors in revised Version 3 with additional options • Filtering out of brief single-channel interruptions in the sensor circuit with the expanded safety monitor Version 3 • Expanded safety monitor with integrated safe slave for controlling a distributed safe AS-i output or for safe coupling a safe signal from one AS-i network to another AS-i network • Configuration software ASIMON V3 with graphic function diagram presentation Your advantage: Easy to configure safety functions up to Category 4, PL e, SIL 3	**3RK1**	2/17
 K45F  S45F SlimLine module, safe AS-i output	**AS-Interface safety modules** • Complete portfolio of ASIsafe modules • For connection of safety switches with contacts (e. g. position switches) as well as solid-state safety sensors (BWS) • Degree of protection IP65/IP67 or IP20 • Very compact dimensions, from 20 mm width • Up to four safe inputs per module • Up to one safe output per module • Standard outputs are available on the module in addition • Up to Category 4, PL e, SIL 3 Your advantage: Easy integration of safe signals, be it in the control cabinet or in the field	**3RK1**	2/20
 Position switch	**SIRIUS 3SF1, 3SF3 mechanical safety switches for AS-Interface** • Plastic with degree of protection IP65 and metal with degree of protection IP66/IP67 • ASIsafe Electronics integrated in the enclosure, with low power consumption < 60 mA • Available with separate actuator and interlocking Your advantage: Conventional wiring of safety functions no longer required.	**3SF1, 3SF3**	Ch. 12
 Cable-operated switch	**SIRIUS 3SF2 cable-operated switches for AS-Interface** • Degree of protection IP65 • Direct connection of cable-operated switches for detection of signals • Metal enclosures	**3SF2**	Ch. 12

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AS-Interface: ASIsafe (continued)		
 EMERGENCY-STOP for mounting on front plate	**SIRIUS EMERGENCY-STOP mushroom pushbuttons for AS-Interface** • Degree of protection IP65/IP67 • EMERGENCY-STOP directly on AS-Interface using integrated modules • Metal or plastic version Your advantage: Easy direct connection of service-proven control elements to ASIsafe	**3SF5**	Ch. 13
 F adapter	**AS-Interface F adapters for EMERGENCY-STOP devices** • Connection of an EMERGENCY-STOP device according to ISO 13850 to AS-Interface • Is snap-mounted from behind onto the EMERGENCY-STOP device (actuator) • Safety category 4 (SIL 3) Your advantage: Easy direct connection of service-proven control elements to ASIsafe	**3SF5**	Ch. 13
AS-Interface: Masters			
	The AS-Interface master connects SIMATIC control systems to AS-Interface. It automatically organizes the data traffic on the AS-Interface cable and sees not only to processing the signals but also to performing the parameter setting, monitoring and diagnostics functions.		
 CP 343-2, CP 343-2P for SIMATIC S7-300	**Masters for SIMATIC** • Connection of up to 62 AS-Interface slaves • Connection of up to 496 digital inputs and 496 outputs per master or AS-Interface network • Integrated analog value transmission • Simple configuration by adopting the actual configuration on the AS-Interface network at the press of a button • Easy operation in the input/output address area of the SIMATIC S7 comparable to standard I/O modules • Monitoring of the control supply voltage on the AS-Interface shaped cable Your advantage: Easy connection to SIMATIC S7-300, ET 200M or SIMATIC S7-200	**6GK7**	2/23
 CP 243-2 for SIMATIC S7-200			
AS-Interface: Routers			
	As an alternative to the CPs, it is also possible to use a link as AS-Interface master – at any position beneath the PROFIBUS DP or PROFINET IO.		
 DP/AS-i LINK Advanced	**Routers** • Degree of protection IP20 • PROFIBUS slave or PROFINET IO device and AS-Interface master (single or double master in case of DP/AS-i LINK Advanced and IE/AS-i LINK PN IO) • Connection of up to 62 AS-Interface slaves per AS-Interface network • Connection of up to 496 digital inputs and 496 outputs per AS-i network, with doubling of the project data volume for double master versions • Integrated ground-fault monitoring (in case of DP/AS-i LINK Advanced and IE/AS-i LINK PN IO) • User-friendly local diagnostics and local start-up by means of a full graphic display and control keys or through a web interface with a standard browser (in case of DP/AS-i LINK Advanced and IE/AS-i LINK PN IO) • Integrated analog value transmission • Configuring and uploading of AS-Interface configuration in STEP 7 possible • User-friendly selection of AS-Interface slaves • Safety-oriented transition from ASIsafe to PROFIsafe also available as DP/AS-i F-Link Your advantage: Optimum transition to PROFIBUS or PROFINET, integrated in STEP 7	**3RK3** **6GK1**	2/31 2/26, 2/29, 2/35
 DP/AS-Interface Link 20E			
 DP/AS-i F-Link			
 IE/AS-i LINK PN IO			

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Introduction

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AS-Interface: Slaves			
	Slaves contain the AS-Interface electronics and connection options for sensors and actuators in the field and in the control cabinet. A total of up to 62 slaves can be connected to one bus. The slaves then exchange their data in cyclic mode with a control module (master).		
 K20 digital module	**I/O modules for use in the field, high degree of protection** Digital I/O modules IP67 - K60, K60R, K45 and K20 • Degree of protection IP65/IP67 or IP68/IP69K • Modules available with up to degree of protection IP68/IP69K • ATEX-certified modules available for Ex Zone 22 • Connection sockets in M8/M12 • Up to eight inputs and four outputs • A/B technology available • Contacting protected against polarity reversal • Standard rail mounting and wall mounting possible • Mounting of the module on the base plate using just one screw • Diagnostics LEDs Your advantage: Reduction of mounting and start-up times by up to 40 %	**3RK1, 3RK2**	2/39, 2/41, 2/43, 2/45
 K45 digital module			
 K60 digital module			
 K60 analog module	Analog I/O modules, IP67 - K60 • Degree of protection IP65/IP67 • Detects or transmits analog signals locally • 2-/4-channel • Input modules for up to four sensors with current signal, with voltage signal or with thermal resistor • Output modules for current or voltage • Fast analog modules available for higher access speeds Your advantage: Easy integration of analog values	**3RK1**	2/48
 SlimLine	**I/O modules for use in the control cabinet** • Degree of protection IP20 • No M12 plugs required for connection • Up to 16 inputs • Narrow design of the SlimLine modules with width from 22.5 mm • Removable, finger-safe terminal blocks that cannot be mixed up (SlimLine) • Flat design of the flat modules for small control cabinets and confined conditions • Connection with screw-type or spring-type terminals • Standard rail mounting and wall mounting possible • Diagnostics LEDs Your advantage: Modules enable use in cabinets and small local control cabinets	**3RG9, 3RK1**	2/51
 F90 module			
 Flat module			

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AS-Interface: Slaves (continued)			
 Counter module	**Modules with special functions: Counter modules** • Degree of protection IP20 • For evaluation of pulses • Connection with screw-type or spring-type terminals Your advantage: Evaluation of pulses which exceed even the clock frequency of AS-Interface	**3RK1**	2/58
 Ground-fault detection module	**Modules with special functions: Ground-fault detection modules** • Degree of protection IP20 • Display using LEDs • Two signaling outputs Your advantage: Automatic diagnostics of ground faults on AS-Interface	**3RK1**	2/59
 Overvoltage protection module	**Modules with special functions: Overvoltage protection module** • Degree of protection IP67 • Discharge through ground cable with oil-proof outer sheath • Protection at transition of lightning protection zones Your advantage: The AS-Interface overvoltage protection module protects downstream AS-Interface devices or individual sections in AS-Interface networks from conducted overvoltages	**3RK1**	2/60
 3RT20 1.-1B...-0CC0 contactor	**Contactors and contactor assemblies** Power contactors for switching motors and contactor assemblies • Notable reduction of wiring in the control circuit • Integrated mechanical interlocking • Prevention of wiring errors in the main circuit • Connection to AS-Interface through function modules	**3RT2, 3RA23, 3RA24**	Ch. 3
 SIRIUS 3RA27 12... function module for AS-Interface	SIRIUS function modules for AS-Interface • For mounting onto SIRIUS 3RT2 contactors • Reduction of control current wiring through plug-in technology and integrated monitoring of circuit breaker/motor starter protector and contactor • Reduced space requirement in the control cabinet through fewer digital inputs and outputs in the control system • Easy configuring through operation of feeders instead of individual contactors • Enhanced operational reliability and quick wiring thanks to spring-type connections • Small number of variants by using identical modules for size S00 and S0 contactors Your advantage: Shortening of mounting and start-up times	**3RA27 12**	Ch. 3
 3RA61 compact feeder	**Motor starters for use in the control cabinet** SIRIUS 3RA6 compact starters, 3RA61 direct-on-line starters, 3RA62 reversing starters • Degree of protection IP20 • Very compact load feeders with the integrated functionality of a solid-state overload relay • As direct-on line or reversing starters for motors up to 15 kW/400 V • Easy expansion into a communication-capable load feeder using AS-i add-on modules • On-site safe disconnection also possible using AS-i add-on modules • Standardized integration of the loads in higher-level control systems using AS-i Your advantage: Compact solution with minimum wiring outlay for actuating direct-on-line and reversing starters in the control cabinet	**3RA6**	Ch. 8

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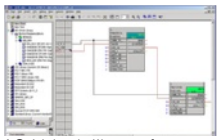
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AS-Interface: Slaves (continued)			
 SIRIUS M200D motor starter	**Motor starters for use in the field, high degree of protection** SIRIUS M200D motor starters for AS-Interface • High degree of protection IP65 for cabinet-free construction • As direct-on line or reversing starters for motors up to 5.5 kW/400 V • Mechanical or electronic switching for high switching frequencies • Optional with manual operation and brake control • Expanded diagnostics and parameterization possible through AS-Interface • Easy and consistent integration in STEP 7 through AS-Interface Your advantage: The correct solution for all simple applications in conveyor systems with spatially distributed drives	**3RK1**	Ch. 9
 ECOFAST motor starter	ECOFAST motor starters • Degree of protection IP65/IP67 • Standardized interfaces according to ECOFAST Specification (complies with DESINA) • Mechanical or solid-state soft switching function • Optional with AS-i interface for connecting the motor feeder to AS-Interface Your advantage: Less space required in the control cabinet, the starters can be installed near the motor or be plugged on the motor.	**3RK1**	Ch. 9
 SIRIUS MCU motor starter	SIRIUS MCU motor starters for AS-Interface • Degree of protection IP55 • Direct-on-line or reversing starters up to 5.5 kW at 400 V AC (50/60 Hz) • Integrated overload and short-circuit protection with SIRIUS 3RV motor starter protectors Class 10 with short-circuit breaking capacity I_{cu} = 50 kA at 400 V AC • Overload protection with thermal release (bimetal) Your advantage: Factory-wired motor starters in high degree of protection for use in the field.	**3RK1**	Ch. 9
 Motor starter for AS-Interface, 24 V DC	Motor starters for AS-Interface, 24 V DC • Degree of protection IP65/IP67 • Direct-on-line starters, double starters or reversing starters • Up to 70 W • Quick stop function Your advantage: Simple motor starter in service-proven module construction for 24 V DC motors	**3RK1**	Ch. 9
	Commanding and signaling devices		
 Pushbutton	SIRIUS 3SF5 pushbuttons and indicator lights • Modular construction according to individual requirements • Up to 6 signaling points • Metal and plastic version • Any change of equipment possible even after installation • Indicator lights with integrated LED Your advantage: Complete 3SB3 operating system with simple AS-Interface connection for your plant	**3SF58**	Ch. 13
 Signaling column	8WD4 Signaling Columns • Many optical and acoustic elements can be combined • Up to three signaling elements can be connected using an adapter element • With LEDs or incandescent lamps Your advantage: Signaling columns for monitoring production sequences and for visual or acoustic warnings in emergency situations, with easy AS-Interface connection	**8WD4**	Ch. 13
 Connection for LOGO!	**AS-Interface connections for LOGO!** • AS-Interface slave for the connection of LOGO! • Distributed controller functionality Your advantage: Distributed intelligence can be used on-site and can be connected to the control system through AS-Interface	**3RK1**	2/61

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AS-Interface: Power supply units and data decoupling modules			
	AS-Interface power supply units generate a controlled direct voltage of 30 V DC with high stability and low residual ripple in conjunction with data decoupling. They are an integral component of the AS-Interface network and enable the simultaneous transmission of data and energy on one cable. In conjunction with data decoupling modules, AS-Interface can also be operated with standard power supply units.		
 IP20, 3 A	**AS-Interface power supply units** • With wide performance spectrum from 2.6 to 8 A • Degree of protection IP20 • Separation of data and energy by means of the integrated data decoupling • UL/CSA approval means the power supplies can be used worldwide 2.6 A version with output power restricted to max. 100 W (for use in NEC Class 2 circuits) • Certified for global use • Integrated ground-fault and overload detection save the need for additional components and makes applications reliable • Diagnostics memory, remote indication and remote RESET allow fast detection of faults in the system • The ultra-wide input range enables single- and two-phase applications (8 A version) Your advantage: Optimum performance for each application	**3RX9**	2/62
 IP20, 8 A			
 SITOP PSU100M, 24 V DC, 20 A	**24 V power supply units** Standard 24 V power supply units (SITOP) • Performance spectrum 2.5 A to 40 A • Overload and short-circuit proof in every performance class • Add-on modules for signaling, redundancy, buffering and UPS • Single-phase, two-phase and three-phase versions Your advantage: Economical alternatives in conjunction with data decoupling modules	**6EP**	Ch. 15
 S22.5 data decoupling module	**S22.5 data decoupling modules** • Degree of protection IP20, narrow design 22.5 mm • Connection of several AS-i networks to one power supply unit • Single and double data decoupling • Operation with 24 V DC or 30 V DC Your advantage: Cost-effective installation of AS-i networks in conjunction with standard power supply units	**3RK1**	2/63
AS-Interface: Transmission Media			
	AS-Interface shaped cable for connection of network stations.		
 Shaped cable	**AS-Interface shaped cables** • No polarity reversal thanks to trapezoidal shape • Cables made of optimized material for different operating conditions • Special version according to UL Class 2 available Your advantage: Fast replacement and connection to AS-Interface by piercing method	**3RX9**	2/65

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Introduction

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AS-Interface: System Components and Accessories			
	Accessories comprise tools for mounting, installation and operating as well as individual components.		
 Repeater  Extension plug	**Repeaters and extension plugs** • Repeaters for extending the AS-Interface cable by 100 m per repeater • Extension plug for extending the AS-Interface segment to max. 200 m • Maximum two repeaters and one extension plug in series (max. 300 m) • Parallel switching of several repeaters possible (star configuration option) • Maximum size increases (when combined) to more than 600 m • Easy mounting • IP67 module enclosure Your advantage: Lower infrastructure costs, more possibilities of use and greater freedom for plant planning.	**3RK1, 6GK1**	Repeaters: 2/66 Extension plugs: 2/67
 Addressing unit for AS-Interface V 3.0	**Addressing units** • Reading out and adjusting the slave address 0 to 31 or 1A to 31A, 1B to 31B, with automatic addressing aid and prevention of double addresses • Reading out the slave profile (IO, ID, ID2) and reading out and setting the ID1 code • Input/output test when commissioning the slaves: All digital and analog slaves according to AS-Interface Specification V 3.0, including safe input slaves and complex CTT2 slaves • Display of the operational current in case of direct connection of an AS-i slave (measuring range from 0 to 150 mA) • Storage of complete network configurations (profiles of all slaves) to simplify the addressing Your advantage: Easiest way to address and test the slaves	**3RK1**	2/68
 Analyzer	**AS-Interface analyzers** • Diagnostics units for completely checking the quality and function of an AS-Interface installation • Transmission of collected data through an RS232 interface to a PC, evaluation by software • Easy and user-friendly operation • Automatically generated test logs • Advanced trigger functions enable exact analysis • Process data can be monitored online • In addition to digital I/O data it is possible to view analog values and safety slaves in data mode Your advantage: Preventative testing of an AS-Interface network is possible, recorded logs facilitate remote diagnostics	**3RK1**	2/70
 M12 sealing cap  Cable terminating piece	**Miscellaneous accessories** AS-Interface system manual, individual components such as sealing caps, cable adapters, distributors, M12 plugs and cables, etc.	**3RK2, 3RG7, 3RG9, 3RK1, 3RX9, 6ES7**	2/73
AS-Interface: Software			
 AS-i block library for PCS 7	**AS-Interface block library for SIMATIC PCS 7** • Engineering software and runtime software • Easy connection of AS-Interface to PCS 7 • Engineering work reduced to positioning and connecting the function blocks in the CFC • With no additional configuring steps required for connection to the PCS 7 Maintenance Station, diagnostics for the AS-i system is optimally guaranteed Your advantage: Easy connection of AS-Interface to PCS 7, little engineering and configuration	**3ZS1**	Ch. 14

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IO-Link		
 IO-Link family		
IO-Link is a new communication standard for sensors and actuators - defined by the Profibus User Organization (PNO).		
• Dynamic changing of sensor/actuator parameters directly by the PLC		2/76
• Devices can be exchanged during operation, without a PC or programming device, through re-parameterization using the user program by means of a function block (FB)		
• Fast commissioning thanks to central data storage		
• Consistent diagnostics information as far as the sensor/actuator level		
• Uniform and greatly reduced wiring of different sensors/actuators/controls		
Your advantage: Fast commissioning and flexible maintenance thanks to central data storage, less wiring work because no passive distributors are needed		
IO-Link: Masters		
 SIRIUS 4SI electronic module for ET 200S		
The IO-Link master modules form the heart of the IO-Link system.		2/78
IO-Link master modules for ET 200S		
IO-Link 4SI electronic module	**6ES7**	2/78
• Up to 4 IO-Link devices (three-conductor connection) can be connected		
• Up to 4 standard actuators/sensors (two-conductor/three-conductor connection) can be connected	**3RK1**	2/79
• SIRIUS 4SI electronic modules		
• Up to 16 SIRIUS controls can be connected with IO-Link (grouped)		
• Supports firmware update (STEP 7 V5.4 SP4 and higher).		
IO-Link master modules for ET 200eco PN	**6ES7**	2/80
• Up to 4 IO-Link devices (three-conductor connection) can be connected		
• Up to 8 standard sensors (8 DI) and up to 4 standard actuators (4 DO) can be connected in addition.		
Your advantage: Easy connection to the control system in IP20 as well as in IP65/IP67		
IO-Link: Input modules		
 IO-Link K20 module with four digital inputs		
IO-Link input modules make full use of the potential of IO-Link and economically are a more attractive solution than a direct sensor connection.		2/81
IO-Link K20 modules	**3RK5**	2/82
• Four or eight digital inputs		
• Degree of protection IP65/IP67		
• Connection sockets in M8/M12		
• Contacting protected against polarity reversal		
• Your advantage: Reduction of mounting and start-up times by up to 40 %		
IO-Link: Industrial Controls		
 3RT20 1.-1B...-0CC0 contactor		
Starters and contactor assemblies for direct-on-line, reversing and wye-delta starting can be connected to IO-Link through function modules without any additional, complicated wiring.		
Contactors and contactor assemblies		
Power contactors for switching motors and contactor assemblies	**3RT2, 3RA23, 3RA24**	Ch. 3
• Notable reduction of wiring in the control circuit		
• Integrated mechanical interlocking		
• Prevention of wiring errors in the main circuit		
 SIRIUS 3RA27 11 function module for IO-Link		
SIRIUS function modules for IO-Link	**3RA27 11**	Ch. 3
• Connection of the communication-capable 3RT2, 3RA23, 3RA24 power contactors to IO-Link		
• Reduction of control current wiring through plug-in technology, feeder groups and integrated monitoring of circuit breaker/motor starter protector and contactor		
• Reduced space requirement in the control cabinet through fewer digital inputs and outputs in the control system		
• Simple user program thanks to operation of feeders instead of individual contactors		
• Enhanced operational reliability and quick wiring thanks to spring-type connections		
• Can be flexibly combined with many automation solutions using the open, standardized IO-Link wiring system		
• Small number of variants by using identical modules for size S00 and S0 contactors		
Your advantage: Shortening of mounting and start-up times		

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		Order No.	Page
IO-Link: Industrial Controls (continued)			
 Overload relay SIRIUS 3RB24	**Overload relays** SIRIUS 3RB24 solid-state overload relays for IO-Link • Diagnostics and current value transmission via IO-Link • Current measuring modules (3RB29) for current values from 0.3 … 630 A • Controlling direct-on-line, reversing and wye-delta starters via IO-Link in conjunction with contactors • Full motor protection through PTC connection Your advantage: Communication-capable overload relay enables remote diagnostics and preventative maintenance	**3RB24**	Ch. 7
 SIRIUS 3RA64 direct-on-line starter	**Motor starters for use in the control cabinet** SIRIUS 3RA6 compact starters, 3RA64 direct-on-line starters, 3RA65 reversing starters • Degree of protection IP20 • Very compact load feeders with the integrated functionality of a solid-state overload relay • Up to 15 kW/400 V • Wide setting range • Practically weld-free contacts • Your advantage: Compact solution with minimum wiring outlay and many different diagnostics options	**3RA64, 3RA65**	Ch. 8
 SIRIUS 3UG48	**Monitoring Relays** SIRIUS 3UG48 monitoring relays for stand-alone installation for IO-Link • Monitoring of - Network (3UG48 1) - Current (3UG48 2), - Voltage (3UG48 3) - Power factor (3UG48 4) - Speed (3UG48 5) • Parameterization and diagnostics via the display on the device or via IO-Link • Adjustable warning and switch-off limit values and on/tripping delay times • All current measured values available in the control system • Your advantage: Communication-capable overload relay enables remote diagnostics and preventative maintenance	**3UG48**	Ch. 10
 SIRIUS 3RS14, 3RS15	SIRIUS 3RS14, 3RS15 temperature monitoring relay for IO-Link • Measuring the temperature of solids, liquids and gases • Use of resistance sensors (3RS14) or thermoelements (3RS15) • Parameterization and diagnostics via the display on the device or via IO-Link; adjustable warning and switch-off limit values and on/tripping delay times • All current measured values available in the control system Your advantage: Independent monitoring easily linked to the control system	**3RS14, 3RS15**	Ch. 10

Note:

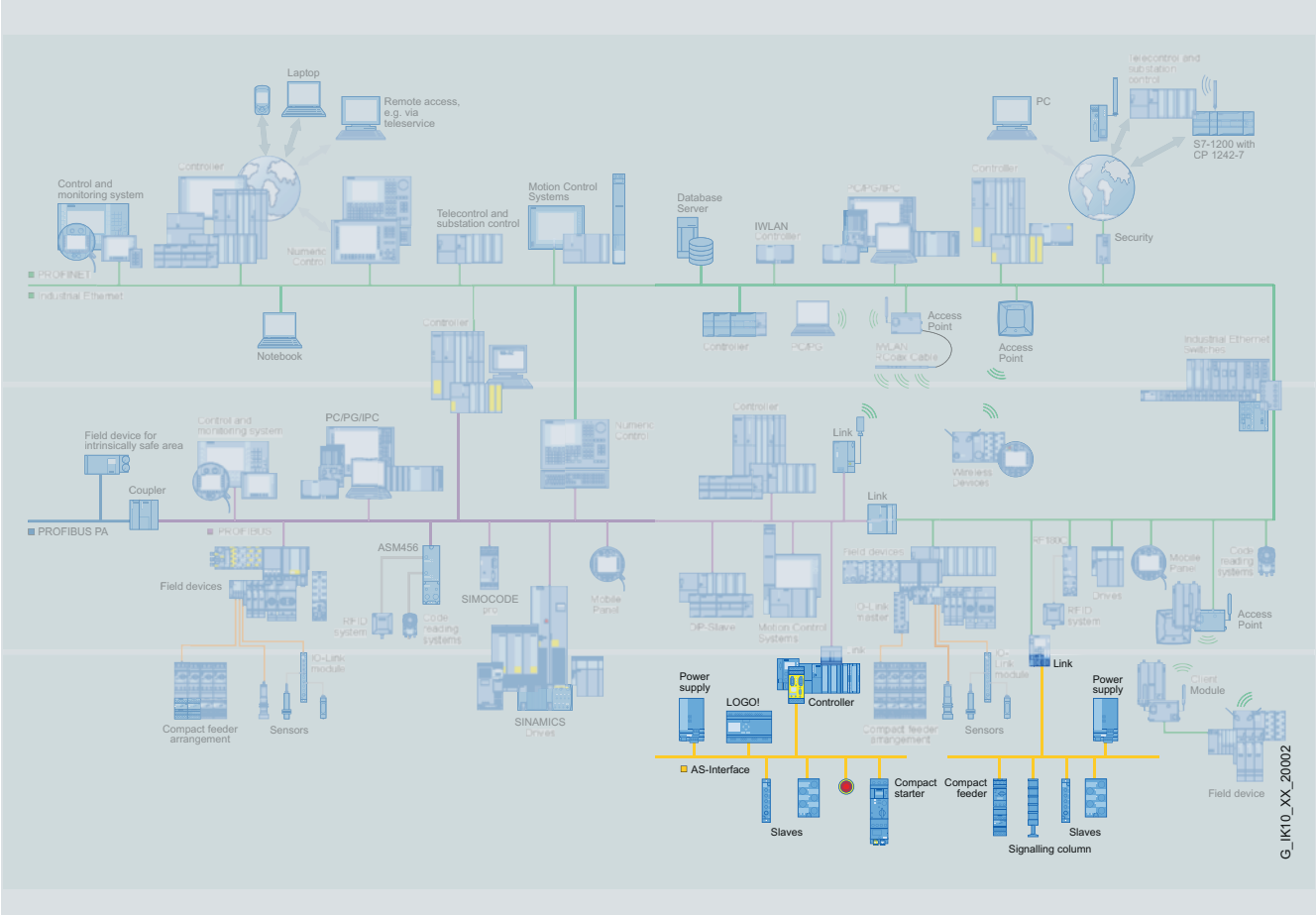
	Screw terminals
	Spring-type terminals
	Combicon connectors (plug-in screw terminals)
	Fast Connect
	The terminals are indicated in the selection and ordering data by orange backgrounds.

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Overview

AS-Interface is an open, international standard according to EN 50295 and IEC 62026-2 for process and field communication. Leading manufacturers of actuators and sensors all over the world support the AS-Interface. Interested companies are provided with the electrical and mechanical specifications by the AS-Interface Association.

AS-Interface is a single master system. For automation systems from Siemens there are communications processors (CPs) and routers (links) which control the process or field communication as masters, and actuators and sensors which are activated as AS-Interface slaves.



Benefits

A key feature of AS-Interface technology is the use of a shared two-conductor cable for data transmission and the distribution of auxiliary power to the sensors/actuators. A power supply unit which meets the requirements of the AS-Interface transmission method and has an external data decoupling module if required is used for the distribution of auxiliary power. The AS-Interface cable used for the wiring is mechanically coded and hence protected against polarity reversal and can be easily contacted by the insulation piercing method.

Elaborately wired control cables in the control cabinet and marshalling racks can be replaced by AS-Interface.

The AS-Interface cable can be connected to any points thanks to a specially developed cable and connection by the insulation piercing method.

With this concept you become extremely flexible and achieve high savings.

Application

I/O data exchange

The AS-i master transmits automatically the inputs and outputs between the control system and the digital and analog AS-Interface slaves.

Slave diagnostics information is forwarded to the control system when required.

AS-Interface masters according to the AS-Interface Specification V2.1 or V3.0 support integrated analog value processing. This means that data exchange with analog AS-Interface slaves is just as easy as with digital slaves.

Command interface

In addition to I/O data exchange with binary and analog AS-Interface slaves the AS-Interface masters provide a number of other functions through the command interface.

Hence it is possible, for example, for slave addresses to be issued, parameter values transferred or configuration information read out from user programs.

You can find more information on the Internet at
http://support.automation.siemens.com/WW/view/en/51678777

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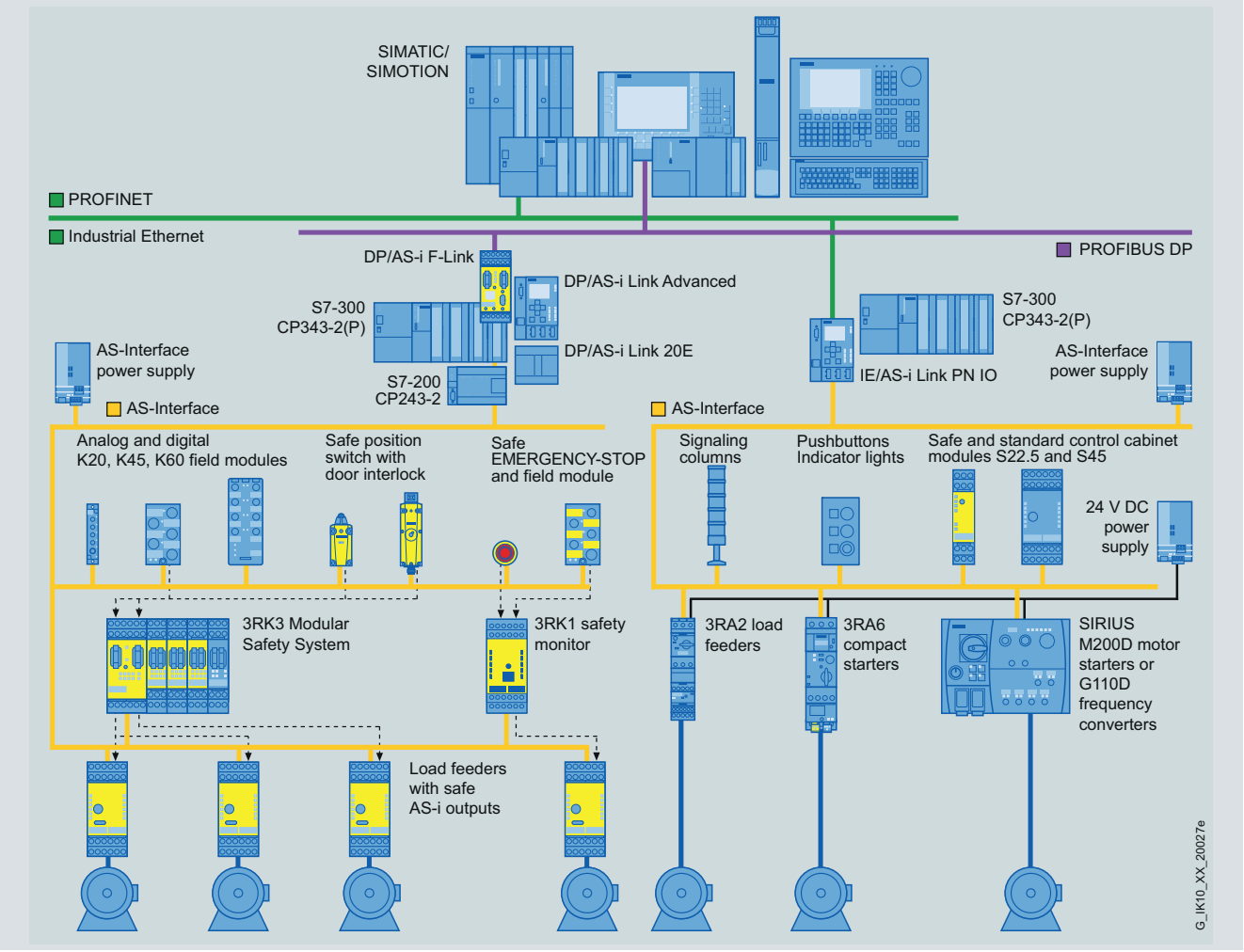
Communication overview

Overview

System components

To implement the communication, a system installation has the following main components:

- Master interface modules for central control units such as SIMATIC S7, ET 200M distributed peripherals, or routers from PROFIBUS/PROFINET to AS-Interface
- Power supply units, if required in combination with a data decoupling module for the power supply to the slaves
- AS-Interface shaped cables
- Network components such as repeaters and extension plugs (cannot be used for AS-i Power24V)
- Modules for connection of standard sensors/actuators
- Actuators and sensors with integrated AS-i slave
- Safety modules for transmitting safety-oriented data through AS-Interface
- Addressing units for setting the slave addresses during commissioning



Example of a configuration with the system components

Features

Standard	EN 50295 / IEC 62026-2
Topology	Line, star or tree structure (same as electrical wiring)
Transmission medium	Unshielded two-conductor cable (2×1.5 mm^2) for data and auxiliary power
Connection methods	Contacting of the AS-Interface cable by insulation piercing method
Maximum cable length	• 100 m without repeater • 200 m with extension plug • 300 m with two repeaters in series connection • 600 m with extension plugs and two repeaters connected in parallel Larger cable lengths are possible when additional repeaters are connected in parallel

Maximum cycle time	• 5 ms in full expansion with standard addresses • 10 ms in full expansion with A/B addresses, profile-specific for Spec 3.0 slaves
Number of stations per AS-Interface line	• 31 slaves acc. to AS-Interface Spec. V2.0 • 62 slaves (A/B technology) acc. to AS-Interface Spec. V2.1 and V3.0 • Integrated analog value transmission
Number of binary sensors and actuators	• Max. 124 DI/124 DO according to Spec. V2.0; • Max. 248 DI/186 DO according to Spec. V2.1 • Max. 496 DI/496 DO according to Spec. V3.0
Access control	• Cyclic polling master/slave procedure • Cyclic data acceptance from host (PLC, PC)
Error safeguard	Identification and repetition of faulty message frames

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Overview

Scope of the AS-Interface specification

AS-Interface specification	Maximum number of slaves			Number of digital inputs	Number of digital outputs
	Digital	Analog	ASIsafe	DI	DO
Version 2.0	31	31	31	31 × 4 = 124	31 × 4 = 124
Version 2.1	62	31	31	62 × 4 = 248	62 × 3 = 186
Version 3.0	62	62	31	62 × 8 = 496	62 × 8 = 496

Basic data of AS-Interface Specification 2.0

- AS-Interface Specification 2.0 describes a fieldbus system with an AS-i master and up to 31 AS-i slaves.
- Each AS-i slave has up to 4 digital inputs and 4 digital outputs.
- With full expansion, the complete transmission of all input/output data requires max. 5 ms cycle time.

Expansions of AS-Interface Specification 2.1

AS-Interface Specification 2.1 enables the number of network stations to be doubled from 31 to 62 as follows:

- The standard slaves continue to have one AS-i address (1...31).
- Slaves with extended addressing divide an address into an A address (1A...31A) and a B address (1B...31B). Up to 62 A/B slaves can be connected accordingly to one AS-i network.
- Mixed operation of standard slaves and A/B slaves is possible without difficulty. The AS-i master identifies automatically which type of slave is connected. No special adjustments are required of the user.

Another function of the AS-Interface Specification V2.1 is the integrated analog value transmission function. Access to both analog values and digital values is possible without the need for any special function blocks.

Expansions of AS-Interface Specification 3.0

- AS-Interface Specification 3.0 enables the connection of a nearly 1000 digital inputs/outputs (profile S-7.A.A: 8DI/8DO as A/B slave).
- New profiles have also enabled the option of expanded addressing for analog slaves.
- Acceleration of analog value transmission through "Fast Analog Profile".
- Variable use of analog modules: Optional parameterization of resolution (12/14 bit) and 1 and 2-channel capability.
- Asynchronous serial protocol 100 baud or 50 baud, bidirectional.

AS-Interface masters

To be able to operate A/B slaves on an AS-Interface network you must use master modules that meet the minimum requirements of Specification 2.1.

The AS-i masters for S7-300 / ET 200M and all DP/AS-i links and IE/AS-i links comply with AS-Interface Specification 3.0 and support all new and previous slaves.

AS-Interface specification	Available masters
Version 2.1	CP 243-2 (S7-200)
Version 3.0	CP 343-2, 343-2P (S7-300 / ET 200M), DP/AS-i Link Advanced, DP/AS-i F-Link, DP/AS-Interface Link 20E, IE/AS-i Link PN IO

The AS-Interface specification relevant for the respective slave is noted in the Selection and ordering data.

For the exact slave profile see AS-Interface system manual.

Communication cycle

AS-Interface specification	Maximum cycle time (digital signals)
Version 2.0	5 ms
Version 2.1	5 ms with 31 slaves 10 ms with 62 slaves
Version 3.0	5 ms with 31 slaves 10 ms with 62 slaves, supplementary, up to 20 ms with A/B slaves using 4DI/4DO, up to 40 ms with A/B slaves using 8DI/8DO.

Each address is queried in max. 5 ms cycle time. If two A/B slaves are operated on one basic address (e. g. 12A and 12B), a maximum 10 ms will be required for updating the data of both slaves.

Whether an AS-Interface slave is a standard slave or an A/B slave can be seen in the section "Selection and ordering data" or the AS-Interface system manual.
All slave types can be mixed and used on a single AS-Interface network.

More information

AS-Interface system manual

More information is available in the AS-Interface system manual.

The German and English-language AS-Interface System Manual can be downloaded free from the Internet, see http://support.automation.siemens.com/WW/view/en/26250840

A print version of the AS-Interface System Manual is also available in both languages, see page 2/73.

Internet

More information is available on the Internet, see the opening information on page 13.

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AS-Interface specification AS-i Power24V expansion

Overview



AS-Interface S22.5 data decoupling module as central element for AS-i Power24V

Parallel wiring often dominates still, particularly in applications with very few I/Os. Although AS-Interface is similarly well suited for small applications, its use is often prevented by the cost of the 30 V AS-Interface power supply unit which is required in addition.
Through the expansion of AS-Interface with AS-i Power24V and the resulting possibility of using existing standard 24 V DC power supply units in AS-i networks, AS-Interface is now also attractive for applications with a very tight budget.

Data and power in standard AS-Interface networks up to now

One of the great advantages of AS-Interface is the ability to convey not only data but also the power needed for the connected slaves and sensors over the same unshielded two-conductor cable. This is owed to the service-proven AS-Interface power supply units which provide integrated data decoupling as well as overload and short-circuit protection and integrated ground fault monitoring.

The new technology

Through the expansion of AS-Interface with AS-i Power24V it is now also possible to use 24 V standard power supply units in AS-i networks. The communication technology of AS-Interface works at the same high level of quality with an operating voltage of both 30 V DC and 24 V DC.

	Key data of AS-i Power24V
Number of slaves	Up to 62 standard slaves and up to 31 safe slaves
Topology	Any
Range	Up to 50 m
Components	• 24V power supply unit with little residual ripple • AS-i Power24V-capable data decoupling with integrated ground-fault detection • AS-i Power24V-capable masters, slaves and components

Requirements for operation of an AS-i Power24V network

- The maximum range of 50 m must be observed in order to reach slaves and sensors with a sufficient level of voltage (at least 20 V).
- The power supply units must comply with the PELV Standard (Protective Extra Low Voltage) and have a residual ripple of < 250 mVpp. We recommend power supply units from the SITOP range, see Chapter 15.
- When used in conjunction with standard 24 V power supply units, each AS-i network requires Power24V-capable data decoupling with adapted ground fault detection.
- For reliable operation of an AS-i network with 24 V voltage it is important that the masters, slaves and other components are approved for AS-i Power24V. AS-i Power24V-capable AS-i components can also be used without restriction in standard 30 V AS-i networks.
- The use of repeaters or extension plugs in AS-i Power24V networks is not permitted.

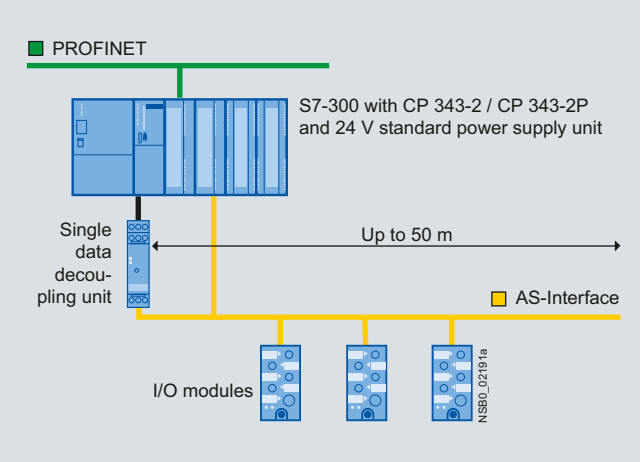
Benefits

AS-i Power24V networks incur no additional costs for an AS-Interface power supply unit because an already existing 24 V power supply unit can be used. This brings the user several benefits:

- The level of standardization of very small applications can be increased further.
- The additional advantages of a modern communication system in terms of commissioning, maintenance and diagnostics can be fully exploited.

Application

Construction of an AS-i Power24V network



Construction of an AS-i Power24V network with an AS-Interface S22.5 data decoupling module (simple network)

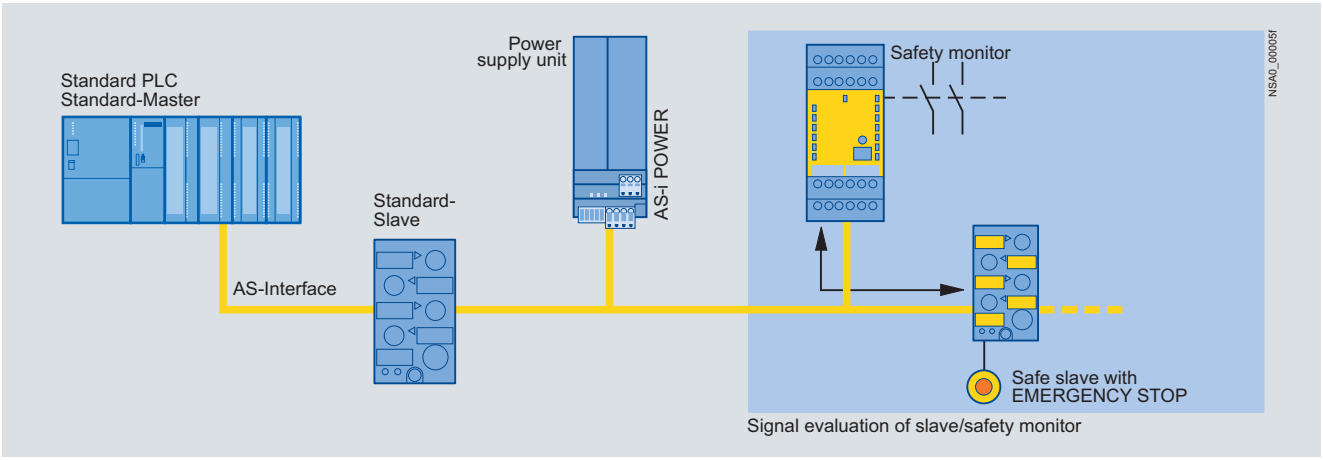
More information

Complete overview of AS-i Power24V-capable units currently available from Siemens see http://support.automation.siemens.com/WW/view/en/42806066

Details of AS-i Power24V see the opening information on page 13.

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Overview



Secure communication and standard communication on AS-Interface

Safety is included

The ASIsafe concept supports the integration of safety-related components, such as EMERGENCY-STOP switches, protective door switches or safety light arrays, in the AS-Interface network. These are fully compatible with the familiar AS-Interface components (masters, slaves, power supplies, repeaters, etc.) in accordance with IEC 62026-2 and are operated in conjunction with them on the yellow AS-Interface cable.

A failsafe controller or a special master is not required. The master regards safety slaves like all other slaves and receives the safety data solely for information purposes. All existing AS-Interface networks can thus be expanded.
ASIsafe makes sure that a maximum response time of 40 ms can be achieved. This is the time between the signal being applied to the input of the safe slave and the output on the safety monitor being switched off. With distributed disconnection through a safe AS-i output, the response time is extended by the time (30 ms) which the safe AS-i output requires in addition to the disconnection to a total of 70 ms (worst case).

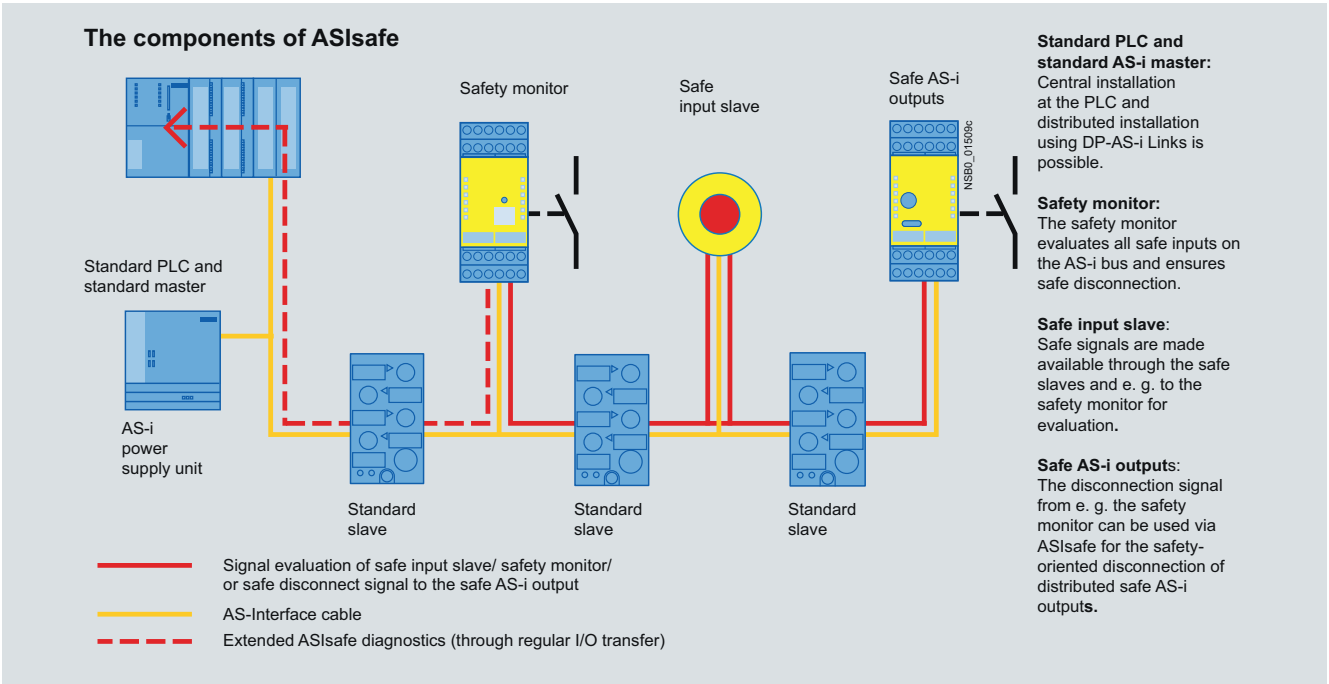
Tested safety

The system was tested and approved by TÜV (Germany), NRTL (USA) and INRS (France). The transmission procedure for safety-oriented signals is configured for implementing applications up to Category 4 according to EN 954-1, up to PL e according to EN ISO 13849-1 and up to SIL 3 according to IEC 62061/IEC 61508.

Design

The design of the safety systems is identical to the wiring of AS-Interface as it is known today.

The family of safe AS-Interface products includes the safety monitor which monitors or disconnects the safe stations. The range of safe stations comprises the safety modules and the safety-related sensors with integrated interface. Sensors, monitors and safe AS-i outputs can be connected to any points of the AS-Interface network. Also, several monitors can be used on one network.



The ASIsafe components and their signal flows

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Introduction

Function

Like the standard stations, the safe stations send their information to the master after master calls.

The safety monitor monitors this transmission from the safe stations to the master and switches to the safe state or sends a shutdown signal to one or more distributed safe AS-i outputs which switch in turn to the safe state.

The safety monitor provides OR logic, AND logic, timer functions, buffer storage, etc.

Software

With the ASIMON configuration software you can configure safety-oriented applications and transfer them into the monitor. The configuration comprises the input signals of the safe stations and the internal functions of the safety monitor.

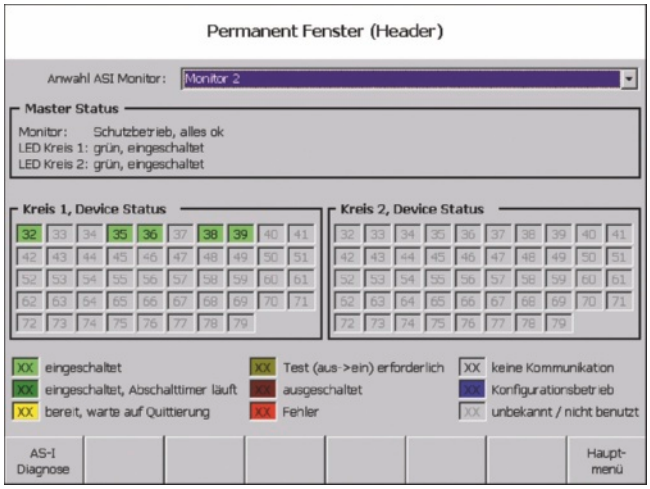
The software also enables online diagnostics.

Integration

The existing infrastructure such as the master and the power supply unit can be used as before for integrating the safety systems in AS-Interface. For the safety systems the safety monitor is integrated as monitoring element and the safe stations as interface between the safe sensors and the system. The safe sensors can be used as before.

A detailed diagnosis of all parameterized modules of the safety monitor can be obtained using the PLC. The STEP 7 function blocks for the S7-200 and S7-300/400 are available on the Internet, see
http://support.automation.siemens.com/WW/view/en/25239870/130000

In addition, an AS-i address should be set for the safety monitor via the configuration software. Evaluation is performed by means of function blocks in the PLC. With the aid of prefabricated WinCC flexible function units this evaluation can be visualized across the system on the existing SIMATIC HMI devices.



Diagnostics interface for safety monitors via S7-300/400

Benefits

- No failsafe PLC or special master is required for the ASIsafe Solution local (safety monitor)
- Alternatively integration in SIMATIC / SINUMERIK safety architectures with the aid of DP/AS-i F-Link (ASIsafe Solution PROFIsafe)
- Simple system structure thanks to standardized AS-Interface technique
- Safety-related and standard data on the same bus
- Existing systems can be expanded quickly and easily
- Optimum integration in TIA (Safety Diagnostics) and Safety Integrated
- Safe signals can be combined in groups
- Inclusion of the safety signals in the plant diagnostics, also on existing HMI panels
- Approved to Category 4 according to EN 954-1 or PL e according to EN ISO 13849-1 or SIL 3 according to IEC 61508
- ASIsafe is certified by TÜV (Germany), NRTL (USA) and INRS (France)

Application

Integrated safety technology in the AS-Interface system is used wherever EMERGENCY-STOP pushbuttons, protective door interlocks, stop Category 0 and 1, two-hand operator controls and light arrays are now installed.

More information

More information and circuit examples for safety systems with AS-Interface Safety Monitor and DP/AS-i F-Link are available on the Internet, see
http://support.automation.siemens.com/WW/view/en/24509484

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Overview



Safety monitor with screw terminals (removable terminals)

The safety monitor is the centerpiece of ASIsafe Solution local. It enables safety-orientated responding to signals from the ASI-safe (input) slaves on the same AS-i network and has one or two enabling circuits. A safe application is configured using a PC. Various application-specific operating modes can be selected for this. They include, for example, an EMERGENCY-STOP function, door interlock and selection of stop Category 0 or Category 1.

To be able to make full use of the AS-Interface diagnostics options, the monitor can also be operated with an AS interface address if required. With the aid of the diagnostics module for STEP 7, which is included on the ASIsafe CD, the full diagnostics spectrum can be processed further in the higher-level PLC.

The AS-Interface safety monitor is currently offered in the latest Version 3 (Firmware V3.x) and is available in three expansion levels.

Both basic/expanded expansion levels are available with one or two-channeled configured enabling circuits.

The expanded safety monitor is also available as a version with integrated safe slave which can be used for the control of a safe AS-i output or for safe coupling of a switch signal on another safety monitor or F-Link.

The safety monitor is used in an AS-Interface bus system to monitor protective devices, e. g. protective doors, EMERGENCY-STOP switches, etc.

The safety monitor can be used up to Category 4 according to EN 954-1, to PL e according to EN ISO 13849-1 and to SIL 3 according to IEC 62061/IEC 61508.

Note:

Depending on the choice of safety components used, the complete safety system may also be classified in a lower safety category.

The safety monitor is mounted on the standard mounting rail. Disassembly from the standard mounting rail is quick and easy and requires no tools. With an additional accessory (push-in lugs), the safety monitor can also be screwed on.

Application

The safety monitor acts as a "bus-based safety relay". It provides a user-friendly introduction to safety-orientated communication over fieldbuses thanks to its simple configuration using the graphic PC software ASIMON. The standard infrastructure of the AS-i network (AS-i master under standard PLC, AS-i power supply unit) can still be used without restriction.

The monitor comes in three expansion levels:

- Basic safety monitor
  with starter set of modules and basic functionality
- Expanded safety monitor with expanded features and functionality
- The expanded safety monitor is also available as a version with integrated safe slave which can be used for the control of a distributed safe AS-i output or for safe coupling of a switch signal on another safety monitor or F-Link.

Basic safety monitor versus expanded safety monitor

	Basic	Expanded
Number of monitoring modules	32	48
Number of OR gates (inputs)	2	6
Number of AND gates (inputs)	--	6
Wildcards for monitoring modules	✓	✓
Deactivating of monitoring modules	✓	✓
Fault release	✓	✓
Diagnostics hold	✓	✓
A/B slaves for acknowledgment	✓	✓
Safe time functions	--	✓
"Button" function	--	✓
Debouncing of contacts	--	✓
Filtering out of brief disconnections	--	✓ (as of Version 3)
Control of safe AS-i output/ safe coupling	--	✓ (in version with integrated safe slave)

✓ Available

-- Not available

Number of monitoring modules

The number of devices which the safety monitor can process is increased with the expanded safety monitor from 32 to 48. Applications of greater complexity and size can thus be simulated in the safety monitor.

Logic OR operation

At the logic operation level two elements can be linked by OR operations in the basic version and up to six in the expanded version.

Logic AND operation

In addition to the standard AND operation in the main path of an enabling circuit, an AND operation can also be inserted in an OR operation on the expanded safety monitor. More than two elements can be linked in this AND.

Note:

Supplementing the service-proven concept of the safety monitors, the new 3RK3 modular safety system (MSS) is available for ASIsafe, see Chapter 11.

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AS-Interface safety monitors

Features of the basic safety monitor

- Wildcards and deactivating of monitoring modules
  Wildcards are available for the configuration. They are integrated in the configuration and diagnostics and can be easily activated if required. User-friendly configuring is thus possible even when system configurations change.
- Fault release:
  If a module detects a fault, the AS-Interface safety monitor goes into fault status. A differentiated fault release (reset) is now possible for this scenario. The fault release can be activated by an AS-Interface standard slave, e.g. a pushbutton, and is effective only on module level. The great advantage of this is that the entire safety monitor is no longer reset but only the module which is locked in the fault.
- Diagnostics hold:
  Disconnections can be "frozen" until an acknowledgment comes through a standard slave. This function provides valuable help in the event of short-time causes of disconnection.
- Also from Version 3 upwards:
  The standard output data bits of safe input slaves can be processed for acknowledgment, fault release and other non-safety-oriented signals.

Additional features of the expanded safety monitor

The following additional features are provided by only the expanded safety monitor:

- Safe time functions:
  Timers with the following functions are available:
  - ON-delay
  - OFF-delay and
  - Pulse
- "Button" function:
  Additional acknowledgment option for restarting the system using an additional button. The button function can be assigned to any input or output signal of a standard slave through configuration in the ASIMON software.
- Debouncing of contacts:
  For debouncing the contacts it is possible to set a bounce time after which a system restart takes place.
- Also from Version 3 upwards:
  Filtering out of brief single-channel interruptions in the sensor circuit. A tolerance time can be set during which the brief opening of a safety-oriented input contact is ignored in order to increase plant availability.

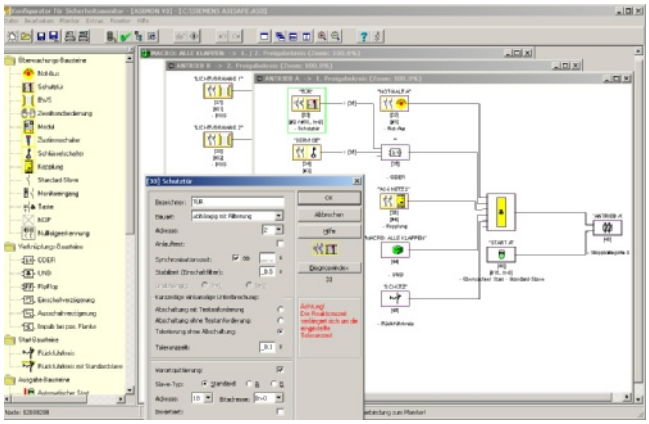
Additional features of the expanded safety monitor with integrated safe slave

This new safety monitor type offers the additional features of the expanded safety monitor plus the following features:

- Filtering out of brief single-channel interruptions in the sensor circuit.
- Actuating a safe distributed actuator (safe output module of e. g. safe valves or motor starters) in parallel to the 2nd enabling circuit.
- Alternatively: Use as a "safe coupler" between two ASIsafe networks. A safe input signal on network 1 can thus act on an enabling circuit of network 2. A detour via a hard-wired safe input module on network 2 is not required in this case.

Configuration software ASIMON V3: New features

- Multi-window system
- Creation of the safety logic in graphic function diagram form, with changeover to former tree presentation possible
- No "preprocessing" of the safety logic
- Management of user-specific modules
- Downward compatibility:
  - Existing ASIMON V2 projects can be loaded
  - Can also be used on all former versions of the safety monitor – with the corresponding scope of functions
- Graphic printout of the safety logic
- Easier system start-up:
  - Teaching the code sequences of safe AS-i Slaves step-by-step
  - Manual input of code sequences also possible in addition
  - Selectable number of simulated slaves
- Simpler diagnostics using AS-Interface through assignment of a diagnostics index to the software function block
- Signaling the switching state of the signaling and relay outputs to higher-level PLCs using a simulated AS-Interface slave
- New functions for filtering out brief interruptions and for controlling a safe AS-i output or for safe coupling of two AS-i networks



Interface of the configuration software ASIMON V3

Technical specifications

3RK1 105 safety monitor

Rated operational current		
I_e/AC-12 up to 250 V	A	3
I_e/AC-15		
• 115 V	A	3
• 230 V	A	3
I_e/DC-12 up to 24 V	A	3
I_e/DC-13		
• 24 V	A	1
• 115 V	A	0.1
• 230 V	A	0.05
Response time	ms	≤ 40
Achievable performance level acc. to EN ISO 13849-1		PL e
Achievable SIL (or SILCL) acc. to EN 62061 / IEC 61508		SIL 3
Ambient temperature	°C	0 ... +60
Storage temperature	°C	-40 ... +85

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Selection and ordering data

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
 3RK1 105-1BE04-0CA0	**Basic safety monitors** Version 3 With screw terminals, removable terminals, width 45 mm		**Screw terminals**				
	• One enabling circuit (monitor type 1)	A	**3RK1 105-1AE04-0CA0**		1	1 unit	42C
	• Two enabling circuits (monitor type 2)	A	**3RK1 105-1BE04-0CA0**		1	1 unit	42C
	Expanded safety monitors Version 3 With screw terminals, removable terminals, width 45 mm						
	• One enabling circuit (monitor type 3)	A	**3RK1 105-1AE04-2CA0**		1	1 unit	42C
	• Two enabling circuits (monitor type 4)	A	**3RK1 105-1BE04-2CA0**		1	1 unit	42C
	Expanded safety monitor with integrated safe slave Version 3 With screw terminals, removable terminals, width 45 mm						
	• Two enabling circuits including control of a safe AS-i output/safe coupling (monitor type 6)	A	**3RK1 105-1BE04-4CA0**		1	1 unit	42C
	Basic safety monitors Version 3 With spring-type terminals, removable terminals, width 45 mm		**Spring-type terminals**				
	• One enabling circuit (monitor type 1)	A	**3RK1 105-1AG04-0CA0**		1	1 unit	42C
	• Two enabling circuits (monitor type 2)	A	**3RK1 105-1BG04-0CA0**		1	1 unit	42C
	Expanded safety monitors Version 3 With spring-type terminals, removable terminals, width 45 mm						
	• One enabling circuit (monitor type 3)	A	**3RK1 105-1AG04-2CA0**		1	1 unit	42C
	• Two enabling circuits (monitor type 4)	A	**3RK1 105-1BG04-2CA0**		1	1 unit	42C
	Expanded safety monitor with integrated safe slave Version 3 With spring-type terminals, removable terminals, width 45 mm						
	• Two enabling circuits including control of a safe AS-i output/safe coupling (monitor type 6)	A	**3RK1 105-1BG04-4CA0**		1	1 unit	42C
Accessories							
	ASIsafe CD Included in the scope of supply: • ASIMON V3 configuration software on CD ROM, for PC with the 32-bit operating systems Windows XP, Windows Vista Business / Ultimate, Windows 7	►	**3RK1 802-2FB06-0GA1**		1	1 unit	42C
 3RK1 901-5AA00	**Cable sets** Included in the scope of supply: • PC configuration cable for communication between PC (serial interface) and safety monitor, length approx. 1.50 m • Transfer cable between two safety monitors, length approx. 0.25 m	►	**3RK1 901-5AA00**		1	1 unit	42C
	USB/serial adapters To connect a serial PC cable (for connection to serial PC interface/RS 232) to the USB port of a PC, recommended for use in conjunction with AS-i safety monitor for example	B	**3UF7 946-0AA00-0**		1	1 unit	42J
	Sealable covers For securing against unauthorized configuration of the safety monitor	B	**3RP1 902**		1	5 units	41H
	Push-in lugs For screw fixing	B	**3RP1 903**		1	10 units	41H

Note:

Supplementing the service-proven concept of the safety monitors, the new 3RK3 modular safety system is available for ASI-safe, see Chapter 11.

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AS-Interface safety modules

Overview



AS-Interface safety modules: K45F (left), K20F (center) and S22.5F (right)



S45F SlimLine module, safe AS-i output

Safety modules for AS-Interface (ASIsafe modules) are available for field use in degree of protection IP67 (K20F and K45F compact modules) and for the control cabinet (S22.5F SlimLine modules) in degree of protection IP20.

A very compact module with an optimum price /performance ratio is thus available for very application.

All modules for the connection of (mechanical) switches and safety sensors with contacts feature crossover monitoring of the connected sensor lead. On versions for the connection of solid-state switches and safety sensors (e. g. light arrays) the crossover monitoring must be performed by the sensor.

The following modules are available for selection:

K20F compact safety modules for use in the field

Being only 20 mm wide, the K20F module is particularly well suited for applications where modules need to be arranged in the most confined space. The K20F modules are connected to the AS-Interface with a round cable with M12 cable box instead of with the AS-Interface flat cable. This enables extremely compact installation. The flexibility of the round cable means that it can also be used on moving machine parts without any problems. The K20 modules are also ideal for such applications as their non-encapsulated design makes them particularly light in weight.

K45F compact safety modules for use in the field

The platform of the K45F modules covers the following variations:

- Connection of ("mechanical") switches/safety sensors with contacts:
  - K45F 2F-DI: Two safety-oriented inputs in operation up to Category 2 according to EN ISO 13849-1. If Category 4 is required, a two-channel input is available on the module.
  - K45F 2F-DI/2DO: There are also two standard outputs in addition to the safe inputs. Supplied from the yellow AS-i cable
  - K45F 2F-DI/2DO U_{aux}: same as K45F 2F-DI/2DO, but supplied from the black 24 V DC cable
  - K45F 4F-DI: four safety-oriented inputs in operation up to Category 2, two for Category 4. Extremely compact double slave (uses two full AS-i addresses).
- Connection of solid-state switches/safety sensors (non-contact protective devices):
  - K45F LS (light sensor): Safe input module for the connection of electronic safety sensors with testing semiconductor outputs (OSSD)
    In particular non-contact protective devices such as active, optoelectronic light arrays and light curtains for Type 2 and Type 4 according to IEC/EN 61496
    Transmitters as well as receivers are supplied with power from the yellow AS-i cable. Matching sensor cables and optionally a separate transmitter supply module are available as accessories.

S22.5F SlimLine safety modules for use in control cabinets and local control cabinets

The S22.5F SlimLine safety module has two safety inputs. The safe connection of signals to ASIsafe networks in the control cabinet is also possible therefore. For operation up to Category 2, both inputs can be assigned separately; if Category 4 is required, a two-channel input is available on the module.

In addition, there are two S22.5F module versions which have two standard outputs in addition to the two safety inputs; power is supplied either from only the yellow AS-Interface cable or as auxiliary voltage from the black 24 V DC cable.

S45F SlimLine safety modules with safe outputs for the safe distributed disconnection of actuators

With the safe SlimLine-Module S45F, the shutdown signal, for example from the safety monitor, can be used through the ASIsafe for distributed safety-oriented disconnection.

To this end, the module has a dual-channel relay output with which an enabling circuit up to safety category 4 and Performance Level e according to EN ISO 13849-1 and SIL 3 according to EN 62061 / IEC 61508 can be deactivated safely. The response time for the entire system (safety monitor, S45F module, etc.) from the moment of the disconnect request to the actual disconnection is max. 70 ms.

As an additional possibility the module offers normal switching of the output using an AS-i standard output bit.

The module has 3 digital inputs and 2 digital outputs for the additional connection of sensors and actuators. These can be used, inter alia, for the necessary monitoring of the downstream contactors of the feedback circuit.

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Selection and ordering data

Version		DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
K20F compact safety modules							
I/O type	U_{aux} 24 V						
2 F-DI	--	A	**3RK1 205-0BQ30-0AA3**		1	1 unit	42C
K45F compact safety modules							
Modules supplied without mounting plate							
I/O type	U_{aux} 24 V						
2 F-DI	--	▶	**3RK1 205-0BQ00-0AA3**		1	1 unit	42C
4 F-DI	--	A	**3RK1 205-0CQ00-0AA3**		1	1 unit	42C
2 F-DI/2 DO	--	B	**3RK1 405-0BQ20-0AA3**		1	1 unit	42C
2 F-DI/2 DO	✓	B	**3RK1 405-1BQ20-0AA3**		1	1 unit	42C
2 F-DI LS type 2 [1]	--	A	**3RK1 205-0BQ21-0AA3**		1	1 unit	42C
2 F-DI LS type 4 [2]	--	A	**3RK1 205-0BQ24-0AA3**		1	1 unit	42C
[1] Connection of previous Siemens light curtain FS 400 3RG78 43 (type 2) through socket 1/3							
[2] Connection of previous Siemens light curtain FS 400 3RG78 46 (type 4) through socket 1/3, other makes through socket 2/3							
S22.5F SlimLine safety modules							
Connection	I/O type	U_{aux} 24 V					
Screw	2 F-DI	--	A	**3RK1 205-0BE00-0AA2**	1	1 unit	42C
	2 F-DI/2 DO	--	A	**3RK1 405-0BE00-0AA2**	1	1 unit	42C
	2 F-DI/2 DO	✓	A	**3RK1 405-1BE00-0AA2**	1	1 unit	42C
Spring-type	2 F-DI	--	A	**3RK1 205-0BG00-0AA2**	1	1 unit	42C
	2 F-DI/2 DO	--	B	**3RK1 405-0BG00-0AA2**	1	1 unit	42C
	2 F-DI/2 DO	✓	B	**3RK1 405-1BG00-0AA2**	1	1 unit	42C
S45F SlimLine safety modules							
Connection	I/O type	U_{aux} 24 V					
Screw	1F-RO/3DI/2DO	✓	A	**3RK1 405-1SE15-0AA2**	1	1 unit	42C
Spring-type	1F-RO/3DI/2DO	✓	A	**3RK1 405-1SG15-0AA2**	1	1 unit	42C


3RK1 205-0BQ30-0AA3


3RK1 205-0BQ00-0AA3


3RK1 205-0BE00-0AA2


3RK1 405-1SE15-0AA2

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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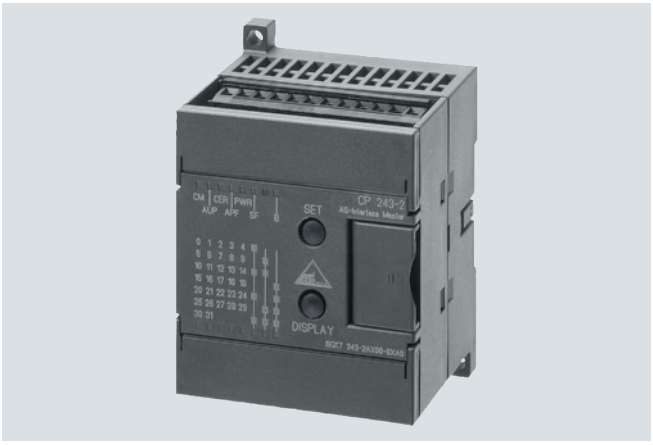
Accessories

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
 3RK1 901-2EA00	**K45 mounting plates** For mounting K45F						
	• For wall mounting	►	**3RK1 901-2EA00**		1	1 unit	42C
	• For standard rail mounting	►	**3RK1 901-2DA00**		1	1 unit	42C
	24 V supply modules for K45F LS (light sensor) • Optional, for transmitter power supply for large protective field widths • Modules supplied without mounting plate	A	**3RK1 901-1NP00**		1	1 unit	42C
 3RK1 901-1AA00	**Input bridges for K45F**						
	• Black version	A	**3RK1 901-1AA00**		1	1 unit	42C
	• Red version	D	**3RK1 901-1AA01**		1	1 unit	42C
 3RK1 901-1KA00	**AS-Interface sealing caps M12** For free M12 sockets	►	**3RK1 901-1KA00**		100	10 units	42C
 3RK1 901-1KA01	**AS-Interface sealing caps M12, tamper-proof** For free M12 sockets	A	**3RK1 901-1KA01**		100	10 units	42C

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



CP 243-2

The CP 243-2 is the AS-Interface master for the SIMATIC S7-200 and has the following features:

- Connection of up to 62 AS-Interface slaves
- Integrated analog value transmission (Analog Profiles 7.3 and 7.4)
- Supports all AS-Interface master functions according to the extended AS-Interface specification V2.1
- Display of the operating state and readiness for operation of connected slaves by means of LEDs in the front panel
- Fault indications (e. g. AS-Interface voltage fault, configuration fault) by means of LEDs in the front panel
- Compact enclosure in the design of the SIMATIC S7-200

Design

The CP 243-2 is connected like an expansion module to the S7-200. It has:

- Two screw terminals for direct connection of the AS-Interface cable
- LEDs in the front panel for displaying the operating state and functional readiness of all connected slaves
- Two pushbuttons for displaying the status information of the slaves, for switching over the operating state and for adopting the existing ACTUAL configuration as the DESIRED configuration.

Function

The CP 243-2 supports all specified functions of the extended AS-Interface Specification V2.1.

In the process image of the S7-200 the CP 243-2 occupies one digital input byte (status byte), one digital output byte (control byte), and 8 analog input and 8 analog output words.
The CP 243-2 thus occupies two (logic) slots. The operating mode of the CP 243-2 can be set with the status byte and the control byte using the user program. Depending on the operating mode, the CP 243-2 saves either the digital or analog I/O data of the AS-Interface slaves or diagnostic values in the analog address area of the S7-200, or it enables master calls (e. g. re-addressing of the slaves).

Configuration

All connected AS-Interface slaves are configured at the press of a button. No further configuration of the CP is required.

Benefits

- More flexibility and versatility in the use of SIMATIC S7-200 as the result of the distinct increase in the number of digital and analog inputs/outputs available
- Shorter start-up times through simple configuration at the press of a button
- Reduction of standstill and servicing times in the event of a fault thanks to the LED indicators
- Status of the CP
  - Display of all the slaves connected and their readiness for operation
  - Monitoring of the AS-Interface mains voltage

Application

The CP 243-2 is the AS-Interface master connection for the 22x CPUs of the SIMATIC S7-200. Through connection to AS-Interface the number of inputs and outputs available for S7-200 is greatly increased (max. 248 DI / 186 DO on the AS-Interface per CP).

Analog values (per CP a maximum of 31 standard analog slaves with up to 4 channels each) also become available on the AS-Interface for the S7-200 thanks to the integrated analog value processing. On the S7-200, up to two CP 243-2 communications processors can be operated simultaneously.

Selection and ordering data

Version	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
		Order No. / Price per PU			
CP 243-2 communications processors For connection of the SIMATIC S7-200 to AS-Interface; corresponds to AS-Interface Specification V2.1; dimensions (W x H x D / mm): 71 x 80 x 62 (dimensions without fixing lugs)	►	**6GK7 243-2AX01-0XA0**	1	1 unit	42C



6GK7 243-2AX01-0XA0

More information

The manuals are also available on the Internet at
http://support.automation.siem ens.com/WW/view/en/10805937/133300

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Masters for SIMATIC S7
CP 343-2P, CP 343-2

Overview



CP 343-2P / CP 343-2

The CP 343-2P is the AS-Interface master for the SIMATIC S7-300 and the ET 200M distributed I/O station, with user-friendly parameterizing options.

The CP 343-2 is the basic version of the same module.

The CP 343-2P / CP 343-2 has the following features:

- Connection of up to 62 AS-Interface slaves
- Integrated analog value transmission (all analog profiles)
- Supports all AS-Interface master functions according to the AS-Interface Specification V3.0
- Status displays of operating states and indication of the readiness for operation of connected slaves by means of LEDs in the front panel
- Fault indications (e. g. AS-Interface voltage fault, configuration fault) by means of LEDs in the front panel
- Compact enclosure in the design of the SIMATIC S7-300
- Suitable for AS-i Power24V (product version 2 and higher / firmware version 3.1) and standard AS-i (30 V)
- Extra with the CP 343-2P: Supports detailed configuration of the AS-Interface-network with STEP 7 V5.2 and higher

Design

The CP 343-2P / CP 343-2 is connected like an I/O module to the S7-300. It has:

- Two terminal connections for direct connection of the AS-Interface cable
- LEDs in the front panel for displaying the operating state and the readiness for operation of all connected and activated slaves
- Pushbuttons for switching over the master operating state and for adopting the existing ACTUAL configuration of the AS-i slave as the DESIRED configuration

Function

The CP 343-2P / CP 343-2 supports all specified functions of the extended AS-Interface Specification V3.0.

The CP 343-2P / CP 343-2 occupies 16 bytes each in the I/O address area of the SIMATIC S7-300. The digital I/O data of the standard slaves and A slaves are saved in this area. The digital I/O data of the B slaves and the analog I/O data can be accessed with the S7 system functions.

If required, master calls can be performed with the command interface, e. g. read/write parameters, read/write configuration.

You can find more information on the Internet at http://support.automation.siemens.com/WW/view/en/51678777

Configuration

All connected AS-Interface slaves are configured at the press of a button. No further configuration of the CP is required.

Additional features of the CP 343-2P

The CP 343-2P also supports configuring of the AS-Interface network with STEP 7 V5.2 and higher. Specifying the AS-i configuration in HW-Config facilitates the setting of slave parameters and documentation of the plant. Uploading the ACTUAL configuration of an already configured AS-Interface network is also supported. The saved configuration cannot be overwritten at the press of a button and is therefore tamper-proof.

Benefits

- Shorter start-up times through simple configuration at the press of a button
- Construction of flexible distributed structures by use in the DP-slave ET 200M
- Provides diagnostics of the AS-Interface networks
- Well suited also for complex applications thanks to connection options for 62 slaves and integral analog value processing
- Reduction of standstill and servicing times in the event of a fault thanks to the LED indicators:
  - Status of the AS-Interface network
  - Slaves connected and their readiness for operation
  - Monitoring of the AS-Interface mains voltage
- Lower costs for stock keeping and spare parts because the CP can be used for the SIMATIC S7-300 as well as for the ET 200M
- Extra with the CP 343-2P: Improved plant documentation and support for service assignments thanks to a description of the AS-Interface configuration in the STEP 7 project
- No need for the AS-i power supply unit with AS-i Power24V: The AS-Interface cable is supplied through an existing 24 V DC PELV power supply unit. An AS-i data decoupling module (e. g. 3RK1 901-1DE12-1AA0) is required for the decoupling, see page 2/63.
- Operation with AS-Interface power supply (see page 2/62) possible without restrictions.

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Application

The CP 343-2P / CP 343-2 is the AS-Interface master connection for the SIMATIC S7-300 and the ET 200M.

Through connection to AS-Interface it is possible to access max. 248 DI/248 DO per CP, using 62 A/B slaves with 4DI/4DO each.

With the integrated analog value processing it is easy to transmit analog signals (per CP up to 62 A/B analog slaves with a maximum of two channels each or up to 31 A/B analog slaves with a maximum of 4 channels each).

The CP 343-2P is the further development of the CP 343-2 and contains its entire functionality. An existing STEP 7 user program for a CP 343-2 can thus be used without restrictions with a CP 343-2P. It is only in STEP 7 HW-Config that the two modules are configured differently, with the CP 343-2P offering additional options. This is why the CP 343-2P is recommended.

Selection and ordering data

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
 6GK7 343-2AH11-0XA0	**CP 343-2P communications processors** For connection of SIMATIC S7-300 and ET 200M to AS-Interface; configuration of the AS-i network using the SET key or STEP 7 (V5.2 and higher); without front connector; corresponds to AS-Interface Specification V3.0; dimensions (W x H x D / mm): 40 x 125 x 120	►	**6GK7 343-2AH11-0XA0**		1	1 unit	42C
 6GK7 343-2AH01-0XA0	**CP 343-2 communications processors** Basic version for connection of SIMATIC S7-300 and ET 200M to AS-Interface Configuration of the AS-i network using the SET key; without front connector; corresponds to AS-Interface Specification V3.0; dimensions (W x H x D / mm): 40 x 125 x 120	►	**6GK7 343-2AH01-0XA0**		1	1 unit	42C

Accessories

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Front connectors, 20-pole						
• With screw terminals	A	**6ES7 392-1AJ00-0AA0**		1	1 unit	230
• With spring-type terminals	A	**6ES7 392-1BJ00-0AA0**		1	1 unit	230

More information

The manuals are also available on the Internet at http://support.automation.siemens.com/WW/view/en/14310380/133300.

Information about AS-i block library for PCS 7 for easy connection of AS-Interface to PCS 7 see

- Chapter 14
- Industry Mall: "Automation" → "Industrial controls" → "Parametrization, configuration and visualization with SIRIUS" → "AS-Interface Block Library for SIMATIC PCS 7"

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Illustrations are approximate

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DP/AS-i LINK Advanced

Overview



DP/AS-i LINK Advanced

PN	DP-M	DP-S	ASi-M		
		●	●		

IK10_10195

The DP/AS-i LINK Advanced is a compact router between PROFIBUS (DP Slave) and AS-Interface, with the following features:

- Single and double AS-Interface master (according to AS-Interface Specification V3.0) for connection of 62 AS-Interface slaves or 124 AS-Interface slaves (with a double master)
- Integrated analog value transmission (all analog profiles)
- Integrated ground-fault monitoring for the AS-Interface cable
- User-friendly local diagnostics and start-up by means of a full graphic display and control keys or through a web interface with a standard browser on the PC screen
- Optimum TIA integration using STEP 7
- Integration in non-Siemens engineering tools using the PROFIBUS GSD file
- Vertical integration (standard web interface) through Industrial Ethernet
- Supply voltage from the AS-Interface shaped cable or alternatively with 24 V DC (optional)
- Suitable for AS-i Power24V (product version 4 and higher / firmware version 2.2) and standard AS-i (30 V)
- Module exchange without entering the connection parameters (e. g. PROFIBUS address) using C-PLUG (optional)

Design

- Compact plastic enclosure in degree of protection IP20 for standard rail mounting
- COMBICON plug-in screw terminals
- Compact design:
  - Pixel graphics display in the front panel for detailed display of the operating state and readiness for operation of all connected AS-Interface slaves
  - 6 pushbuttons for starting up and testing the AS-Interface line directly on the DP/AS-i LINK Advanced
  - LED display of the operating state of PROFIBUS DP and AS-Interface
  - Integrated Ethernet port (RJ45 socket) for user-friendly start-up, diagnostics and testing of DP/AS-i LINK Advanced through a web interface using a standard browser
- Small mounting depth thanks to recessed plug mounting
- Operation without fans and batteries

Functionality

Communications

The DP/AS-i LINK Advanced enables a PROFIBUS DP master to cyclically access the I/O data of all the slaves of a lower-level AS-Interface segment. Also supported are the expanded slave types with higher I/O data volume according to AS-i Specification V3.0.

The DP/AS-i LINK Advanced occupies the following address area:

- As a single master: 32 bytes of input data and 32 bytes of output data in which the I/O data of the connected AS-Interface slaves (standard and A/B slaves) of an AS-i line are stored.
- A double master occupies twice the number of bytes.

The size of the input/output image can be compressed so that only the actually required I/O address area is occupied in the system of the DP master.
The integrated evaluation of analog signals is just as easy as access to digital values because the analog process data also lie directly in the I/O address area of the CPU.

PROFIBUS DP-V1 Masters also provide the option of triggering AS-Interface Master calls over the acyclic PROFIBUS services (e. g. write parameters, amend addresses, read diagnostic values).
Using an operating display in AS-i Link it is possible to fully commission the lower-level AS-Interface line.

DP/AS-i LINK Advanced is equipped with an additional Ethernet port which enables the use of the integrated web server. The web server can be called up with any standard web browser (e. g. Internet Explorer) without additional software. It allows all diagnostics information to be shown on the PC and the bus configuration and, if applicable, any adjustments, to be displayed. Firmware updates are also possible using this port.

The optional C-PLUG supports module exchange without entering the connection parameters (PROFIBUS address etc.), keeping downtimes to a minimum in the event of a fault.

Diagnostics

The following diagnostics is possible using LEDs, the display and control keys, web interface or STEP 7:

- Operating state of the DP/AS-i LINK Advanced
- Status of the link as a PROFIBUS DP slave
- Diagnostics of the AS-Interface network
- Message frame statistics
- Standard diagnostics pages in the web interface for fast diagnostics access through Ethernet using a standard browser
- For the use of the web interfaces no network settings are necessary on the PC (Zeroconf procedure).
- The reporting of diagnostic events is optional via E-Mail or SNMP Trap possible. The integrated diagnostic buffer saves the events including time stamp.

Configuration

The DP/AS-i LINK Advanced can be configured as follows:

- With STEP 7 as of V5.4: With STEP 7 configuring the AS-Interface configuration can be uploaded in STEP 7. Can also be AS-Interface slaves from Siemens conveniently configure in HW Config (slave selection dialog).
- By adopting the ACTUAL configuration of the AS-Interface on the display
- Alternatively DP/AS-i LINK Advanced can be integrated into the engineering tool over the PROFIBUS GSD file (e. g. for STEP 7 versions below V5.4 or engineering tools from third-party software houses).

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Benefits

- Short start-up times through simple configuration at the press of a button and testing of the AS-Interface line using the display or web interface
- Reduction of standstill and servicing times in the event of a slave failure thanks to user-friendly diagnostics using the display or web interface and through simple module exchange with the help of the C-PLUG exchange medium
- Reduced amount of engineering work thanks to user-friendly configuration of Siemens slaves using the slave catalog in HW-Config (STEP 7)
- Costs saved by the double AS-Interface master when large volumes of project data are involved
- Saves the need for AS-i power supply with AS-i Power24V: The AS-Interface cable assembly is fed through an existing 24 V DC PELV power supply unit. For decoupling an AS-i data decoupling module is required, see power supply units and data decoupling modules.
- Standard mode with AS-Interface power supply (see power supply units and data decoupling modules) possible without restrictions, whereby no further operating voltage is required.

Application

The DP/AS-i LINK Advanced is a PROFIBUS DP-V1 slave (according to IEC 61158/IEC 61784) and an AS-Interface master (based on AS-Interface Specification V3.0 according to IEC 62026-2). It enables transparent data access to AS-Interface from PROFIBUS DP.

Exchanging data with the PROFIBUS DP master

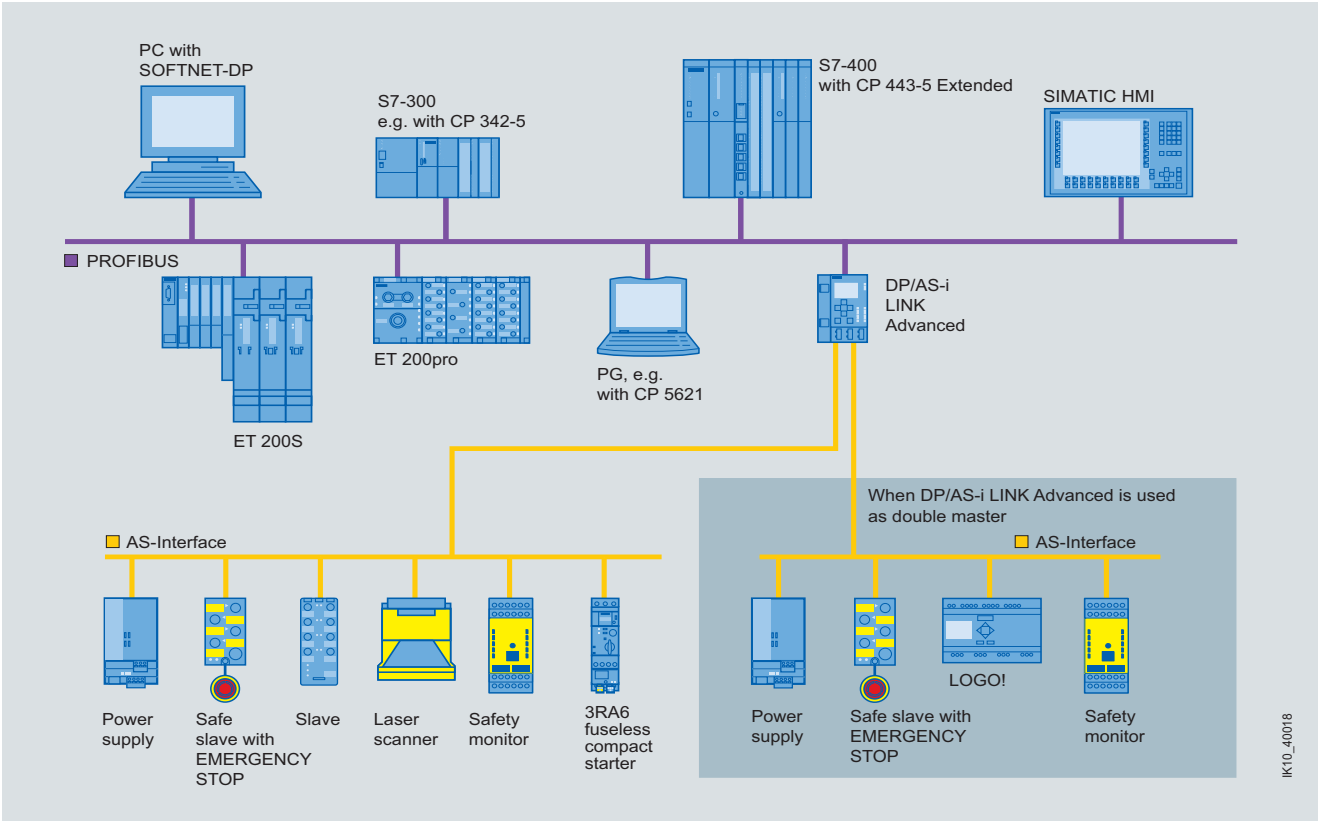
PROFIBUS DP masters (DP-V0) can exchange I/O data with AS-Interface in cyclic mode. PROFIBUS DP masters with acyclic services (DP-V1) are able in addition to initiate AS-Interface master calls (e. g. reading/writing the AS-i configuration during normal operation). As such, the DP/AS-i LINK Advanced is particularly well suited for a decentral construction and for connection of a lower-level AS-Interface network.

Single masters

For applications with typical volumes of project data it is sufficient to use the DP/AS-i LINK Advanced in its version as an AS-Interface single master. The single master can operate up to 248 DI/248 DO, using 62 A/B slaves with 4 DI/4 DO each.

Double masters

For applications with large volumes of project data the DP/AS-i LINK Advanced is used in its version as an AS-Interface double master. In this case, twice the volume of project data can be used on two AS-Interface lines running independently of each other. The double master can operate up to 496 DI/496 DO, using 2 AS-i networks with 62 A/B slaves each with 4DI/4DO each.



Integration of AS-Interface on PROFIBUS through DP/AS-i LINK Advanced as single/double master

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DP/AS-i LINK Advanced

Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
DP/AS-i LINK Advanced						
 DP/AS-i LINK Advanced	Router between PROFIBUS DP and AS-Interface; Degree of protection IP20; including COMBICON plug-in screw terminals for connection of an AS-Interface cable (two AS-Interface cables for double masters) and the optional 24 V supply; corresponds to AS-Interface Specification 3.0; dimensions (W x H x D / mm): 90 x 132 x 88.5		**Combicon connection**			
	• Single master with display	►	**6GK1 415-2BA10**	1	1 unit	42C
	• Double master with display	►	**6GK1 415-2BA20**	1	1 unit	42C
Accessories						
	C-PLUG Exchange medium for the simple exchange of devices in the event of a fault; for accommodating configuration and application data; can be used in SIMATIC NET products with a C-PLUG slot	A	**6GK1 900-0AB00**	1	1 unit	5N3
	PROFIBUS FastConnect Standard Cable GP FastConnect standard type with special design for fast installation, 2-core, shielded	A	**6XV1 830-0EH10**	1	1 M	5K1
	PROFIBUS FastConnect RS485 bus connectors with angled cable feeder (35°) With insulation displacement connection the max. transmission rate is 12 Mbit/s Activatable terminating resistor is integrated					
	• Without PG connection socket	A	**6ES7 972-0BA60-0XA0**	1	1 unit	250
	• With PG connection socket	A	**6ES7 972-0BB60-0XA0**	1	1 unit	250
	PROFIBUS FastConnect Stripping Tool Preset stripping tool for speedy stripping of PROFIBUS FastConnect bus cables	A	**6GK1 905-6AA00**	1	1 unit	5K2
	IE FC RJ45 Plug 90 RJ45 plug-in connector for Industrial Ethernet, with robust metal enclosure and integrated cutting and clamping contacts for connection of Industrial Ethernet FC installation cables; with 90° cable feeder					
	• 1 pack = 1 unit	A	**6GK1 901-1BB20-2AA0**	1	1 unit	5K1
	• 1 pack = 10 units	A	**6GK1 901-1BB20-2AB0**	1	1 unit	5K1
	• 1 pack = 50 units	A	**6GK1 901-1BB20-2AE0**	1	1 unit	5K1

More information

The manuals are also available on the Internet,
http://support.automation.siemens.com/WW/view/en/28602701/133300

AS-i block library for PCS 7 for easy connection of AS-Interface to PCS 7 see

- Chapter 14
- Industry Mall: "Automation" → "Industrial controls" → "Parametrization, configuration and visualization with SIRIUS" → "AS-Interface Block Library for SIMATIC PCS 7"

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



DP/AS-Interface Link 20E

PN	DP-M	DP-S	ASi-M		
		●	●		

IK10_10195

DP/AS-Interface Link 20E connects PROFIBUS DP to AS-Interface and has the following features:

- PROFIBUS DP slave and AS-Interface master
- Up to 62 AS-Interface slaves, each with 4 digital inputs and 4 digital outputs as well as analog slaves can be connected
- Integrated analog value transmission (all analog profiles)
- Supports all AS-Interface master functions according to the AS-Interface Specification V3.0
- Supply from AS-Interface cable; hence no additional power supply required
- Supports the uploading of the AS-Interface configuration in STEP 7 V5.2 and higher

Design

- Compact plastic enclosure in degree of protection IP20 for standard rail mounting
- LEDs in the front panel for displaying the operating state and functional readiness of all connected slaves
- Setting option for PROFIBUS DP address by pressing a button
- LED display of the PROFIBUS DP slave address, DP bus faults and diagnostics
- Two pushbuttons for switching over the operating state and for adopting the existing ACTUAL configuration as the DESIRED configuration

Functionality

Communications

DP/AS-Interface Link 20E enables a DP master to access all the slaves of an AS-Interface network.

DP/AS-Interface Link 20E occupies as standard 32 bytes of input data and 32 bytes of output data in which the digital I/O data of the connected AS-Interface slaves (standard and A/B slaves) of an AS-i line are stored.

The size of the input/output image can be compressed so that only the actually required I/O address area is occupied in the system of the DP master.

The analog I/O data can be accessed with the S7 system functions for read/write data record.

Configuration

The DP/AS-Interface Link 20E is configured as follows:

- With STEP 7 as of Version V5.1 SP2:
  With STEP 7 configuring the AS-Interface configuration can be uploaded in STEP 7 V5.2 and higher. Can also be AS-Interface slaves from Siemens conveniently configure in HW Config (slave selection dialog).
- By adopting the ACTUAL configuration of the AS-Interface by the using the SET pushbutton on the front panel.
- Alternatively, DP/AS-Interface Link 20E can be integrated by means of the PROFIBUS GSD file in the engineering tool (e. g. for STEP 7 V5.1 and lower or for non-Siemens engineering tools).

Benefits

- Reduction of installation costs because the power supply comes completely from the AS-Interface cable, making an additional power supply superfluous
- Short start-up times through simple configuration at the press of a button
- Reduction of standstill and servicing times in the event of a slave failure thanks to the LED indicators
- Easy and fast start-up through reading out the AS-Interface configuration

Application

The DP/AS-Interface Link 20E is a PROFIBUS DP slave (according to IEC 61158/IEC 61784) and an AS-Interface master (according to IEC 62026-2). It enables the AS-Interface to be operated on PROFIBUS DP.

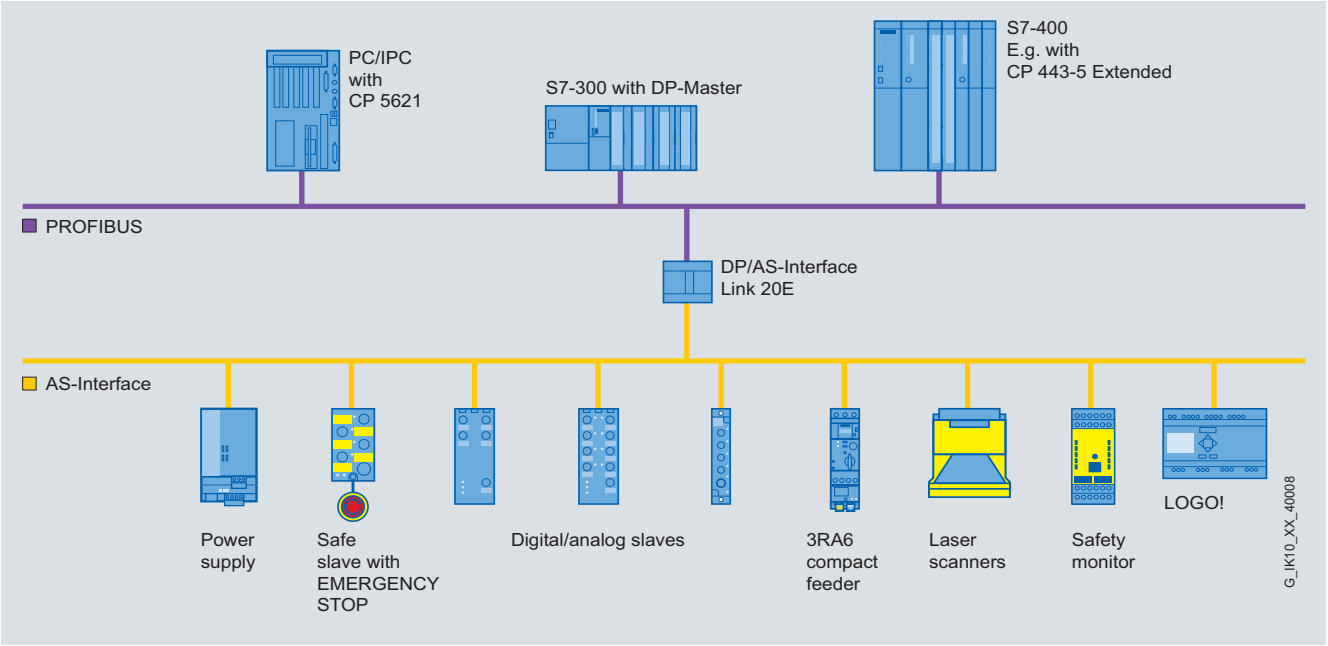
DP/AS-Interface Link 20E can operate up to 248 DI / 248 DO when using 62 A/B slaves with 4DI/4DO each.

PROFIBUS DP masters (DP-V0) can exchange I/O data with AS-Interface in cyclic mode.

PROFIBUS DP masters with acyclic services (DP-V1) are able in addition to initiate AS-Interface master calls (e. g. reading/writing the AS-i configuration during normal operation).

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DP/AS-Interface Link 20E



Transition from PROFIBUS DP to AS-Interface using DP/AS-Interface Link 20E

Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
DP/AS-Interface Link 20E						
 6GK1 415-2AA10		**Screw terminals**				
Router between PROFIBUS DP and AS-Interface in degree of protection IP20; including screw terminals for connection of the AS-Interface cable; corresponds to AS-Interface Specification V3.0; dimensions (W x H x D / mm): 90 x 80 x 60 (dimensions without fixing lugs)	▶	**6GK1 415-2AA10**		1	1 unit	42C
Accessories						
PROFIBUS FC Standard Cable GP FastConnect standard type with special design for fast installation, 2-core, shielded	A	**6XV1 830-0EH10**		1	1 M	5K1
PROFIBUS FastConnect RS485 bus connectors with 90° cable feeder With insulation displacement connection the max. transmission rate is 12 Mbit/s Activatable terminating resistor is integrated						
• Without PG connection socket	A	**6ES7 972-0BA52-0XA0**		1	1 unit	250
• With PG connection socket	A	**6ES7 972-0BB52-0XA0**		1	1 unit	250
PROFIBUS FastConnect RS485 bus connectors with angled cable feeder (35°) With insulation displacement connection the max. transmission rate is 12 Mbit/s Activatable terminating resistor is integrated						
• Without PG connection socket	A	**6ES7 972-0BA60-0XA0**		1	1 unit	250
• With PG connection socket	A	**6ES7 972-0BB60-0XA0**		1	1 unit	250
PROFIBUS FastConnect Stripping Tool Preset stripping tool for speedy stripping of PROFIBUS FastConnect bus cables	A	**6GK1 905-6AA00**		1	1 unit	5K2

More information

The manuals are also available on the Internet at
http://support.automation.siemens.com/WW/view/en/28602858/133300.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



DP/AS-i F-Link

PN	DP-M	DP-S	ASi-M		
		●	●		

IK10_1095

The DP/AS-i F-Link is a compact, safety-oriented router between PROFIBUS (DP Slave) and AS-Interface, with the following features:

- Monitoring the inputs of safety-oriented digital AS-i slaves (ASIsafe slaves) and forwarding of data through PROFIsafe. No additional safety-oriented components are required for the AS-Interface (e. g. safety monitor)
- Can be used up to Category 4 according to EN 954-1, to PL e according to EN ISO 13849-1 and to SIL 3 according to IEC 62061/IEC 61508.
- Connection of up to 62 AS-Interface slaves
- Supports all AS-Interface master functions according to the AS-Interface Specification V3.0
- Typically easy transmission of non-safety-oriented input/output data of all AS-i slaves
- Integrated analog value transmission (all analog profiles)
- Direct integration in PROFIBUS networks.
  Optional integration in PROFINET environments through PROFINET/PROFIBUS gateway (IE/PB Link PN IO) or through SIMATIC S7 315/317/319 F PN/DP or S7-416F-3 PN/DP
- Connection to ET 200S with IM-F-CPU using DP master module is possible
- Optimum TIA integration in STEP 7 using Object Manager, integration in non-Siemens engineering tools using PROFIBUS GSD file
- Local diagnostics using LEDs and display with control keys

Design

- Rugged, slim plastic enclosure, degree of protection IP20, for standard rail mounting or wall mounting (with adapter)
- Compact design:
  - LEDs in the front panel for displaying the operating state and functional readiness of all connected slaves
  - 2 buttons on the front for start-up and call up of diagnostics information
  - 4 LEDs for display of the operating state of the device, of PROFIBUS DP and the AS-Interface network
  - Front PROFIBUS DP connection with sub D connector
  - Removable terminal blocks for connection of AS-i +/- and control supply voltage (over 24 V DC PELV power supply unit)
  - Narrow width (45 mm)
- Operation without fans and batteries
- Fast device replacement in the event of a fault

Functionality

Communication principle

The PROFIBUS DP master or the safe control communicates with the AS-Interface slaves over the DP/AS-i F-Link. The AS-Interface process data are mapped in different data areas for non-safety-oriented input and output data and safety-oriented input data.

Diagnostics

Extensive diagnostics is possible using the four LEDs, display and control keys or SIMATIC S7. Further details can be found in the manual.

Configuration

The DP/AS-i F-Link is configured as follows:

- With STEP 7 as of Version V5.4 SP1: In particular, Siemens AS-Interface slaves can be conveniently configured via the slave selection dialog.
- Uploading the actual configuration of an already configured AS-Interface network in a STEP 7 project is possible.
- Alternatively, DP/AS-i F-Link can be integrated by means of the PROFIBUS GSD file in the engineering tool.
  As a start-up aid, it is also possible to adopt the ACTUAL configuration in the appliance storage device directly on the appliance to activate the AS-interface slaves.

Programming

In contrast to the AS-Interface safety monitor, DP/AS-i F-Link is a pure gateway, which does not run through its own safety logic. Programming of the safety function is implemented at the level of the higher-level failsafe PLC, e. g.:

- With Distributed Safety, Version V5.4 SP1 or higher for SIMATIC S7-300F/416F
- With the SAFETY INTEGRATED "SI-Basic" or "SI-COMFORT NCU" Software for SINUMERIK 840D pl/sl

The safety and standard range can access the digital and analog I/O data of the connected AS-Interface slaves directly through the I/O address area of the CPU.

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DP/AS-i F-Link

Benefits

- Gaps in (bus-based) safety technology closed: safety-oriented signals (EMERGENCY-STOP, door interlock, light curtains etc.) collected with AS-i and transferred to higher-level F-PLC. This enables:
  - Quick installation, easy commissioning: Use of AS-i virtues in the field now fully consistent for Safety Integrated
  - Cost-effective solution as ASIsafe is ideally suited for the collection of "fewer but more distributed failsafe bits".
- Price advantage: As a fully fledged AS-i master according to Specification V3.0, more input and outputs can be used, e. g.:
  - up to 248 DI / 248 DO when using 62 A/B slaves with 4DI/4DO each
  - up to 62 digital or analog slaves
- Investment protection:
  - Connection to PROFIBUS networks, such as DP/AS-i Link Advanced or DP/AS-interface Link 20E
  - Downward compatibility to AS-Interface specification V2
  - Open for modern automation concepts with AS-i
- Teaching the code sequences of ASIsafe slaves is possible at the press of a button
- Reduced amount of engineering work thanks to user-friendly configuration of all AS-i slaves from Siemens using the slave selection dialog in HW-Config (STEP 7), including setting the F-parameter of the ASIsafe slaves modeled on PROFIsafe slaves
- Cost-savings thanks to programming of the safety logic with the familiar, powerful commands of the distributed safety packages from the failsafe SIMATIC PLC in F-FUP or F-FOP, incl. TÜV-certified function blocks for typical safety applications
- Use in machine-tools under SINUMERIK 840 D (pl/sl) possible
- Reduction of standstill and servicing times in the event of a slave failure thanks to user-friendly diagnostics using the display and through simple module exchange (only a few settings by control keys are required, without use of the configuring tool)

Application

Links between PROFIsafe and ASIsafe

The DP/AS-i F-Link is a PROFIBUS DP-V1 slave (according to IEC 61158 and IEC 61784) and an AS-Interface master (based on AS-Interface Specification V3.0 according to IEC 62026-2). It enables transparent data access to AS-Interface from PROFIBUS DP. The DP/AS-i F-Link is also an AS-i master with which safety-oriented input data can be passed from ASIsafe slaves via the PROFIsafe protocol to a failsafe CPU with PROFIBUS DP master. No additional safety cabling or monitoring is required (in particular no AS-Interface safety monitor). The transmission of binary values or analog values is possible depending on the slave type. All slaves according to AS-Interface Specification V2.0, V2.1 or V3.0 can be used as AS-i slaves.

PROFIBUS DP masters according to DP-V0 or DP-V1 can exchange I/O data with lower-level AS-i slaves in cyclic mode. PROFIBUS DP masters with acyclic services according to DP-V1 are able in addition to initiate AS-i command calls (e. g. reading/writing the AS-i configuration during normal operation). In addition to digital I/O data, analog data can also be saved performantly in the cyclic periphery of a failsafe S7-300/ S7-416 F-CPU.

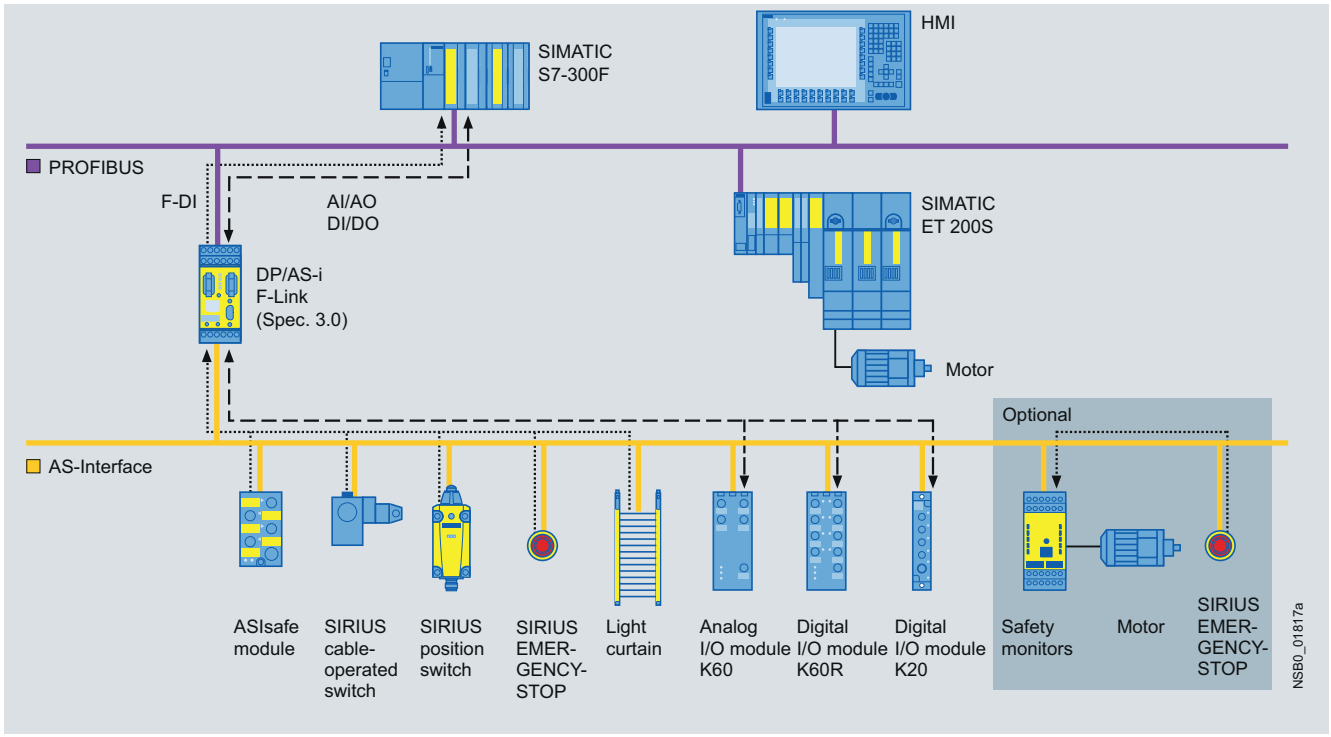
In configuring mode the DP/AS-i F-Link reads in the configuration data of the peripherals on the AS-Interface. Slave addresses can be set using the display and the control keys, and the code sequences of safe AS-i slaves can be taught.

During operation, four display LEDs and the display provide detailed diagnostics information, which directly localizes the fault if required. Using the PLC user program it is possible to read out diagnostics data records and make them available to a higher-level operating and monitoring system (e. g. WinCC Flexible or TRANSLINE HMI).

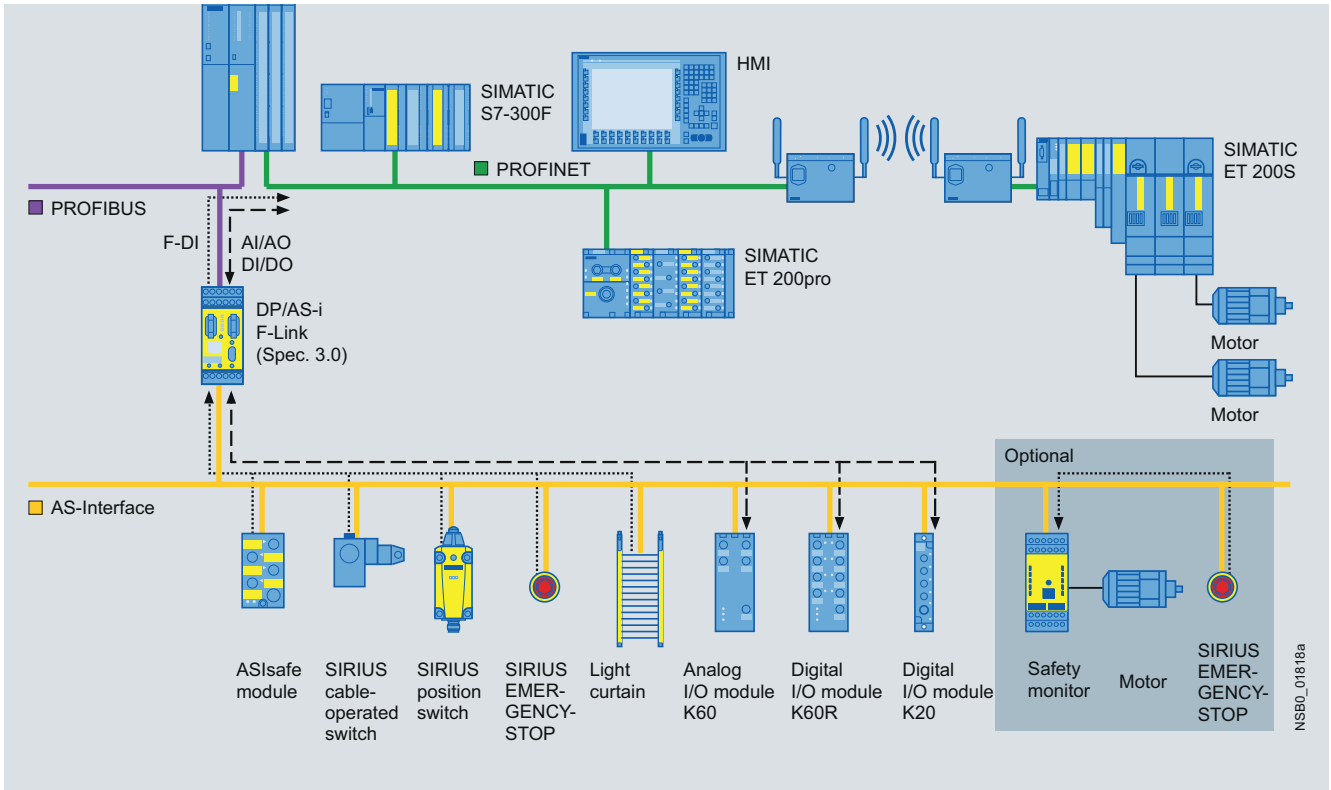
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Network connectivity

The DP/AS-i F-Link can be used in PROFIBUS and PROFINET networks as follows:



Integration in PROFIBUS networks under SIMATIC F PLC



Integration in PROFINET networks under SIMATIC F PLC (alternatively can also be integrated through IE/PB Link)

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DP/AS-i F-Link

Further network connectivity options

- Integration in PROFINET networks under SIMATIC F PLC through IE/PB Link
- Integration in SINUMERIK Power Line and Solution Line
- Integration under non-Siemens failsafe control systems using PROFIBUS GSD file, available on the Internet at http://support.automation.siemens.com/WW/view/en/113250

Selection and ordering data

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
 DP/AS-i F-Link	**DP/AS-i F-Link** Router between PROFIBUS DP and AS-Interface for safety-oriented data transmission from ASIsafe to PROFIBUS DP – PROFIsafe in degree of protection IP20; corresponds to AS-Interface Specification V3.0; dimensions (W x H x D / mm): 45 x 104 x 120						
	•Screw terminals	A	**3RK3 141-1CD10**		1	1 unit	42C
	•Spring-type terminals	A	**3RK3 141-2CD10**		1	1 unit	42C

More information

For more accessories for the PROFIBUS connection see page 2/30.

The DP/AS-i F-Link manual is available on the Internet at http://support.automation.siemens.com/WW/view/en/24196041

Circuit examples for safety systems with DP/AS-i F-Link are available at http://support.automation.siemens.com/WW/view/en/24509484

The F-Link Object Manager must be installed for configuring HW-Config (STEP 7). The Object Manager can be downloaded free of charge from the Internet at http://support.automation.siemens.com/WW/view/en/24724923

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



IE/AS-i LINK PN IO

PN	DP-M	DP-S	ASi-M		
●			●		

The IE/AS-i LINK PN IO is a compact router between PROFINET/Industrial Ethernet (PROFINET IO Device) and AS-Interface, with the following features:

- Single and double AS-Interface master (according to AS-Interface Specification V3.0) for connection of 62 AS-Interface slaves or 124 AS-Interface slaves (with a double master)
- Integrated analog value transmission (all analog profiles)
- Integrated ground-fault monitoring for the AS-Interface cable
- User-friendly local diagnostics and start-up by means of a full graphic display and control keys or through a web interface with a standard browser on the PC screen
- Optimum TIA integration using STEP 7
- Integration in non-Siemens engineering tools using the PROFINET GSD file
- Vertical integration (standard web interface) through Industrial Ethernet
- Supply via AS-Interface cable or with 24 V DC
- Suitable for AS-i Power24V (product version 4 and higher / firmware version 2.2) and standard AS-i (30 V)
- Module exchange without entering the connection parameters (IP address etc.) using C-PLUG (optional)
- Costs saved by the double AS-Interface master when large volumes of project data are involved

Design

- Compact plastic enclosure in degree of protection IP20 for standard rail mounting
- COMBICON plug-in screw terminals
- Compact design:
  - Pixel graphics display in the front panel for detailed display of the operating state and readiness for operation of all connected AS-Interface slaves
  - Six pushbuttons for starting up and testing the AS-Interface line directly on the IE/AS-i LINK PN IO
  - LED display of the operating state of PROFINET IO and AS-Interface
  - Integrated 2-port switch (RJ45 socket) for connection to Industrial Ethernet supports the line topology with an external switch
- Small mounting depth thanks to recessed plug mounting
- Operation without fans and batteries

Functionality

Communications

The IE/AS-i LINK PN IO enables a PROFINET IO controller to cyclically access the I/O data of all the slaves of a lower-level AS-Interface segment. Also supported are the expanded slave types with higher I/O data volume according to AS-i Specification V3.0.

The IE/AS-i LINK PN IO occupies the following address area:

- As a single master or IO controller with full expansion: 62 bytes of input data and 62 bytes of output data in which the I/O data of the connected AS-Interface slaves (standard and A/B slaves) of an AS-i line are stored.
- As double master, double the number of bytes.

The size of the input/output image can be compressed so that only the actually required I/O address area is occupied in the system of the DP master.

The integrated evaluation of analog signals is just as easy as access to digital values because the analog process data also lie directly in the I/O address area of the CPU.

PROFINET IO controllers are able in addition to initiate AS-Interface master calls (e. g. to write parameters, change addresses, read diagnostic values) through the acyclic PROFINET services.

Using an operating display in AS-Interface Link it is possible to fully commission the lower-level AS-i line.

The IE/AS-i LINK PN IO is equipped with two Ethernet ports which are connected by an internal switch. With the Ethernet it is possible in addition to use the integrated web server. The web server can be called up with any standard web browser (e. g. Internet Explorer) without additional software. It enables the PC to present all diagnostics information and to display the set bus configuration and parameters as well as their adaptation where applicable. Firmware updates are also possible using this port.

The optional C-PLUG supports module exchange without entering the connection parameters (e. g. IP address), keeping downtimes to a minimum in the event of a fault.

Diagnostics

The following diagnostics is possible using the display and control keys, web interface or STEP 7:

- Operating state of the IE/AS-i LINK PN IO
- Status of the link as a PROFINET IO device
- Diagnostics of the AS-Interface network
- Message frame statistics
- Standard diagnostics pages in the web interface for fast diagnostics access through Ethernet using a standard browser
- For the use of the web interfaces no network settings on the PC are necessary (Zeroconf procedure).
- The reporting of diagnostic events is optional via E-Mail or SNMP Trap possible. The integrated diagnostic buffer saves the events including time stamp.

Configuration

The IE/AS-i LINK PN IO is configured as follows:

- STEP 7 V5.4 or higher is required for configuring the full functional scope of the IE/AS-i LINK PN IO. With STEP 7 configuring the AS-Interface configuration can be uploaded in STEP 7 V5.4 SP2 and higher. Can also be AS-Interface slaves from Siemens conveniently configure in HW Config (slave selection dialog).
- Alternatively, E/AS-i LINK PN IO can be integrated by means of the PROFINET GSD file in the engineering tool (e. g. for STEP 7 V5.4 SP2 and lower or for non-Siemens engineering tools).

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IE/AS-i LINK PN IO

Benefits

- Short start-up times through simple configuration at the press of a button and testing of the AS-Interface line using the display or web interface
- Reduction of standstill and servicing times in the event of a slave failure thanks to user-friendly diagnostics using the display or web interface
- Costs saved by the double AS-Interface master when large volumes of project data are involved
- Saves the need for AS-i power supply with AS-i Power24V: The AS-Interface cable assembly is fed through an existing 24 V DC PELV power supply unit. For decoupling an AS-i data decoupling module is required, see power supply units and data decoupling modules.
- Standard mode with AS-Interface power supply (see power supply units and data decoupling modules) possible without restrictions, whereby no further operating voltage is required

Application

The DP/AS-i LINK PN IO is a PROFINET IO device (according to IEC 61158/IEC 61784) and an AS-Interface master (based on AS-Interface Specification V3.0 according to IEC 62026-2). It enables transparent data access to AS-Interface from Industrial Ethernet.

Exchanging data with PROFINET IO controllers

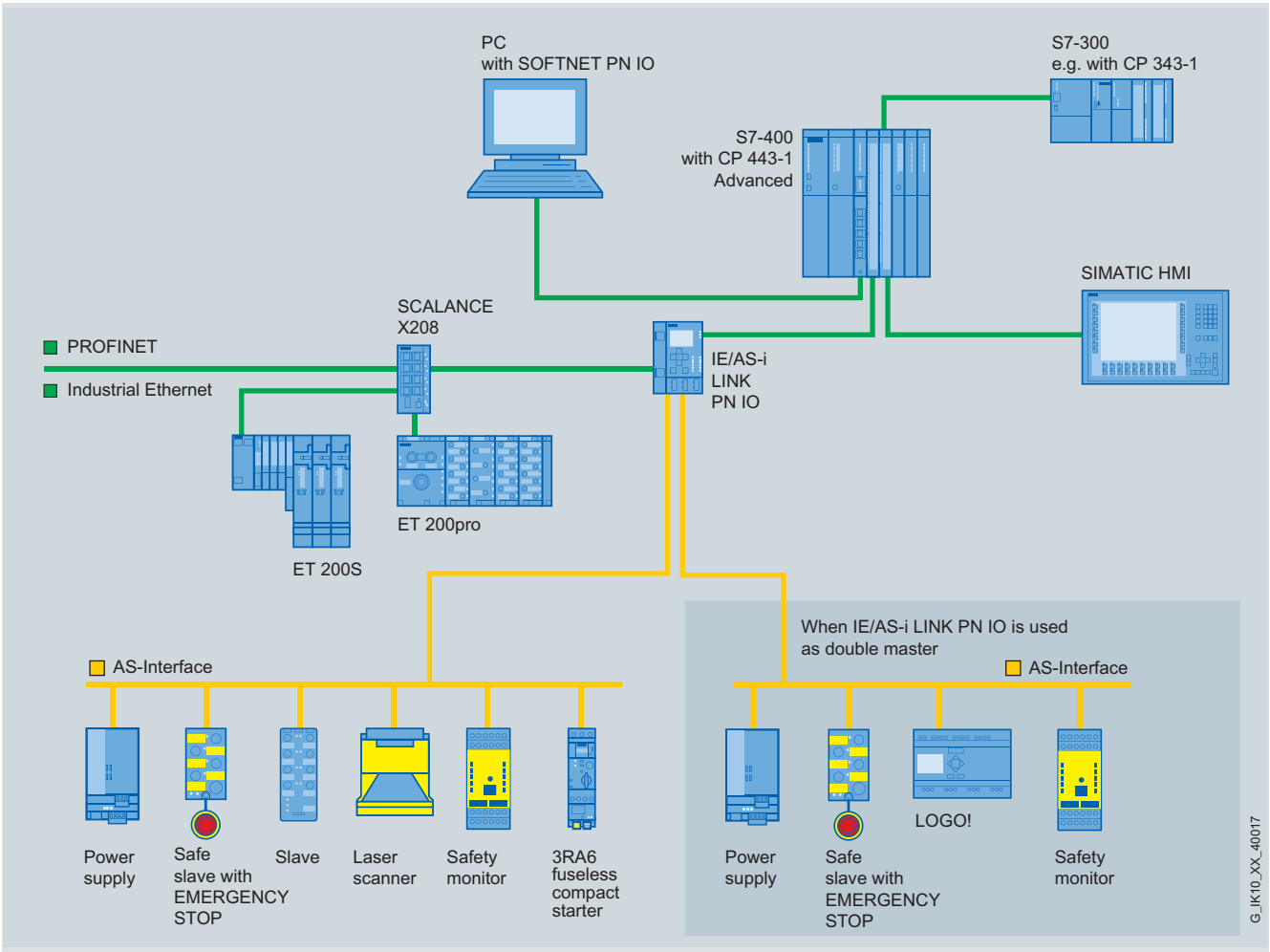
PROFINET IO controllers can exchange I/O data with AS-Interface in cyclic mode and can perform AS-i master calls in addition with acyclic services (e. g. reading/writing the AS-i configuration during normal operation). As such, the IE/AS-i LINK PN IO is particularly well suited for a decentral construction and for connection of a lower-level AS-Interface network.

Single masters

For applications with typical volumes of project data it is sufficient to use the IE/AS-i LINK PN IO in its version as an AS-i single master. The single master can operate up to 248 DI/248 DO, using 62 A/B slaves with 4DI/4DO each.

Double masters

For applications with large volumes of project data the IE/AS-i LINK PN IO in its version as an AS-i double master is used. In this case, twice the volume of project data can be used on two AS-i lines running independently of each other. The double master can operate up to 496 DI/496 DO, using 2 AS-i networks with 62 A/B slaves each with 4DI/4DO each.



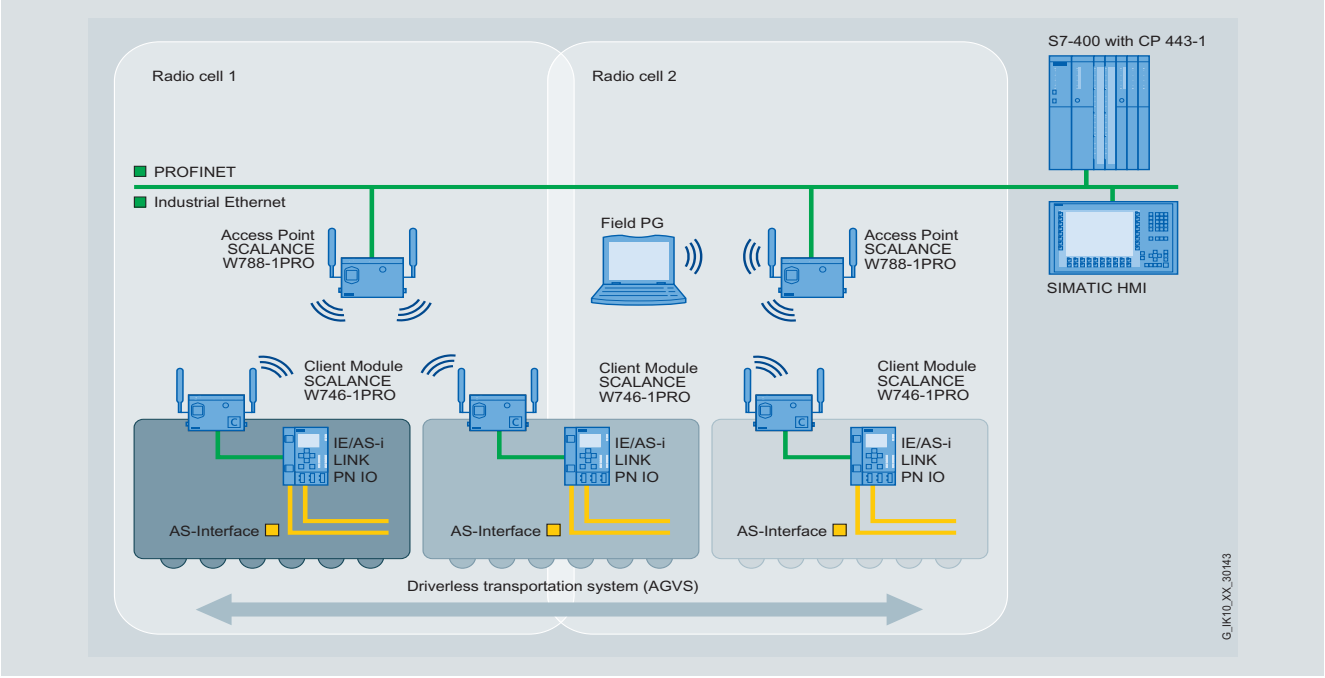
Integration of AS-Interface on PROFINET through IE/AS-i LINK PN IO as single/double master

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Wireless communication

Using an upstream IWLAN client module, e. g. SCALANCE W746-1PRO, an AS-Interface line can be integrated in the PROFINET world by wireless means.

Sample uses are applications which up to now have been performed with fault-prone tow chain or collector wire technology. Maintenance costs are thus reduced.



Wireless communication between Industrial Ethernet and AS-Interface components

Selection and ordering data

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
IE/AS-i LINK PN IO							
 IE/AS-i LINK PN IO	Router between PROFINET/Industrial Ethernet and AS-Interface in degree of protection IP20; including COMBICON plug-in screw terminals for connection of an AS-Interface cable (two AS-Interface cables for double masters) and the optional 24 V supply; corresponds to AS-Interface Specification 3.0; dimensions (W x H x D / mm): 90 x 132 x 88.5		**Combicon connection**				
	• Single master with display	▶	**6GK1 411-2AB10**		1	1 unit	42C
	• Double master with display	▶	**6GK1 411-2AB20**		1	1 unit	42C
Accessories							
	C-PLUG Exchange medium for the simple exchange of devices in the event of a fault; for accommodating configuration and application data; can be used in SIMATIC NET products with a C-PLUG slot	A	**6GK1 900-0AB00**		1	1 unit	5N3
	IE FC RJ45 Plug 90 RJ45 plug-in connector for Industrial Ethernet, with robust metal enclosure and integrated cutting and clamping contacts for connection of Industrial Ethernet FC installation cables; with 90° cable feeder						
	• 1 pack = 1 unit	A	**6GK1 901-1BB20-2AA0**		1	1 unit	5K1
	• 1 pack = 10 units	A	**6GK1 901-1BB20-2AB0**		1	1 unit	5K1
	• 1 pack = 50 units	A	**6GK1 901-1BB20-2AE0**		1	1 unit	5K1

More information

The manuals are also available on the Internet,
http://support.automation.siemens.com/WW/view/en/29992487/13330

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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I/O modules for use in field, high degr. of protect. Digital I/O modules, IP67 – Introduction

Overview



K60



K20



K45

Three coordinated series of AS-Interface compact modules with digital and analog compact modules and a high degree of protection are available for use in the field:

- Series K60 (digital and analog)
- Series K45 (digital)
- Series K20 (digital)

All compact modules are characterized by particularly simple handling. The K60 and K45 modules are mounted with a mounting plate. The mounting plate is used to receive the AS-Interface flat cables and enables mounting on a wall or standard mounting rail.

The K20 modules are directly mounted without a mounting plate and connected to the AS-Interface using a round cable.

Connection types

For flexible connection of different sensors and actuators, the following PIN assignments are available on the I/O modules with M12 sockets:

Standard assignment

With the standard assignment, one sensor/actuator is connected per M12 socket. In this case, the signal for the outputs is at PIN4 while the signal for the inputs is detected at PIN4 and PIN2. As the result, sensors can be connected directly to PIN2 and PIN4.

Y assignment

With the Y assignment, two sensors or two actuators can be connected to one M12 socket. In this case, both PIN4 and PIN2 are provided for respectively one sensor/actuator signal on each M12 socket.

Y-II assignment

The Y-II assignment offers the following options:

- Individual connection of a sensor/actuator to one M12 socket
- Connection of respectively two sensors/actuators to one M12 socket as follows:
  - The signal of the first sensor/actuator is connected to PIN4 of the first socket.
  - The signal of the second sensor/actuator is connected to PIN2 of the first socket and to PIN4 of the second socket.

  In this case, the second socket is not required and is closed with a sealing cap.

Overview of digital compact modules

The following table provides an overview of the important features of the digital compact modules.

Version	K60	K45	K20
8 inputs/2 outputs	✓	--	--
8 inputs	✓	--	--
4 inputs/4 outputs	✓	✓	✓
4 inputs/3 outputs	✓	--	--
4 inputs/2 outputs	✓	--	--
4 inputs	✓	✓	✓
2 inputs/2 outputs	--	✓	✓
4 outputs	✓	✓	✓
3 outputs	--	✓	--
AS-Interface connection	Flat cable / round cable	Flat cable	Round cable
I/O connection method	M12	M12/M8	M12/M8
Pin assignment	Standard/Y-II/Y	Standard/Y	Standard/Y
Degree of protection	IP65/IP67/IP68/IP69K	IP65/IP67	IP65/IP67
ATEX 3D (Zone 22)	✓	--	--
Extended address mode	✓	✓	✓

✓ Available

-- Not available

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Overview

The K60 digital AS-Interface compact modules are characterized by optimized handling characteristics and user-friendliness. They permit the mounting times and start-up times of AS-Interface to be reduced by up to 40 %.

Assembly of the K60 modules is performed with a mounting plate which accommodates the AS-Interface shaped cables. Two different mounting plates are offered for

- wall mounting
- standard rail mounting.

Addressing of the K60 modules is performed using an addressing socket integrated in the compact module. The addresses can also be assigned after installed.

K60 compact modules with a maximum of four digital inputs and outputs

These compact modules contain the communication electronics and the M12 standard connections for inputs and outputs. Using M12 standard connectors, a maximum of four sensors and four actuators can be simply and reliably connected to the compact module.

The mounting plate and the compact module are joined together by means of a screw, with simultaneous contacting of the AS-Interface cable by the service-proven insulation piercing method.

K60 compact modules with a maximum of eight digital inputs

These modules have eight digital inputs for connection through M12 plugs.

The module requires two AS-Interface addresses for processing all eight inputs. As with every compact module, the addressing can be performed through a double addressing socket.

K60 compact modules with a four digital inputs and outputs according to AS-Interface Specification 3.0

The new AS-i specification 3.0 adds a number of completely new features to the AS-Interface bus system. The extended address mode (A/B addresses) enables the connection of up to 62 slaves on one AS-i network. With the extended address mode according to Specification 3.0, four outputs are now possible even with A/B slaves (instead of only three outputs possible up to now with specification 2.1). Hence with full expansion of an AS-i network, there are now 248 inputs as well as 248 outputs available on one AS-i system. Modules with four inputs and four outputs as A/B slaves according to Specification 3.0 are also available as K60 compact modules.

Please note that these modules can be used only with a new master according to AS-i specification 3.0 (e. g. the new DP/AS-i LINK Advanced or IE/AS-i LINK PN IO) and that the cycle times for the outputs can extend to max. 20 ms.

K60 data couplers

An AS-Interface data coupler has been added to the K60 compact module range. Integrated in this module are two AS-i slaves which are connected to two different AS-i networks. Each of the two integrated slaves has four virtual inputs and four virtual outputs. The bidirectional data transmission of four data bits between two AS-i networks is thus possible in a simple and cost-effective manner. The data coupler need its own address in each AS-i network.

Each AS-i network works with a different cycle time depending on the number of stations. Hence, two AS-i networks are not necessarily synchronous. For this reason the AS-i data coupler can be used to transmit only standard data and no safe data.

K60 compact modules for use in hazardous areas (ATEX)

Two versions of the K60 modules are available for use in Zone 22 hazardous areas according to Classification II 3D (dusty atmosphere, non-conductive dust). The version with four inputs and four outputs has the designation (Ex) II 3D Ex tD A22 IP65X T75°C and the version with four inputs has the designation (Ex) II 3D Ex tD A22 IP65X T60°C.

Special conditions have to be observed for the safe operation of these devices. In particular the module must be protected by suitable protective measures from mechanical damage.

More information

For other conditions for safe operation see
http://support.automation.siemens.com/WW/view/en/18290447

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I/O modules for use in field, high degr. of protect. Digital I/O modules, IP67 – K60

Selection and ordering data



3RK1 400-1DQ00-0AA3

Version					DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Digital I/O modules, IP67 - K60 • PNP transistor • Width 60 mm • Connection method: M12 • Modules supplied without mounting plate										
Type	Current carrying capacity of outputs	Slave type	Pin assignment	Sensor power supply off						
8 inputs/ 2 outputs	2 A	A/B	Special	AS-i	A	**3RK2 400-1HQ00-0AA3**		1	1 unit	42C
8 inputs	--	Standard	Y-II	AS-i	▶	**3RK1 200-0DQ00-0AA3**		1	1 unit	42C
	--	A/B	Y-II	AS-i	▶	**3RK2 200-0DQ00-0AA3**		1	1 unit	42C
	--	A/B	Y-II	U_{aux}	A	**3RK2 200-1DQ00-1AA3**		1	1 unit	42C
4 inputs/ 4 outputs	2 A	Standard	Y-II	AS-i	▶	**3RK1 400-1DQ00-0AA3**		1	1 unit	42C
	2 A	Standard	Standard	AS-i	▶	**3RK1 400-1CQ00-0AA3**		1	1 unit	42C
	1 A	Standard	Y-II	AS-i	A	**3RK1 400-1DQ01-0AA3**		1	1 unit	42C
	1 A	Standard	Standard	AS-i	▶	**3RK1 400-1DQ03-0AA3**		1	1 unit	42C
	2 A	A/B slave (Spec. 3.0)	Y-II	AS-i	A	**3RK2 400-1DQ00-0AA3**		1	1 unit	42C
	2 A	A/B slave (Spec. 3.0)	Y-II	U_{aux}	A	**3RK2 400-1DQ00-1AA3**		1	1 unit	42C
4 inputs/ 3 outputs	2 A	A/B	Y-II	AS-i	▶	**3RK2 400-1FQ03-0AA3**		1	1 unit	42C
4 inputs/ 2 outputs	2 A	Standard	Y-II	AS-i	▶	**3RK1 400-1MQ00-0AA3**		1	1 unit	42C
4 inputs	--	Standard	Y-II	AS-i	▶	**3RK1 200-0CQ00-0AA3**		1	1 unit	42C
2x2 inputs/ 2x2 outputs	1 A	Standard	Y	AS-i	B	**3RK1 400-1DQ02-0AA3**		1	1 unit	42C
4 outputs	2 A	Standard	Y-II	AS-i	▶	**3RK1 100-1CQ00-0AA3**		1	1 unit	42C
Digital I/O modules IP67 – K60, version ATEX (Ex) II 3D Ex tD A22 IP65X T75°C/60°C • PNP transistor • Width 60 mm • Current carrying capacity of the inputs: 200 mA • Connection method: M12 • Modules supplied without mounting plate										
Type	Current carrying capacity of outputs	Slave type	Pin assignment							
4 inputs/ 4 outputs	2 A	Standard	Y-II		C	**3RK1 400-1DQ05-0AA3**		1	1 unit	42C
4 inputs	--	Standard	Y-II		B	**3RK1 200-0CQ05-0AA3**		1	1 unit	42C
Digital I/O modules IP67 - K60 data couplers • Modules supplied without mounting plate										
Type	Current carrying capacity of outputs	Slave type	Pin assignment							
Data coupler 4 inputs/4 outputs (virtual)	--	Standard	--		C	**3RK1 408-8SQ00-0AA3**		1	1 unit	42C

Accessories



3RK1 901-0CA00

K60 mounting plates Suitable for all K60 compact modules						
• Wall mounting	▶	**3RK1 901-0CA00**		1	1 unit	42C
• Standard rail mounting	▶	**3RK1 901-0CB01**		1	1 unit	42C



AS-Interface sealing caps M12 For free M12 sockets	▶	**3RK1 901-1KA00**		100	10 units	42C



AS-Interface sealing caps M12, tamper-proof For free M12 sockets	A	**3RK1 901-1KA01**		100	10 units	42C



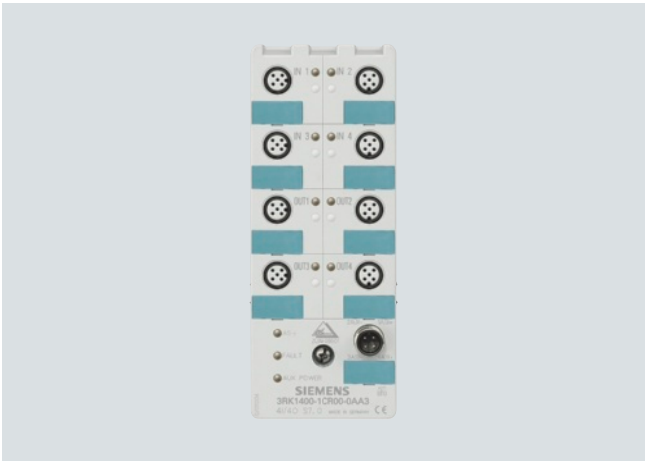
Sealing sets • For K60 mounting plate and standard distributor • Cannot be used for K45 mounting plate • One set contains one straight and one shaped seal	A	**3RK1 902-0AR00**		100	5 units	42D

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Operation in particularly harsh environments



K60R module in degree of protection IP68/IP69K

Modules with degree of protection IP67 cannot be used in areas exposed to permanently high levels of humidity, in applications with drilling emulsions and cutting oils or when cleaning with high-pressure cleaners. The answer for these applications is provided by the expansion of the K60 compact modules with the K60R module with degree of protection IP68/IP69K.

The K60R modules are connected instead of the AS-Interface flat cable using a round cable with M12 cable box.
The AS-Interface bus cable and the 24 V DC auxiliary voltage supply are routed in this case in a shared round cable.

Degree of protection IP68 permits many new applications, which were impossible with the former field modules with degree of protection IP67. In applications such as filling plants or machine-tools the K60R with degree of protection IP68 enables the module to be used directly in zones exposed to permanent loading by humidity. It is thus possible to make even more rigorous savings in wiring with AS-Interface. For the IP68 test conditions see the section "IP68/IP69K tests".

Cleaning with high-pressure cleaners, such as is regularly performed in the food and drinks industry for instance, is possible without difficulty (IP69K).

In applications with tow chains, many users rely on placing the AS-Interface bus cable in a round cable. With the K60R module round cable connection is possible for direct connection to a round cable. No adapter is required.

Mounting

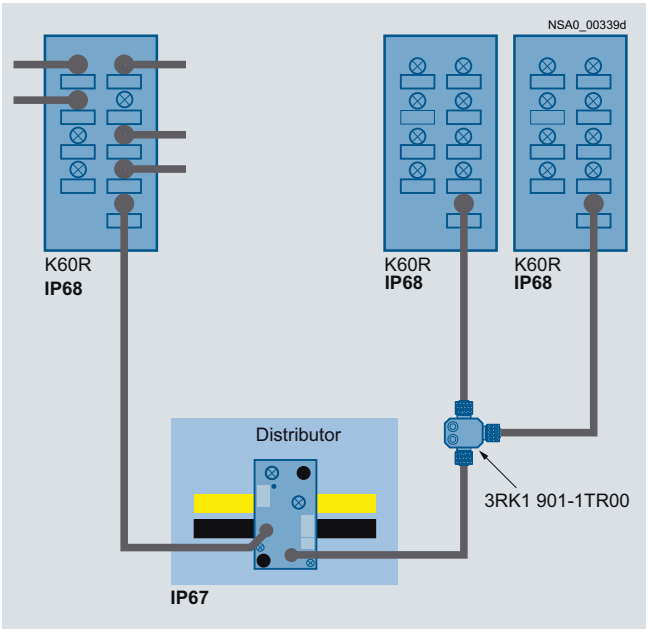
The same mounting plates are used as for the K60 modules. Instead of using flat cables the K60R is connected using a 4-pole round cable with an M12 connection. With the K60R the mounting plate thus serves only as a fixture and ground terminal.

Addressing

Addressing is performed using the same socket as for the bus connection. Connecting the module to the addressing unit takes place over a 3-pole standard M12 cable.

When the mounting is finished, the module is connected with the addressing cable to the addressing unit and is addressed. The addressing cable is then removed and the module connected to the bus cable.

Connection



K60R connection options

In the IP67 environment the service-proven standard components are connected using flat cables. Spur lines are laid into the IP68 environment by means of an AS-Interface M12 feeder (3RK1 901-1NR..). The module is connected with a round cable to an M12 cable box. For this purpose the module has a M12 bus connection instead of the former addressing socket. The AS-Interface bus cable and the 24 V DC auxiliary voltage are routed together in a 4-pole round cable. There must be no ground conductor in this round cable. Connection to ground is made through the mounting plate.

In the IP68 environment only cables with extruded M12 plugs may be used.

To connect more than one K60R module to one spur line, the spur line can be split again using a T distributor (3RK1 901-1TR00) with degree of protection IP68.

Please note the following conditions:

- The configuration guidelines for AS-Interface apply. For all M12 connecting cables the maximum permissible current is limited to 4 A. The cross-section of these cables amounts to just 0.34 mm^2. For connection of the K60R modules, the aforementioned M12 connecting cables can be used for the spur lines. The voltage drop caused by the ohmic resistance (approx. 0.11 Ω/m) must be taken into account.
- For round cable connections with shared AS-i and U_{aux} in a single cable, the following maximum lengths apply:
  - per spur line from feeder to module: maximum 5 m
  - total of all round cable segments in an AS-Interface network: maximum 20 m

IP68/IP69K tests

- K60R modules were tested with the following tests:
- Stricter test than IP67: 90 min at 1.8 m depth of water (IP67: 30 min at 1 m depth of water)
- Salt water test: Five months in salt water, 20 cm deep, at room temperature
- Test with particularly creepable oil: Five months completely under oil at room temperature

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I/O modules for use in field, high degr. of protect. Digital I/O modules, IP68/IP69K – K60R

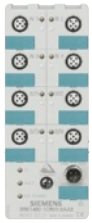
- Test with drilling emulsion: Five months at room temperature (components of the drilling emulsion: Anionic and non-ionic emulsifiers, paraffinic low-aromatic mineral oil, boric acid alkanolamines, corrosion inhibitors, oil content 40 %)
- Test in oil bath (Excelence 416 oil) with alternating oil bath temperature: 130 cycles of 15 to 55 °C, two months
- Cleaning with a high-pressure cleaner according to IP69K: 80 to 100 bar, 10 to 15 cm distance, time per side > 30 s, water temperature 80 °C

To simulate requirements as realistically as possible the modules were artificially aged prior to the tests by 15 temperature cycles of -25/+85 °C. During the test the modules were connected to 3RX1 connecting cables. Unassigned connections were closed with 3RK1 901-1KA00 sealing caps.

Note:

Sealing caps and M12 connections must be tightened with the correct torque.

Selection and ordering data

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
 3RK1 400-1CR00-0AA3	**Digital I/O modules IP68/IP69K - K60R** • 4 inputs/4 outputs • Width 60 mm • IP68/IP69K • Standard assignment • Current carrying capacity: - 200 mA (inputs) - 2 A (outputs) • Standard slave • Modules supplied without mounting plate	A	**3RK1 400-1CR00-0AA3**		1	1 unit	42C
Accessories							
 3RK1 901-0CA00	**K60 mounting plates** Suitable for all K60 and K60R compact modules						
	• Wall mounting	►	**3RK1 901-0CA00**		1	1 unit	42C
	• Standard rail mounting	►	**3RK1 901-0CB01**		1	1 unit	42C
 3RK1 901-1KA00	**AS-Interface sealing caps M12** For free M12 sockets	►	**3RK1 901-1KA00**		100	10 units	42C
 3RK1 901-1NR21	**AS-Interface M12 feeders**						
	For flat cable: AS-i / U_{aux} — For: M12 socket — Cable length: -- — Cable end in feeder: Not available	A	**3RK1 901-1NR20**		1	1 unit	42C
	For flat cable: AS-i / U_{aux} — For: M12 cable box — Cable length: 1 m — Cable end in feeder: Not available	A	**3RK1 901-1NR21**		1	1 unit	42C
	For flat cable: AS-i / U_{aux} — For: M12 cable box — Cable length: 2 m — Cable end in feeder: Not available	A	**3RK1 901-1NR22**		1	1 unit	42C
 3RK1 901-1NR04	**AS-Interface M12 feeders, 4-fold**						
	For flat cable: AS-i / U_{aux} — For: 4-fold M12 socket delivery includes coupling module — Cable length: -- — Cable end in feeder: Available	A	**3RK1 901-1NR04**		1	1 unit	42C
 3RK1 901-1TR00	**M12-T distributors** • IP68 • 1 x M12 plug • 2 x M12 box	C	**3RK1 901-1TR00**		1	1 unit	42C
 3RK1 902-4PB15-3AA0	**M12 connecting cables** • 3-pole • For addressing AS-i slaves with M12 bus connection • Cable length 1.5 m	C	**3RK1 902-4PB15-3AA0**		1	1 unit	42D

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



K45 compact modules

The K45 series of compact modules supplements complete the K60 large compact modules which have a proven track record in industry. They are the logical consequence for rounding off the bottom end of the existing product range.

The acclaimed advantages of the existing K60 compact modules are fully emulated by the far smaller K45 modules. Their footprint is the same as that of the user modules. However, they have a mounting depth which is only two-thirds of the user module and hence an exact match for the compact module family.

Yet in spite of these small dimensions all the modules have large labels and an integrated addressing socket.

Two mounting plates are offered for the K45 compact modules:

- The mounting plate for wall mounting has a hole pattern that is identical to that of the K60 compact modules. This means that K60 compact modules can be mounted together with K45 modules in an aligned arrangement. The flat cables can be inserted in the recesses of the mounting plates where they cause no hindrance.
- The mounting plate for standard rail mounting has a hole pattern that is identical to that of the user modules.

Mounting the flat cables is now easier than ever. The yellow and black AS-Interface flat cable can be inserted into the mounting plates from the left or right regardless of the position of the coding lug. The correct polarity of the applied voltages is always guaranteed.

Sensors/actuators are connected using M12 sockets.
The 4I module can be ordered optionally with M8 connection sockets.

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I/O modules for use in field, high degr. of protect. Digital I/O modules, IP67 – K45

Selection and ordering data



3RK1 400-0GQ20-0AA3

Digital I/O modules, IP67 - K45

- PNP transistor
- Width 45 mm
- Current carrying capacity of the inputs: 200 mA
- Modules supplied without mounting plate

Type	Current carrying capacity of outputs	Slave type	Pin assign-ment	U_{aux} 24 V	Connection methods	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
4 inputs	--	Standard	Standard	--	M12	►	**3RK1 200-0CQ20-0AA3**		1	1 unit	42C
	--	Standard	Standard	--	M8 screw	A	**3RK1 200-0CT20-0AA3**		1	1 unit	42C
	--	Standard	Standard	--	M8 snap	C	**3RK1 200-0CU20-0AA3**		1	1 unit	42C
	--	A/B	Standard	--	M12	►	**3RK2 200-0CQ20-0AA3**		1	1 unit	42C
	--	A/B	Standard	--	M8 screw	B	**3RK2 200-0CT20-0AA3**		1	1 unit	42C
	--	A/B	Standard	--	M8 snap	C	**3RK2 200-0CU20-0AA3**		1	1 unit	42C
2 x 2 inputs	--	A/B	Y	--	M12	A	**3RK2 200-0CQ22-0AA3**		1	1 unit	42C
2 inputs/ 2 outputs	2 A[1)]	Standard	Standard	✓	M12	►	**3RK1 400-1BQ20-0AA3**		1	1 unit	42C
2 x (1 input/ 1 output)	0.2 A	Standard	Y	--	M12	A	**3RK1 400-0GQ20-0AA3**		1	1 unit	42C
4 x (1 input/ 1 output)	0.2 A	A/B (Spec. 3.0)	Y	--	M12	D	**3RK2 400-0GQ20-0AA3**		1	1 unit	42C
4 x (1 input/ 1 output)	0.5 A	A/B (Spec. 3.0)	Y	✓	M12	B	**3RK2 400-1GQ20-1AA3**		1	1 unit	42C
3 outputs	1 A	A/B	Standard	✓	M12	►	**3RK2 100-1EQ20-0AA3**		1	1 unit	42C
4 outputs	1 A	Standard	Standard	✓	M12	►	**3RK1 100-1CQ20-0AA3**		1	1 unit	42C
2 outputs/ 2 inputs	2 A	A/B	Standard	✓	M12	A	**3RK2 400-1BQ20-0AA3**		1	1 unit	42C

✓ Available
-- Not available

Accessories



3RK1 901-2EA00

K45 mounting plates

- For wall mounting ► **3RK1 901-2EA00** 1 1 unit 42C
- For standard rail mounting ► **3RK1 901-2DA00** 1 1 unit 42C



3RK1 901-1KA00



3RK1 901-1PN00

AS-Interface sealing caps

- For free M12 sockets ► **3RK1 901-1KA00** 100 10 units 42C
- For free M8 sockets A **3RK1 901-1PN00** 100 10 units 42C



3RK1 901-1MN00

Cable terminating pieces ► **3RK1 901-1MN00** 1 10 units 42C
For sealing of open cable ends (shaped AS-Interface cable) in IP67

[1)] The typical current carrying capacity per output increases with version "E12" from 1.5 to 2 A (available since approx. 07/2003).

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



Digital I/O modules IP67 - K20

The K20 compact module range rounds off the AS-Interface compact modules with a particularly slim design and a width of a mere 20 mm. Thanks to its extremely compact dimensions, these modules are particularly suited for handling machine applications in the field of production engineering where modules need to be arranged in the smallest of spaces.

Robotics is yet another application area. Instead of the AS-Interface flat cable, the K20 modules are connected to AS-Interface over a round cable with a M12 cable box. The AS-Interface bus cable and the 24 V DC auxiliary power supply are routed in this case in a shared round cable. This enables extremely compact installation.

The flexibility of the round cable means that it can also be used on moving machine parts without any problems. The K20 modules are also ideal for such applications as their non-encapsulated design makes them particularly light in weight.

In applications with tow chains, many users rely on placing the AS-Interface bus cable in a round cable. In this case, the K20 modules support direct connection to the round cable. No flat to round cable adapter is required.

The K20 compact module range includes standard AS-Interface modules, as well as an ASIsafe version for the connection of failsafe sensors, such as EMERGENCY-STOP pushbuttons or protective door monitoring. All standard AS-Interface K20 modules support, as far as technically possible, the expanded address mode (A/B addresses) according to AS-Interface specification 2.1, which enables connection of 62 stations to an AS-Interface network. The K20 module with four inputs and four outputs works in expanded address mode according to AS-Interface specification 3.0 which, for the first time, supports four outputs with an A/B slave, thus enabling 248 inputs and 248 outputs in a fully expanded AS-Interface network.

For particularly space-saving dimensions, the sensors and actuators are connected over M8 plug-in connectors. Alternatively, M12 connectors with Y assignment can be used.

Selection and ordering data



3RK2 200-0CT30-0AA3

Version					DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Digital I/O modules, IP67 – K20										
Width 20 mm										
Type	Current carrying capacity of outputs	Slave type	Pin assignment	Connection methods						
4 inputs	--	A/B	Standard	M8	A	**3RK2 200-0CT30-0AA3**		1	1 unit	42C
	--	A/B	Y	M12	A	**3RK2 200-0CQ30-0AA3**		1	1 unit	42C
2 inputs/ 2 outputs	1	A/B	Standard	M8	A	**3RK2 400-1BT30-0AA3**		1	1 unit	42C
	1	A/B	Y	M12	A	**3RK2 400-1BQ30-0AA3**		1	1 unit	42C
4 outputs	1	A/B (Spec. 3.0)	Standard	M8	A	**3RK2 100-1CT30-0AA3**		1	1 unit	42C
4 inputs/ 4 outputs	1	Standard	Standard	M8	A	**3RK1 400-1CT30-0AA3**		1	1 unit	42C
	1	A/B (Spec. 3.0)	Standard	M8	A	**3RK2 400-1CT30-0AA3**		1	1 unit	42C
2 safe inputs	--	Standard	Y-II	M12	A	**3RK1 205-0BQ30-0AA3**		1	1 unit	42C

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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I/O modules for use in field, high degr. of protect. Digital I/O modules, IP67 – K20

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories						
AS-Interface sealing caps						
• For free M12 sockets	▶	**3RK1 901-1KA00**		100	10 units	42C
• For free M8 sockets	A	**3RK1 901-1PN00**		100	10 units	42C
AS-Interface compact distributors, for AS-Interface flat cable Current carrying capacity up to 8 A	A	**3RK1 901-1NN10**		1	1 unit	42C

AS-Interface M12 feeders

For flat cable	For	Cable length	Cable end in feeder	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
AS-i	M12 socket	--	Available	▶	**3RX9 801-0AA00**		1	1 unit	42C
AS-i	M12 socket	--	Not available	A	**3RK1 901-1NR10**		1	1 unit	42C
AS-i	M12 cable box	1 m	Not available	A	**3RK1 901-1NR11**		1	1 unit	42C
AS-i	M12 cable box	2 m	Not available	A	**3RK1 901-1NR12**		1	1 unit	42C
AS-i / U_{aux}	M12 socket	--	Not available	A	**3RK1 901-1NR20**		1	1 unit	42C
AS-i / U_{aux}	M12 cable box	1 m	Not available	A	**3RK1 901-1NR21**		1	1 unit	42C
AS-i / U_{aux}	M12 cable box	2 m	Not available	A	**3RK1 901-1NR22**		1	1 unit	42C

AS-Interface M12 feeders, 4-fold

For flat cable	For	Cable length	Cable end in feeder	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
AS-i / U_{aux}	4-fold M12 socket delivery includes coupling module	--	Available	A	**3RK1 901-1NR04**		1	1 unit	42C

M12-T distributors • IP68 • 1 x M12 plug • 2 x M12 box	C	**3RK1 901-1TR00**		1	1 unit	42C
M12 Y-shaped coupler plugs For connection of two sensors to one M12 socket with Y assignment	A	**6ES7 194-1KA01-0XA0**		1	1 unit	250
M12 connecting cables • 3-pole • For addressing AS-i slaves with M12 bus connection • Cable length 1.5 m	C	**3RK1 902-4PB15-3AA0**		1	1 unit	42D


3RK1 901-1KA00


3RK1 901-1PN00


3RK1 901-1NN10


3RX9 801-0AA00


3RK1 901-1NR10


3RK1 901-1NR11


3RK1 901-1NR21


3RK1 901-1NR04


3RK1 901-1TR00


6ES7 194-1KA01-0XA0


3RK1 902-4PB15-3AA0

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

The AS-Interface user modules are the first module generation for AS-Interface.

Today, innovated and further improved modules are available in the form of the K45 and K60 series of compact modules. We recommend replacing the user modules in future with the K45 compact module series. The user modules will be available for a limited time in order to meet the demand for replacements.

For more details see the note on the Industry Mall in the opening information on page 13.

Advantages of the K45 compact modules

The K45 compact modules provide extra advantages in addition to the functionality of the user modules:

- An integrated addressing socket enables the module to be addressed in the installed state
- Time is saved when mounting the module: Mounting with only one screw thanks to hinge system
- Extensive diagnostics by LED on the module (e. g. display of zero address, no communication with master, overload)
- Random insertion of the AS-Interface flat cable irrespective of the position of the profiled lug
- Smaller dimensions
- Versions with M12 and M8 connection sockets enable the direct connection of all sensors
- Modules in A/B technology enable up to 62 slaves on one AS-Interface network

Conversion table for user modules → K45

User modules		Corresponding K45 type	
Order No.	Version	**Order No.**	Version
3RG9 001-0AA00	4 inputs (100 mA)	3RK1 200-0CQ20-0AA3	4 inputs (200 mA)
3RG9 001-0AG00	4 inputs (200 mA)	3RK1 200-0CQ20-0AA3	4 inputs (200 mA)
3RG9 001-0AH00	2 x 2 inputs	3RK2 200-0CQ22-0AA3	2 x 2 inputs A/B slave
3RG9 001-0AC00	2 inputs/2 outputs relay outputs	3RK1 400-1BQ20-0AA3	2 inputs/2 outputs solid-state outputs
3RG9 001-0CC00	2 inputs/2 outputs solid-state outputs	3RK1 400-1BQ20-0AA3	2 inputs/2 outputs solid-state outputs
3RG9 001-0AM00	2 inputs/2 outputs solid-state outputs U_{Aux} using M12 plug	3RK1 400-1BQ20-0AA3	2 inputs/2 outputs solid-state outputs U_{Aux} using black flat cable
3RG9 001-0AJ00	2 x (1 input/1 output) supply of I/O from AS-Interface cable	3RK1 400-0GQ20-0AA3	2 x (1 input/1 output) supply of I/O from AS-Interface cable
3RG9 001-0AB00	4 outputs relay outputs	3RK1 100-1CQ20-0AA3	4 outputs solid-state outputs
3RG9 001-0AL00	4 outputs U_{Aux} using M12 plug	3RK1 100-1CQ20-0AA3	4 outputs U_{Aux} using black flat cable
3RG9 001-0CB00	4 outputs solid-state outputs	3RK1 100-1CQ20-0AA3	4 outputs solid-state outputs

Note:

To use the K45 modules you require the 3RK1 901-2EA00 (wall mounting) or 3RK1 901-2DA00 (standard rail mounting) K45 mounting plates instead of the 3RG9 010-0AA00 and 3RG9 030-0AA00 coupling modules.

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I/O modules for use in field, high degr. of protect. Analog I/O modules, IP67 – K60

Overview



K60 analog compact module

AS-Interface analog modules from the K60 compact series detect or issue analog signals locally. These modules are linked to the higher-level controller through an AS-Interface master according to specification 2.1 or specification 3.0.

The analog modules are divided into five groups:

- Input module for sensors with current signal
- Input module for sensors with voltage signal
- Input module for sensors with thermal resistor
- Output module for current actuators
- Output module for voltage actuators

The input modules according to profile 7.3/7.4 are available with two or four input channels. It is possible in addition to convert the two-channel module to using only one input channel, thus enabling very short times before the analog value is available. The conversion is effected by means of a jumper plug at socket 3. The transmission times achieved with analog modules according to Profile 7.A.9 are shorter by half than those achieved with Profile 7.3/7.4. Operation is adjustable in this case, e. g. it is possible to choose with the ID1 Code whether the module is operated with one or two channels.

The output modules are configured as two-channel modules as standard.

The input and output channels are electrically separated from the AS-Interface network. If sensors with a higher power requirement are to be connected, more power can be supplied through the auxiliary voltage as an alternative to the internal supply.

In the manual the modules are presented in great detail along with their technical specifications and in-depth notes on operation. Sample function blocks round off the manual.

Benefits

- Analog modules are just as easy to integrate in AS-Interface as digital modules
- Analog values can be easily detected and issued locally
- Preprocessing of the analog value transmission in the master enables rapid evaluation of the analog values
- Up to four values can be detected using one analog module
- Faster transmission and conversion of analog values thanks to the new option for changing over to single-channel operation

In addition, Specification 3.0 now also offers:

- A/B technology, now also with analog modules
- On average, double fast transmission times (only 3 or 4 cycles, depending on the resolution selected)
- Variable adjustable mode: 12 bit or 14 bit resolution, 1 or 2-channel, selectable over the ID1 code
- Extra simple handling of analog processing with masters of Specification 3.0, the DP/AS-i LINK Advanced

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Selection and ordering data



3RK1 207-1BQ44-0AA3



3RK2 207-2BQ50-0AA3

Version			DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Analog I/O modules IP67 - K60, analog profile 7.3 • Slave type: Standard • Width 60 mm • Modules supplied without mounting plate								
Inputs	Type	Measuring range						
1 or 2 inputs (selectable using jumper plug at socket 3)	Current	4 ... 20 mA or ± 20 mA (selectable)[1]	A	**3RK1 207-1BQ40-0AA3**		1	1 unit	42C
	Voltage	± 10 V or 1 ... 5 V (selectable)	A	**3RK1 207-2BQ40-0AA3**		1	1 unit	42C
	Thermal resistance	Pt 100 or Ni 100 or 0 ... 600 Ω (selectable)[1]	A	**3RK1 207-3BQ40-0AA3**		1	1 unit	42C
4 inputs	Current	4 ... 20 mA or ± 20 mA (selectable)	A	**3RK1 207-1BQ44-0AA3**		1	1 unit	42C
	Voltage	± 10 V or 1 ... 5 V (selectable)	C	**3RK1 207-2BQ44-0AA3**		1	1 unit	42C
	Thermal resistance	Pt 100 or Ni 100 or 0 ... 600 Ω (selectable)	A	**3RK1 207-3BQ44-0AA3**		1	1 unit	42C
Outputs	Type	Output range						
2 outputs	Current for 2-wire actuators	4 ... 20 mA or ± 20 mA or 0 ... 20 mA (selectable)[1]	A	**3RK1 107-1BQ40-0AA3**		1	1 unit	42C
	Voltage for 2-wire actuators	± 10 V or 0 ... 10 V or 1 ... 5 V (selectable)	A	**3RK1 107-2BQ40-0AA3**		1	1 unit	42C
Analog I/O modules IP67 - K60, analog profile 7.A.9 • Slave type: A/B (Spec. 3.0) • Width 60 mm • Modules supplied without mounting plate								
Inputs	Type	Measuring range						
1 or 2 inputs (variably adjustable)	Current	4 ... 20 mA or ± 20 mA (selectable)	A	**3RK2 207-1BQ50-0AA3**		1	1 unit	42C
	Voltage	± 10 V or 1 ... 5 V (selectable)	A	**3RK2 207-2BQ50-0AA3**		1	1 unit	42C

[1] Some modules are available in the extended temperature range (from -25 to 70 °C) and for use in difficult environmental conditions (coated according to environment standard IEC 60721).

Description	SIPLUS Order No.	corresponds to module
SIPLUS AS-Interface 2AA, IP67	6AG1107-1BQ40-7AA3	3RK1107-1BQ40-0AA3
SIPLUS AS-Interface 2AI, IP67	6AG1207-1BQ40-7AA3	3RK1207-1BQ40-0AA3
SIPLUS AS-Interface 2AI, IP67	6AG1207-3BQ40-7AA3	3RK1207-3BQ40-0AA3

For more information see www.siemens.com/siplus-extreme

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I/O modules for use in field, high degr. of protect. Analog I/O modules, IP67 – K60

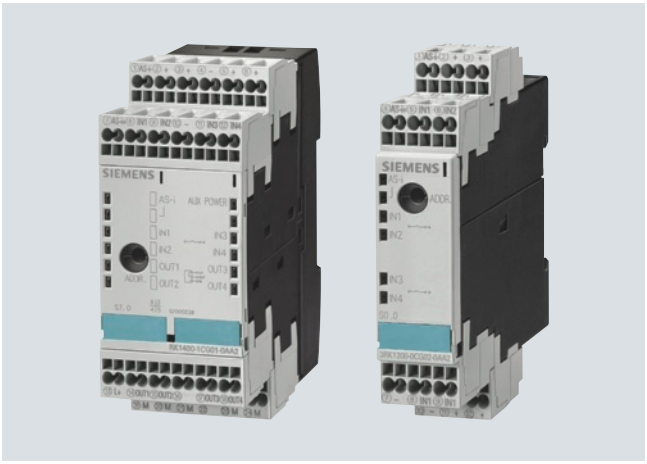
	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories							
	Manuals Only available as download on the Internet see the opening information on page 13						
 3RK1 901-0CA00	**K60 mounting plates**						
	• Wall mounting	►	**3RK1 901-0CA00**		1	1 unit	42C
	• Standard rail mounting	►	**3RK1 901-0CB01**		1	1 unit	42C
 3RK1 901-1KA00	**M12 sealing caps**	►	**3RK1 901-1KA00**		100	10 units	42C
 3RK1 902-0AR00	**Sealing sets** • For mounting plate K60 and distributor • Cannot be used for K45 mounting plate • One set contains one straight and one shaped seal	A	**3RK1 902-0AR00**		100	5 units	42D
 3RK1 901-1AA00	**Jumper plugs** For changing over the 2-channel input modules	A	**3RK1 901-1AA00**		1	1 unit	42C

For more details see the note on the Industry Mall in the opening information on page 13

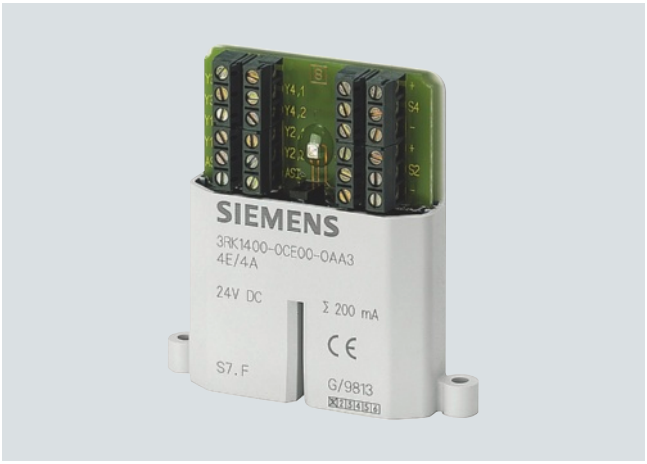
* You can order this quantity or a multiple thereof.
Illustrations are approximate

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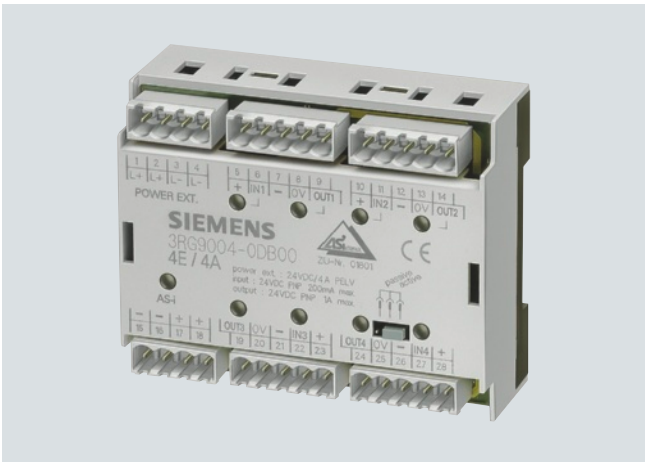
Overview



SlimLine S22.5/S45



Flat module



F90 module

For AS-Interface applications inside control cabinets there are various module series for the most diverse requirements:

- SlimLine S22.5
- SlimLine S45
- F90 module
- Flat module

All modules of these series can be snap-mounted directly on a standard mounting rail or be fastened using screws.

AS-Interface modules in IP20 have direct terminals for the AS-Interface cables and therefore do not require a base.

Series	Spectrum	Mounting on TH35 standard mounting rails according to IEC 60715	Wall mounting using push-in lugs (type 3RP1 903)	Other possibilities
SlimLine S22.5	• 4I (standard and A/B modules) • 4A • 2I/2O (solid-state/relay outputs) • Counters[1)] • Ground-fault detection modules[1)]	✓	✓	--
SlimLine S45	• 4I/4O (solid-state/relay outputs) • 4I/4O with floating I/Os • 4I/3O (A/B modules) • 4I/4O (A/B modules Spec. 3.0)	✓	✓	--
F90 module	• 4I/4O (screw terminals) • 4I/4O (connection using Combicon connector) • 16I	✓	--	--
Flat module	• 4I/4O (screw terminals)	--	--	Integrated lugs for screw fixing

1) For more information about these modules
see "Modules with Special Functions" from page 2/58.

✓ Available

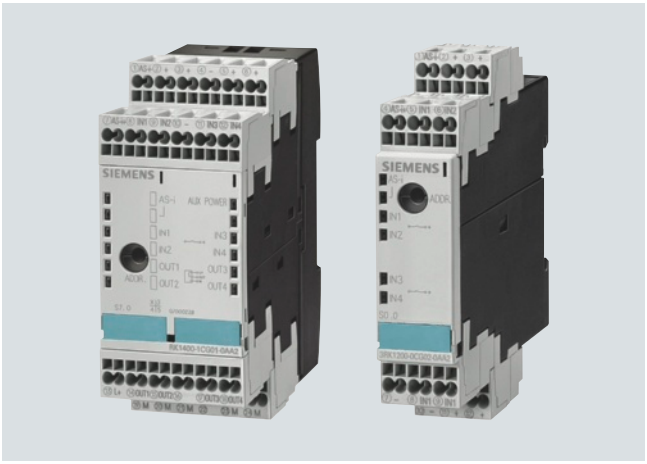
-- Not available

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I/O modules for use in the control cabinet SlimLine

Overview

SlimLine modules of the S22.5 and S45 series



SlimLine S45 modules (left) and S22.5 modules (right)

The AS-Interface series of modules for the "SlimLine" control cabinet with degree of protection IP20 creates space in the cabinet and in distributed local boxes.

For these modules the priority was placed on a narrow type of construction. They have a width of only 22.5 mm or 45 mm.

Standard sensors/actuators and the AS-Interface cable can be connected using removable screw-type or spring-type terminals.

Integrated adapters enable mounting onto a standard mounting rail. Disassembly from the standard mounting rail is quick and easy and requires no tools.

With an additional accessory (push-in lugs), the modules can also be screwed on.

All modules are fitted at the front with LEDs which indicate the module's status.

An addressing socket integrated at the front enables the module to be addressed also when it is installed.

In addition to the digital input/output modules there are modules of design S22.5 with special functions. These include:

- Counter modules
- Ground-fault detection modules

For more information about these modules see

- the section "Modules with special functions" on page 2/58
- Industry Mall: Section "Automation" → "SIRIUS Industrial Controls" → "Industrial Communication" → "AS-Interface" → "Slaves" → "Modules with Special Functions"

The new AS-Interface Specification 3.0 adds a number of completely new features to the AS-Interface bus system. The extended address mode (A/B addresses) enables the connection of up to 62 slaves on one AS-Interface network. With the extended address mode according to specification 3.0, four outputs are now possible for the first time even with A/B slaves (instead of only three outputs possible up to now with specification 2.1). Hence with full expansion of an AS-Interface network, there are now 248 inputs as well as 248 outputs available on one AS-Interface system.

Modules with four inputs and four outputs as A/B slaves according to specification 3.0 are also available as SlimLine modules S45.

Note:

Please note that the modules according to Specification 3.0 can be used only with a new master according to AS-Interface Specification 3.0 (e. g. the new DP/AS-i LINK Advanced or IE/AS-i LINK PN IO) and that the cycle times for the outputs can extend to max. 20 ms.

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Selection and ordering data



3RK1 200-0CE00-0AA2



3RK1 400-0BG00-0AA2



3RK1 400-1CG00-0AA2

Version					DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
S22.5 SlimLine modules • Inputs: PNP transistor • Width 22.5 mm										
Type	Connection	Slave type	Inputs	Outputs						
4 inputs	Screw	Standard	2-wire	--	▶	**3RK1 200-0CE00-0AA2**		1	1 unit	42C
		Standard	2- and 3-wire	--	▶	**3RK1 200-0CE02-0AA2**		1	1 unit	42C
		A/B slave	2- and 3-wire	--	▶	**3RK2 200-0CE02-0AA2**		1	1 unit	42C
	Spring-type	Standard	2-wire	--	A	**3RK1 200-0CG00-0AA2**		1	1 unit	42C
		Standard	2- and 3-wire	--	A	**3RK1 200-0CG02-0AA2**		1	1 unit	42C
		A/B slave	2- and 3-wire	--	A	**3RK2 200-0CG02-0AA2**		1	1 unit	42C
2 inputs/ 2 outputs	Screw	Standard	2-wire	PNP transistor 2 A	▶	**3RK1 400-0BE00-0AA2**		1	1 unit	42C
		Standard	2-wire	Relays	▶	**3RK1 402-0BE00-0AA2**		1	1 unit	42C
	Spring-type	Standard	2-wire	PNP transistor 2 A	B	**3RK1 400-0BG00-0AA2**		1	1 unit	42C
		Standard	2-wire	Relays	B	**3RK1 402-0BG00-0AA2**		1	1 unit	42C
4 outputs	Screw	Standard	--	PNP transistor 1 A	▶	**3RK1 100-1CE00-0AA2**		1	1 unit	42C
	Spring-type	Standard	--	PNP transistor 1 A	A	**3RK1 100-1CG00-0AA2**		1	1 unit	42C
S45 SlimLine modules • Inputs: PNP transistor • Width 45 mm										
Type	Connection	Slave type	Inputs	Outputs						
4 inputs/ 4 outputs	Screw	Standard	2- and 3-wire	PNP transistor 1 A	▶	**3RK1 400-1CE00-0AA2**		1	1 unit	42C
		Standard	2- and 3-wire	PNP transistor 2 A	▶	**3RK1 400-1CE01-0AA2**		1	1 unit	42C
		Standard	2- and 3-wire floating	PNP transistor 1 A floating	▶	**3RK1 402-3CE01-0AA2**		1	1 unit	42C
		Standard	2- and 3-wire	Relays	▶	**3RK1 402-3CE00-0AA2**		1	1 unit	42C
		A/B (Spec. 3.0)	2- and 3-wire	PNP transistor 2 A	A	**3RK2 400-1CE01-0AA2**		1	1 unit	42C
	Spring-type	Standard	2- and 3-wire	PNP transistor 1 A	A	**3RK1 400-1CG00-0AA2**		1	1 unit	42C
		Standard	2- and 3-wire	PNP transistor 2 A	B	**3RK1 400-1CG01-0AA2**		1	1 unit	42C
		Standard	2- and 3-wire floating	PNP transistor 1 A floating	A	**3RK1 402-3CG01-0AA2**		1	1 unit	42C
		Standard	2- and 3-wire	Relays	A	**3RK1 402-3CG00-0AA2**		1	1 unit	42C
		A/B (Spec. 3.0)	2- and 3-wire	PNP transistor 2 A	B	**3RK2 400-1CG01-0AA2**		1	1 unit	42C
4 inputs/ 3 outputs	Screw	A/B slave	2- and 3-wire	PNP transistor 2 A	▶	**3RK2 400-1FE00-0AA2**		1	1 unit	42C
	Spring-type	A/B slave	2- and 3-wire	PNP transistor 2 A	A	**3RK2 400-1FG00-0AA2**		1	1 unit	42C
Accessories										
Sealable covers To secure against unauthorized addressing					B	**3RP1 902**		1	5 units	41H
Push-in lugs For screw fixing					B	**3RP1 903**		1	10 units	41H

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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I/O modules for use in the control cabinet
F90 module

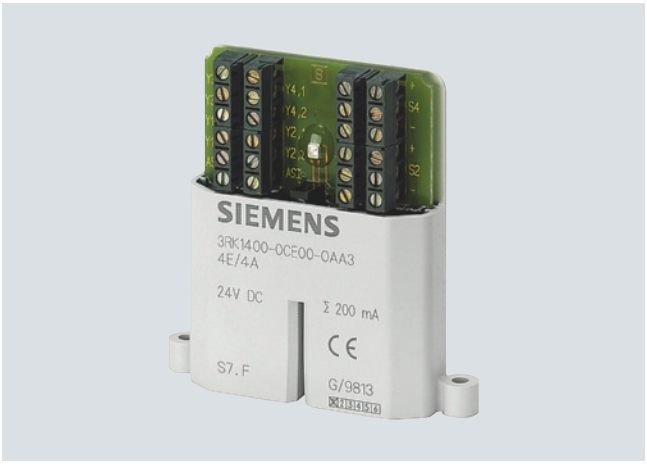
Selection and ordering data

Version				DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
 3RG9 002-0DB00	**F90 module** • Standard slave • Width 90 mm								
Type	Connection	Inputs	Outputs						
4 inputs/ 4 outputs	Screw	2- and 3-wire PNP transistor	PNP transistor 1 A	A	**3RG9 002-0DB00**		1	1 unit	42C
		2- and 3-wire PNP transistor	PNP transistor 2 A	A	**3RG9 002-0DA00**		1	1 unit	42C
		2- and 3-wire PNP transistor floating	PNP transistor 2 A	A	**3RG9 002-0DC00**		1	1 unit	42C
	Combicon	2- and 3-wire PNP transistor	PNP transistor 1 A	A	**3RG9 004-0DB00**		1	1 unit	42C
		2- and 3-wire PNP transistor	PNP transistor 2 A	A	**3RG9 004-0DA00**		1	1 unit	42C
		2- and 3-wire PNP transistor floating	PNP transistor 2 A	A	**3RG9 004-0DC00**		1	1 unit	42C
16 inputs	Screw	PNP transistor	--	A	**3RG9 002-0DE00**		1	1 unit	42C
	Combicon	PNP transistor	--	A	**3RG9 004-0DE00**		1	1 unit	42C
Accessories									
	Combicon connector sets For 4I/4O modules with Combicon connection; one set comprises: • 4 x 5-pole plug for connection • Standard sensors/actuators • 2 x 4-pole plug for AS-Interface and external auxiliary voltage			A	**3RX9 810-0AA00**		1	1 unit	42C

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



Flat module

The flat module for the control cabinet in degree of protection IP20 has 4 inputs and 4 outputs.

The module is fitted at the front with an LED which indicates the module's status.

With the integrated lugs, the modules can be screwed on.

An integrated addressing socket enables the module to be addressed when it is installed.

Standard sensors/actuators and the AS-Interface cable can be connected using screw terminals.

Selection and ordering data

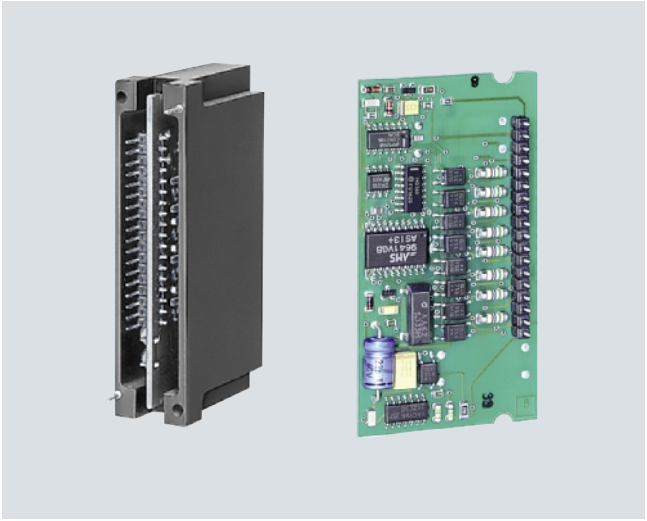
	Version	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
			Order No. Price per PU			
 3RK1 400-0CE00-0AA3	**Flat module** • 4 inputs/4 outputs • 200 mA for all I/Os	A	**3RK1 400-0CE00-0AA3**	1	1 unit	42C

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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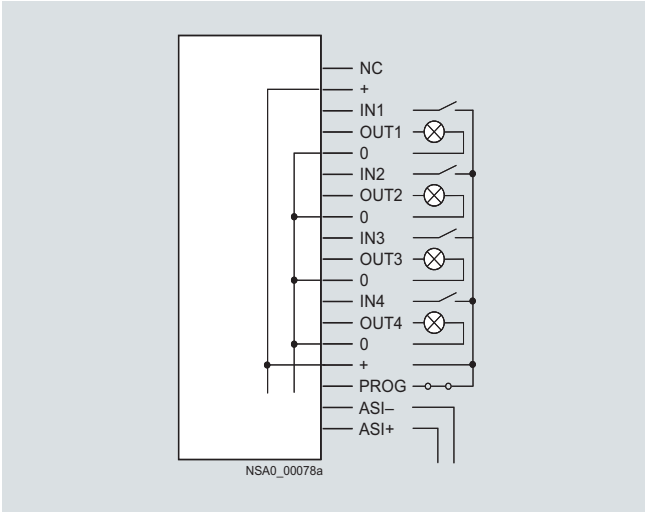
Overview

AS-Interface communication modules for printed circuit board installation



AS-Interface 3RK1 400-0CD00-0AA3 communication module (left)
AS-Interface 3RK2 400-1FD00-0AA2 communication cable (right)

3RK1 400-0CD00-0AA3 AS-Interface communication modules for printed circuit board installation



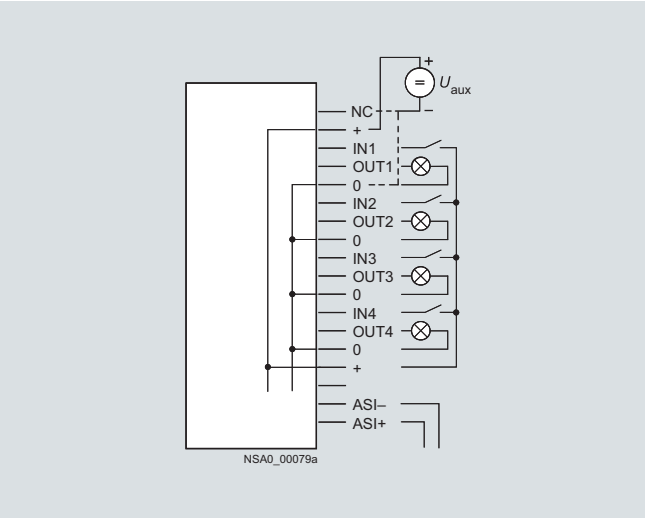
3RK1 400-0CD00-0AA3

With the 4I/4O module for printed circuit board mounting it is possible for up to four mechanical contacts to be queried or indicator lights to be operated, the necessary energy is being provided by the AS-Interface system (yellow AS-Interface cable).

Note:

If the switching outputs are overloaded, the module does not respond to invoking by a master.

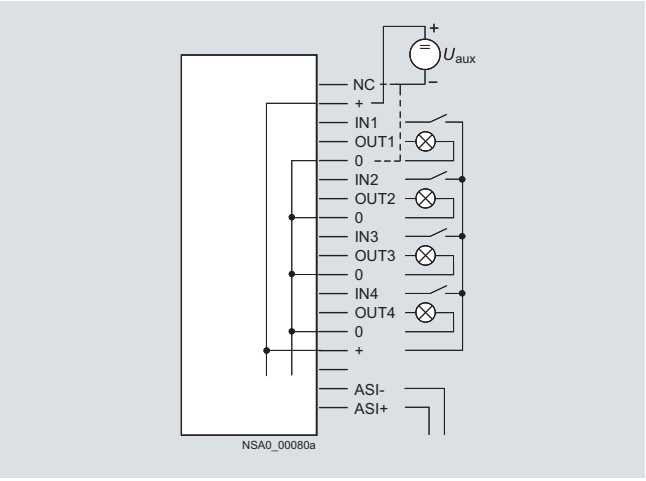
3RK1 400-0CD01-0AA3 AS-Interface communication modules for printed circuit board installation



3RK1 400-0CD01-0AA3

With the 3RK1 400-0CD01-0AA3 4I/4O module for printed circuit board mounting it is possible for up to four mechanical contacts to be queried or indicator lights to be operated, the necessary energy for the inputs and outputs is being provided from the auxiliary voltage (24 V PELV). If (+) is connected to U_{aux} + and (NC) to U_{aux} - , the outputs are not short-circuit and overload proof; if U_{aux} - is connected to (0), the outputs are overload and short-circuit proof (maximum summation current 200 mA). In this case the module does not respond even to invoking by a master when the switching outputs are overloaded.

3RG9 005-0SA00 AS-Interface communication modules for printed circuit board installation



3RG9 005-0SA00

With the 4I/4O module for printed circuit board mounting it is possible for up to four mechanical contacts to be queried or indicator lights to be operated, the power for inputs and outputs being provided from an auxiliary voltage (24 V PELV). If (+) is connected to U_{aux} + and (NC) to U_{aux} - , the outputs are not short-circuit and overload proof; if U_{aux} - is connected to (0), the outputs are overload and short-circuit proof (maximum summation current 200 mA). In this case the module does not respond even to invoking by a master when the switching outputs are overloaded.

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3RK1 400-1CD00-0AA2, 3RK2 400-1FD00-0AA2 AS-Interface communication modules for printed circuit board installation

Connection	Connection pad
AS-i +	27, 29
AS-i -	28, 30
Sensor+	17, 18, 23, 24
Sensor-	13, 14, 19, 20
IN1	21
IN2	22
IN3	15
IN4	16
U_{aux} + (L24+)	2, 4
U_{aux} - (M24)	1, 3
OUT1	9
OUT2	10
OUT3	5
OUT4	6 (not assigned for 3RK2 400-1FD00-0AA2 4I/3O module)
OUT-	7, 8
Not assigned	11, 12, 25, 26

With the 4I/4O or 4I/3O module for printed circuit board mounting it is possible for up to four mechanical contacts or 3-conductor sensors according to IEC 947-5-2 to be connected.
Up to four indicator lights via the 4I/4O module or up to three indicator lights via the 4I/3O module can also be controlled. The power for short-circuit proof solid-state switching outputs is provided from an auxiliary voltage (24 V PELV).

Mounting is very easy using a "Card Edge Board-to-Board Connector". This connector can be ordered for vertical and horizontal mounting from the company AMP, for example:

- 180° version for vertical mounting (AMP): Order No. 530843-2
- 90° version for horizontal mounting (AMP): Order No. 650118-1

If the inputs are loaded with more than 200 mA, the module does not respond to invoking by a master.

3RK1 200-0CD00-0AA2 AS-Interface communication modules for printed circuit board installation

Connection	Connection pad
AS-i +	27, 29
AS-i -	28, 30
Sensor+	17, 18, 23, 24
Sensor-	13, 14, 19, 20
IN1	21
IN2	22
IN3	15
IN4	16
Not assigned	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 25, 26

With the 4I module for printed circuit board mounting it is possible for up to four mechanical contacts or 3-conductor sensors to be connected, the power for inputs being provided from AS-Interface cable.

Mounting is very easy using a "Card Edge Board-to-Board Connector". This connector can be ordered for vertical and horizontal mounting from the company AMP, for example:

- 180° version for vertical mounting (AMP): Order No. 530843-2
- 90° version for horizontal mounting (AMP): Order No. 650118-1

If the inputs are loaded with more than 200 mA, the module does not respond to invoking by a master.

Selection and ordering data


3RK1 400-0CD00-0AA3


3RG9 005-0SA00

Version	Slave type	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
4 inputs/4 outputs							
• Supply of I/Os using AS-Interface cable (max. 200 mA) - Printed circuit board with solder pins, protected by enclosure	Standard	▶	**3RK1 400-0CD00-0AA3**		1	1 unit	42C
• Supply of I/Os using external auxiliary voltage (24 V PELV)							
- Printed circuit board with solder pins, protected by enclosure	Standard	D	**3RK1 400-0CD01-0AA3**		1	1 unit	42C
- Printed circuit board with solder pins for horizontal mounting	Standard	D	**3RG9 005-0SA00**		1	1 unit	42C
• Supply of outputs using external auxiliary voltage (24 V PELV) - Printed circuit board with gold-plated direct connector for 30-pole male connector socket for simple installation with direct connector	Standard	A	**3RK1 400-1CD00-0AA2**		1	5 units	42C
4 inputs/3 outputs • Supply of outputs using external auxiliary voltage (24 V PELV) - Printed circuit board with gold-plated direct connector for 30-pole male connector socket for simple installation with direct connector	A/B	B	**3RK2 400-1FD00-0AA2**		1	5 units	42C
4 inputs • Printed circuit board with gold-plated direct connector for 30-pole male connector socket for simple installation with direct connector	Standard	C	**3RK1 200-0CD00-0AA2**		1	1 unit	42C

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Overview



Counter module with spring-type terminals

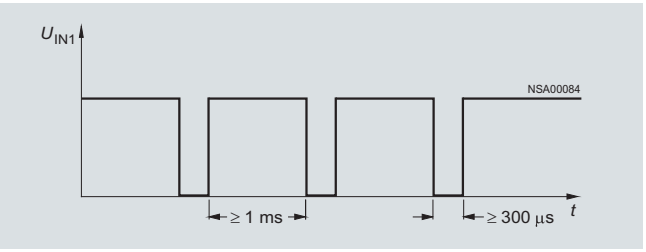
The counter module is used to send hexadecimally coded count values (LSB=D0, MSB=D3) to a higher-level controller. The count value is increased by one for each valid count pulse at terminal 8. Beginning at 0, the module counts up to 15 and then begins again at 0. The controller adopts the current value and determines the number of pulses between two host invocations through subtraction from the previous value. The total number of count pulses is determined by adding these differences.

For the values sent to be unambiguous, no more than 15 count values are allowed between two host invocations or AS-Interface master invocations at terminal 8. The maximum permissible transmission frequency is calculated from these times:

$f_{TRmax} = 15 / T_{max}$

T_{max} : max. possible transmission time from the slave to the host

Another condition for the maximum frequency is the required pulse shape. For the counter to accept a pulse as valid, a Low must have been applied at the input for at least 300 µs and a High for at least 1 ms.
This results in a maximum frequency of $f_{Zmax} = 1 / 1.3$ ms = 769 Hz independently of the control system (see figure).



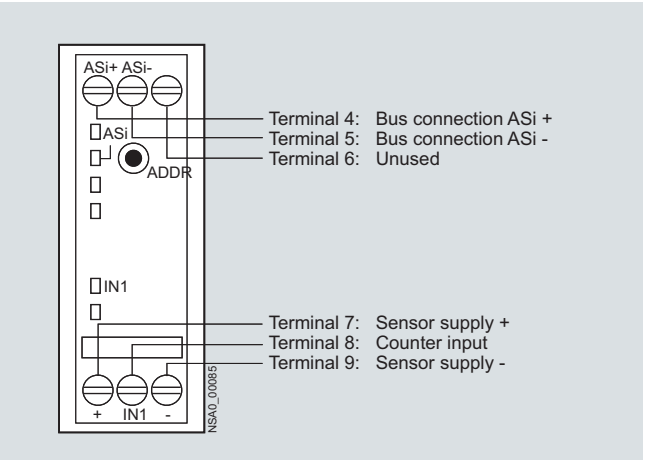
Maximum frequency for the counter module

If the time criterion stipulated in the graphic is violated, the count value is rejected.

The counter is active only for the reset parameter P2 (default). The counter is deleted when P2 is set, and the incoming count pulses are not registered until after P2 is reset again.

Note:

A customized function block is necessary or must be programmed.



Counter module connection options

Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Counter modules						
Width 22.5 mm						
• With screw terminals	A	**3RK1 200-0CE03-0AA2**		1	1 unit	42C
• With spring-type terminals	C	**3RK1 200-0CG03-0AA2**		1	1 unit	42C



3RK1 200-0CE03-0AA2



3RK1 200-0CG03-0AA2

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



Ground-fault detection modules

"Ground faults in any control circuit must not lead to unintentional starting or potentially hazardous movements or prevent the machine from stopping." (IEC 60204-1).

The AS-Interface ground-fault detection module is used to meet these requirements. Using this module from the SlimLine series, ground faults in AS-Interface systems can be reliably detected and reported.

The following ground faults are detected:

- Ground fault from AS-i "+"
- Ground fault from AS-i "-"
- Ground fault from sensors and actuators which are supplied from the AS-Interface voltage.

Note:

Not suitable for AS-Interface Power24V.

Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Ground-fault detection modules						
Width 22.5 mm						
• With screw terminals		**3RK1 408-8KE00-0AA2**		1	1 unit	42C
• With spring-type terminals		**3RK1 408-8KG00-0AA2**		1	1 unit	42C



3RK1 408-8KE00-0AA2

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Modules with special functions
Overvoltage protection modules

Overview



AS-Interface overvoltage protection module

The AS-Interface overvoltage protection module (protection module) protects downstream AS-Interface devices or individual sections in AS-i networks from conducted overvoltages which can be caused by switching operations and remote lightning strikes. The location of the protection module forms within the lightning protection zone concept the transition from zone 1 to 2/3. Direct lightning strikes must be coped with using additional protective measures at the transitions from lightning protection zone 0A to 1.

With the AS-Interface overvoltage protection module it is now also possible to integrate AS-Interface in the overall lightning protection concept of a plant or machine.

The module has the same design and degree of protection (IP67) as the AS-Interface K45 compact modules. It is a passive module without AS-i IC and as such does not need its own address on the AS-Interface network. The module can be used to protect the AS-Interface cable and the cable for the auxiliary voltage from overvoltage. Overvoltages are discharged through a ground cable with a green/yellow oil-proof outer sheath. This cable is fixed in the module and must be connected with low resistance to the system's ground.

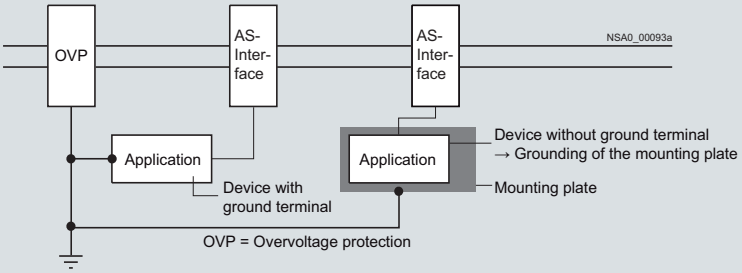
Rated discharge current I_{sn}

The rated discharge current is the peak value of a surge current of the form 8/20 µs (microseconds), for which the protection module is designed in accordance with a specified test program. With waveform 8/20, 100 % of the value is achieved after 8 µs and 50 % after 20 µs.

Protection level U_p

The protection level of a protection module is the highest momentary value of the voltage at the terminals, established in individual tests and characterizes the capability of a protection module to limit overvoltages to a residual level.

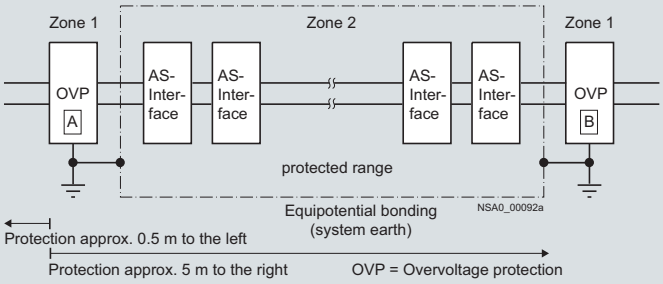
Configuration guidelines



The grounding of protection modules and the units to be protected must be effected through a shared grounding point.

If insulated devices are protected, their mounts must be included in the grounding points.

Sample application



Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
 **AS-Interface overvoltage protection module**	B	**3RK1 901-1GA01**		1	1 unit	42C

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Every LOGO! can now be connected to the AS-Interface system



AS-Interface connections for LOGO!

Using the AS-Interface connection for LOGO!, an intelligent slave can be integrated in the AS-Interface system. With the modular interface it becomes possible to integrate the different basic units in the system according to their functionality. Similarly, functionalities can be quickly and easily adapted to new requirements by exchanging the basic unit.

The interface module provides four inputs and four outputs on the system. These inputs and outputs do not actually exist in hardware terms, however, but are only virtually present through the interface on the bus.

Selection and ordering data

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
 3RK1 400-0CE10-0AA2	**AS-Interface connections for LOGO!** • 4 virtual inputs • 4 virtual outputs	A	**3RK1 400-0CE10-0AA2**		1	1 unit	42C

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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AS-Interface power supply units

Overview



AS-Interface power supply unit for 3 A

AS-Interface power supply units feed 30 V DC into the AS-Interface cable and supply the AS-Interface components. They include power-optimized data decoupling for the separation of communication signals and control supply voltage. As the result, AS-Interface is able to convey both data and power along a single line. The power supply units are resistant to overloads and short circuits.

Dimensions

AS-Interface power supply units have compact dimensions in widths of 50 / 70 / 120 mm. No distances from other devices need to be observed when mounting the power supply units.

Features

- Higher rating: The power supply units deliver currents of 2.6 to 8 A.
- Integrated data decoupling: As the result, AS-Interface is able to convey both data and power along a single line.
- Integrated ground-fault detection: The power supply units perform the reliable detection and signaling of ground faults according to IEC 60204-1. The AS-Interface voltage can be disconnected automatically in the event of a ground fault.
- Integrated overload detection: An output overload is detected and reported over a diagnostics LED.
- Diagnostics memory: Any ground faults or overloads on the output side are stored in a diagnostics memory until the device is reset.
- Remote reset and remote signaling: Using relay contacts, a ground fault can be signaled and evaluated by a central controller and/or indicator light.
- Diagnostics LEDs: Three different LEDs indicate the status of the AS-Interface power supply locally at the power supply unit.
- Ultra-wide input range / two-phase connection: The ultra-wide input range of 120 to 500 V of the 8 A version means that the supply units can be used in virtually any network worldwide. In addition, this version dispenses with the need for an N conductor as the device can be connected directly between 2 phases of a network.
- Operation with 24 V DC: The 3 A power supply unit is also available as a version with a 24 V DC input. This power supply unit is suitable for use in battery-powered systems or in systems with UPS (uninterruptible power supply).
- Removable terminal blocks with spring-type connections: For easy exchanging of devices, each power supply unit has three removable terminal blocks: for the input side, for the output side and for Signal/Reset connections.

Benefits

- Complete solution for supplying AS-Interface networks while making full use of the maximum possible cable length of 100 m or 200 m (with an extension plug) per AS-i Segment
- Only AS-i masters and AS-i slaves need to be connected to the AS-Interface cable in order to operate AS-Interface
- Compact, space-saving dimensions
- Reliable power supply even for large numbers of AS-Interface modules with a high power requirement
- Integrated ground-fault and overload detection saves the need for additional components and enhances safety
- Fast fault detection and reduced downtimes thanks to diagnostics memory, remote signaling and remote reset
- Reduced downtimes as the result of removable terminal blocks which enable the fast exchanging of devices
- Ultra-wide input range of the 8 A version permits single-phase and two-phase operation and saves the need for an N conductor
- Can be used world-wide thanks to for example UL/CSA approval (UL 508)
- With the 2.6 A version the output power is restricted to max. 100 W for use in NEC Class 2 circuits

Selection and ordering data



3RX9 501-0BA00



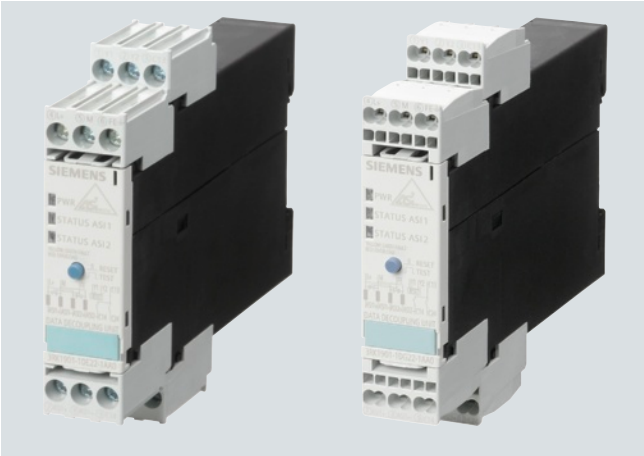
3RX9 503-0BA00

Version		DT	Spring-type terminals Order No.	PU (UNIT, SET, M) Price per PU	PS*	PG
AS-Interface power supply units, IP20 • AS-i single output 30 V DC • With integrated ground-fault detection • With the 2.6 A version the output power is restricted to max. 100 W (for use in NEC CLASS 2 circuits) • Dimensions: Width: 50 mm (3 A / 2.6 A); 70 mm (5 A), 120 mm (8 A); Height: 125 mm; Depth: 125 mm						
Output current	Input voltage					
2.6 A / max. 100 W	120 / 230 V AC (selectable)	▶	**3RX9 501-2BA00**	1	1 unit	42C
3 A	120 / 230 V AC (selectable)	▶	**3RX9 501-0BA00**	1	1 unit	42C
3 A	24 V DC	▶	**3RX9 501-1BA00**	1	1 unit	42C
5 A	120 / 230 V AC (selectable)	▶	**3RX9 502-0BA00**	1	1 unit	42C
8 A	120/ 230 ... 500 V AC (selectable)	▶	**3RX9 503-0BA00**	1	1 unit	42C

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Overview



AS-Interface S22.5 double data decoupling modules
Left: screw terminal version, Right: spring-type terminal version

With the aid of the S22.5 data decoupling module, the AS-Interface network can also be supplied with 24 V DC or 30 V DC from a standard power supply unit and the transmission of data and power can be realized along one cable.
The combination of data decoupling modules and standard power supply units is therefore a cost-efficient alternative to the service-proven AS-Interface power supply units.
The quality of the data signals and the reliable operation of the AS-i network are not negatively affected as the result.

Features of the S22.5 data decoupling module

- Degree of protection IP20
- Narrow design: 22.5 mm wide
- Version with screw or spring-type terminals
- Versions for single and double data decoupling
- Connection of several AS-Interface networks to one power supply unit is possible
- Operation with 24 V DC or 30 V DC, grounded or non-grounded
- Adjustable current limiting up to 2 x 4 A
- Integrated ground-fault detection with fault storage
- Diagnostics LEDs and signaling contacts
- Reset by button or remote reset

Ground-fault detection

The integrated ground-fault detection works with a grounded and non-grounded supply: The connection of negative pole and ground (upstream from the data decoupling module) customary with 24 V DC power supplies is permitted. A ground fault to the negative or positive pole on the AS-Interface network (downstream from the data decoupling module) is detected and stored as a fault and will be signaled using LEDs and a relay contact.

Benefits

- Compatible expansion of the AS-Interface system
- An existing standard power supply unit with 24 V DC or 30 V DC can be used for supplying AS-i networks
- The AS-Interface system can also be used in tightly budgeted applications because no AS-Interface power supply unit needs to be purchased
- Applications benefit in addition from the advantages of a modern bus system:
  - High level of standardization
  - Additional diagnostics and maintenance information
  - Faster commissioning
- Easy and cost-efficient construction of single and multiple networks is possible

Application

The AS-Interface data decoupling module is designed for AS-Interface networks with 30 V supply or 24 V supply (AS-Interface Power24V).

Operation of an AS-i network with the data decoupling module and a 30 V DC standard power supply unit is technically equivalent to the use of an AS-Interface power supply unit and offers the service-proven features of AS-Interface for all applications.

AS-Interface Power24V uses a 24 V DC power supply unit in conjunction with a data decoupling module and is particularly suitable for

- Compact machines using AS-Interface input/output modules
- Applications in the control cabinet for AS-Interface integration of SIRIUS Innovation contactors and compact feeders (3RT2 contactors through 3RA27 function modules or 3RA6 compact feeders through AS-i 3RA69 add-on modules)

When using the double data decoupling module or additional data decoupling modules, several AS-Interface networks can be operated with a single power supply unit. This results in an additional cost advantage.

Note:

The length of an AS-i Power24V network is restricted to 50 m in order to limit the voltage drop along the cable.

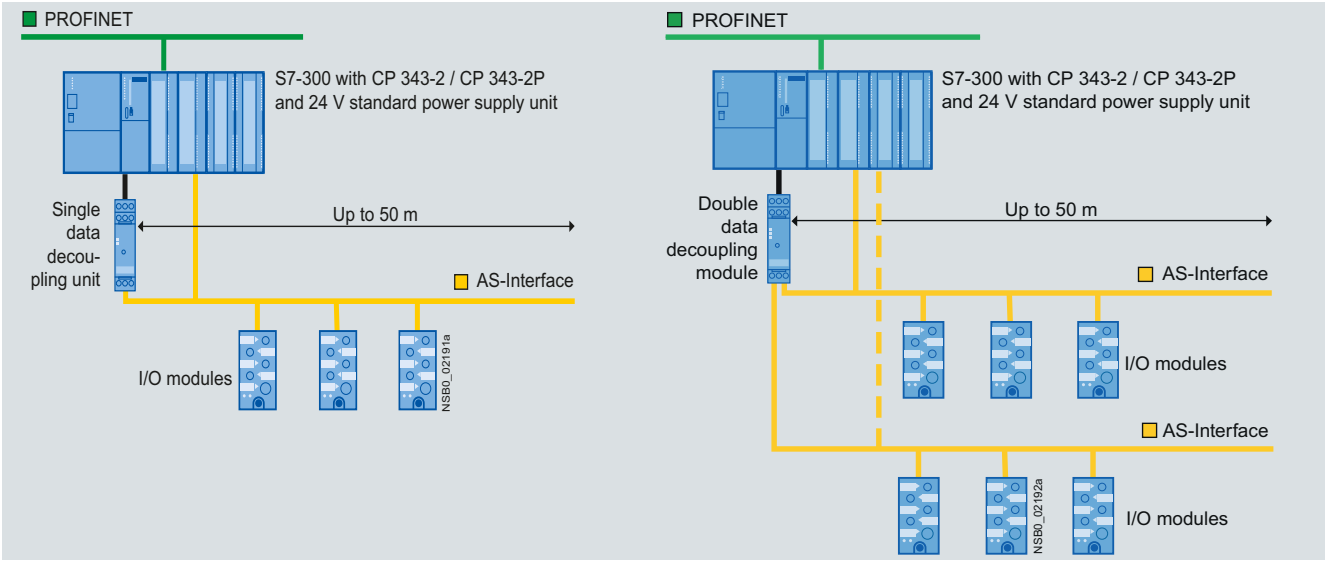
AS-i masters, AS-i slaves and the sensors and actuators supplied through the AS-i cable must be designed for the reduced voltage. Sensors and actuators for the standard voltage range of 10 to 30 V can be supplied with sufficient voltage.

The power supply units must comply with the PELV Standard (Protective Extra Low Voltage) and have a residual ripple of < 250 mVpp. We recommend power supply units from the SITOP range, see Chapter 15, "Products for Specific Requirements" → "Stabilized Power Supplies" → "SITOP 6EP Power Supplies".

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S22.5 data decoupling modules

Construction of an AS-i Power24V network with an AS-Interface S22.5 data decoupling module

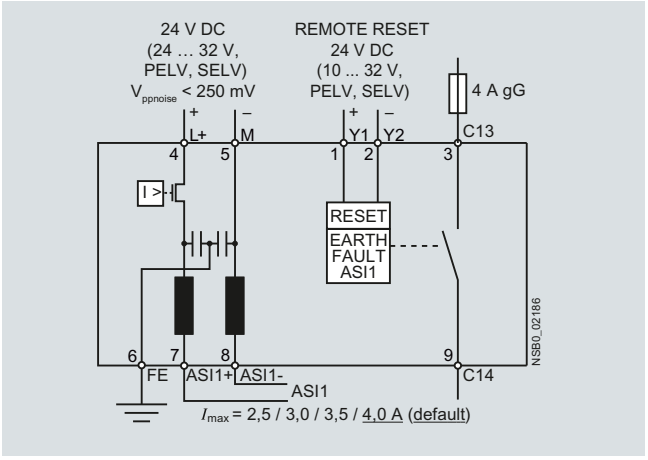


Construction of an AS-i Power24V network with an AS-Interface S22.5 data decoupling module: Left: single network, Right: multiple network

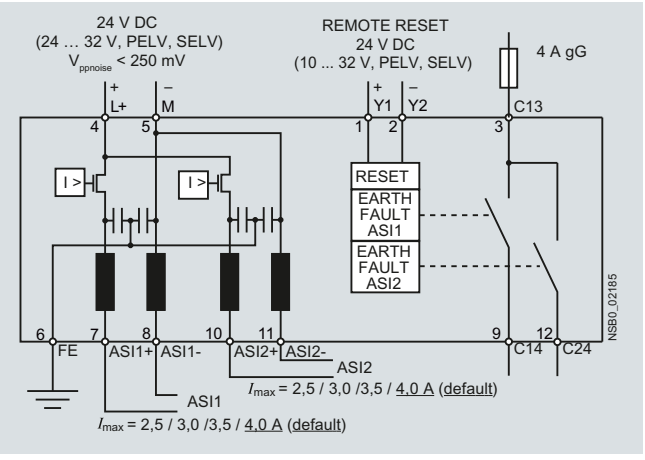
Selection and ordering data

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
 3RK1 901-1DE12-1AA0	**S22.5 data decoupling modules** With screw terminals, removable terminals, width 22.5 mm, height 101 mm, depth 115 mm		**Screw terminals**				
	• Single data decoupling module, 1 x 4 A	►	**3RK1 901-1DE12-1AA0**		1	1 unit	42C
	• Double data decoupling module, 2 x 4 A	►	**3RK1 901-1DE22-1AA0**		1	1 unit	42C
 3RK1 901-1DG12-1AA0	**S22.5 data decoupling modules** With spring-type terminals, removable terminals, width 22.5 mm, height 105 mm, depth 115 mm		**Spring-type terminals**				
	• Single data decoupling module, 1 x 4 A	►	**3RK1 901-1DG12-1AA0**		1	1 unit	42C
	• Double data decoupling module, 2 x 4 A	►	**3RK1 901-1DG22-1AA0**		1	1 unit	42C

Circuit diagrams



Single data decoupling module

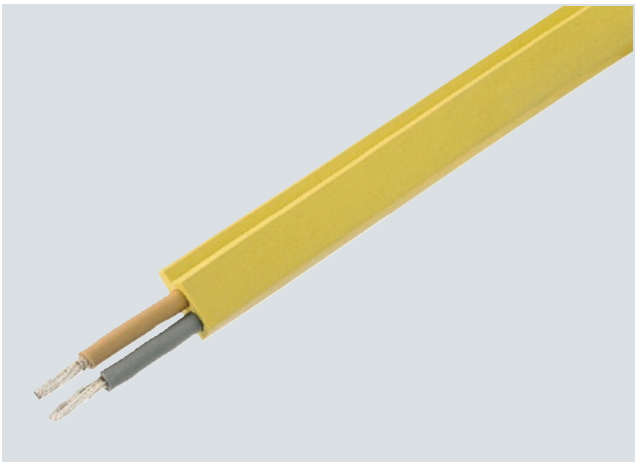


Double data decoupling module

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



AS-Interface shaped cables

The actuator-sensor interface - the networking system used for the lowest field area - is characterized by very easy mounting and installation. A new connection method was developed specially for AS-Interface.

The stations are connected using the AS-Interface cable. This two-wire AS-Interface shaped cable has a trapezoidal shape, thus ruling out polarity reversal.

Connection is effected by the insulation piercing method. In other words, male contacts pierce the shaped AS-Interface cable and make reliable contact with the two wires. Cutting to length and stripping are superfluous. Consequently, AS-Interface stations (e. g. I/O modules, intelligent devices) can be connected in the shortest possible time and exchanging devices is quick.

To enable use in the most varied ambient conditions (e. g. in an oily environment), the AS-Interface cable is available in different materials (rubber, TPE, PUR).

For special applications it is also possible to use an unshielded standard round cable H05VV-F 2x1.5 mm^2 according to AS-i Specification. With AS-Interface, data and energy for the sensors (e.g. proximity switches) and actuators (e.g. indicator lights) are transmitted over the yellow AS-Interface cable.

The black AS-Interface cable must be used for actuators with a 24 V DC supply (e. g. solenoid valves) and a high power requirement.

Suitable for operation in tow chains

The use of the AS-Interface shaped cables with TPE and PUR outer sheath was checked in a tow chain test with the following conditions:

Chain length	m	6
Travel	m	10
Bending radius	mm	75
Travel speed	m/s	4
Acceleration	m/s^2	4
Number of cycles		10 million
Duration of test		approx. 3 years (11000 cycles per day)

After termination of the 10 million cycles only slight wear was visible due to the lugs of the tow chain. No damage to the cores and core insulation could be detected.

Note:

When using a tow chain, the cables must be installed such that they are not subject to tensile forces. On no account may the cables be twisted, but must be routed flat through the tow chain.

Selection and ordering data



3RX9 0..-0AA00

Version			DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
AS-Interface shaped cables								
Material	Color	Quantity						
Rubber	Yellow (AS-Interface)	100-m roll	►	**3RX9 010-0AA00**		1	1 unit	42C
	Yellow (AS-Interface)	1-km drum	B	**3RX9 012-0AA00**		1	1 unit	42C
	Black (24 V DC)	100-m roll	►	**3RX9 020-0AA00**		1	1 unit	42C
	Black (24 V DC)	1-km drum	B	**3RX9 022-0AA00**		1	1 unit	42C
TPE	Yellow (AS-Interface)	100-m roll	►	**3RX9 013-0AA00**		1	1 unit	42C
	Yellow (AS-Interface)	1-km drum	B	**3RX9 014-0AA00**		1	1 unit	42C
	Black (24 V DC)	100-m roll	►	**3RX9 023-0AA00**		1	1 unit	42C
	Black (24 V DC)	1-km drum	B	**3RX9 024-0AA00**		1	1 unit	42C
TPE special version according to UL Class 2	Yellow (AS-Interface)	100-m roll	C	**3RX9 017-0AA00**		1	1 unit	42C
	Black (24 V DC)	100-m roll	C	**3RX9 027-0AA00**		1	1 unit	42C
PUR	Yellow (AS-Interface)	100-m roll	►	**3RX9 015-0AA00**		1	1 unit	42C
	Yellow (AS-Interface)	1-km drum	B	**3RX9 016-0AA00**		1	1 unit	42C
	Black (24 V DC)	100-m roll	►	**3RX9 025-0AA00**		1	1 unit	42C
	Black (24 V DC)	1-km drum	B	**3RX9 026-0AA00**		1	1 unit	42C

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

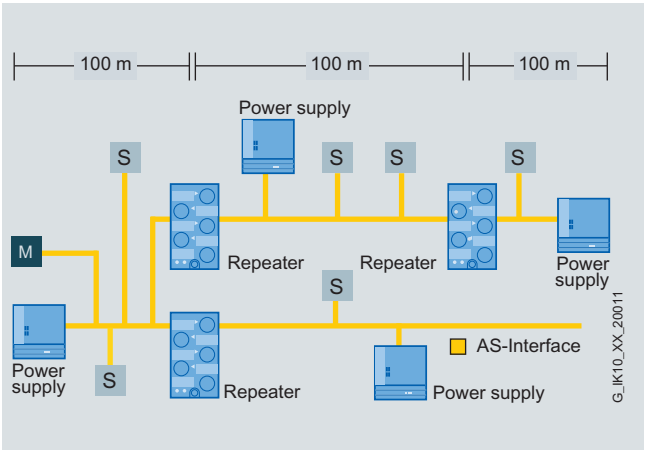
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Repeaters

Overview



AS-Interface repeater



Design of an AS-Interface network with repeaters (example)

AS-Interface repeaters are used for extending the AS-Interface cable by 100 m per repeater and have the following features:

- Maximum two repeaters in series
- Parallel switching of several repeaters possible (star configuration option)
- Maximum size increase of an AS-Interface network to up to 500 m is thus possible
- Easy mounting
- IP67 module enclosure

Design of an AS-Interface network with repeaters

- Slaves can be used on both sides of the repeater
- AS-Interface power supply is required on both sides
- Electrical separation of the two AS-Interface shaped cable lines
- Installed in K45 module enclosure with mounting plate
- Separate display of the correct AS-Interface voltage for each side
- Maximum two repeaters in series (max. cable length 300 m)
- Parallel switching of several repeaters possible (star configuration)
- Combination of series and parallel switching possible (max. range 500 m)

Benefits

- More possibilities of use and greater freedom for plant planning through extension of the AS-Interface network
- Reduced downtime and servicing times in the event of a fault thanks to separate display of the correct AS-Interface voltage for each side

Application

The repeater is used to lengthen the AS-Interface segment by 100 m. In this case there are AS-Interface slaves and one AS-Interface power supply on each side of the repeater.

Note:

The AS-Interface repeater is not suitable for AS-i Power24V networks. It is recommended for use in AS-Interface networks with AS-Interface power supply units (e. g. 3RX9 501-0BA00).

Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Repeaters for AS-Interface For cable extension, including mounting plate	B	**6GK1 210-0SA01**		1	1 unit	42C



6GK1 210-0SA01

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



AS-Interface extension plug (on AS-Interface M12 feeder)

With the extension plug/extension plug plus it is possible to double the cable length possible in an AS-Interface segment from 100 to 200 m.
The extension plug is a passive component, the extension plug plus is equipped in addition with an A/B slave.

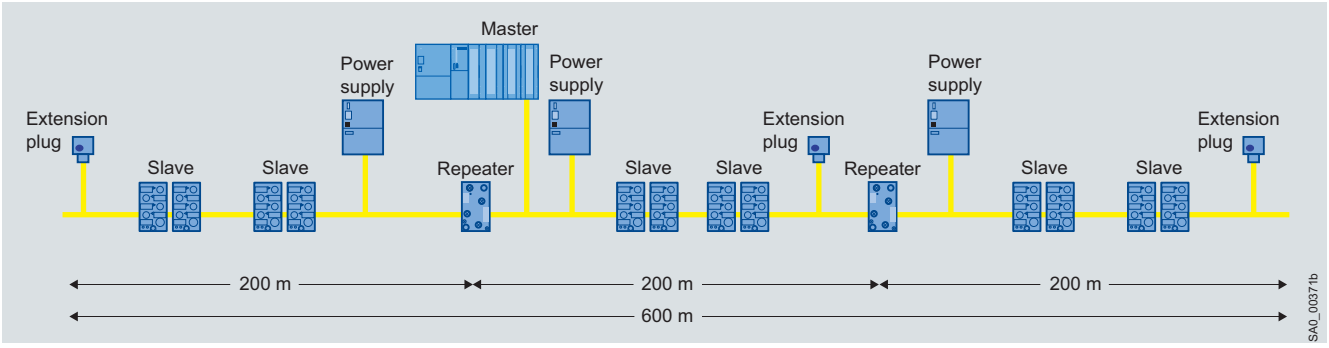
The extension plug / extension plug plus has an M12 plug and can be connected with it to the AS-Interface M12 feeder with degree of protection IP67. Only one power supply unit is needed to supply power to the slaves on the up to 200 m long segment.

Design of an AS-Interface segment with an extension plug

To construct an AS-Interface segment with a cable length of more than 100 m and up to a maximum of 200 m, the extension plug or extension plug plus is installed at that point of the network which in a range of approx. ±10 m is furthest from the AS-Interface power supply unit. The extension plug is not allowed to be used in AS-Interface networks smaller than 100 m. As with all AS-Interface networks, any network structure (line, tree, star) is possible when using the extension plug/extension plug plus. Only one extension plug/extension plug plus is required per 200 m segment even with a tree or star structure.

Note:

The AS-Interface extension plug and the extension plug plus are not suitable for AS-i Power24V networks. Both are recommended for use in AS-Interface networks with AS-Interface power supply units (e. g. 3RX9 501-0BA00).



Maximum network size with repeaters and extension plugs (master at center of network)

Selection and ordering data

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
 3RK1 901-1MX00	**AS-Interface extension plugs**[1)] • Doubling of the cable length to 200 m per AS-Interface segment • Undervoltage monitoring signal by means of diagnostics LED	▶	**3RK1 901-1MX00**		1	1 unit	42C
	AS-Interface extension plugs plus[1)] • Doubling of the cable length to 200 m per AS-Interface segment • Undervoltage monitoring signal through integrated AS-Interface slave to AS-Interface master	▶	**3RK1 901-1MX01**		1	1 unit	42C
Accessories							
 3RX9 801-0AA00	**AS-Interface M12 feeders** • Transition of shaped AS-Interface cable to a standard round cable • Insulation piercing method for connection of AS-Interface cable • M12 socket for connection of standard round cable • Degree of protection IP67	▶	**3RX9 801-0AA00**		1	1 unit	42C
 3RK1 901-1NR10	**AS-Interface M12 feeders** • Transition of AS-Interface cable without U_{aux}, with M12 socket • Insulation piercing method for connection of AS-Interface cable • M12 socket for connection of standard round cable • Max. 4A • Degree of protection IP67/IP68/IP69K	A	**3RK1 901-1NR10**		1	1 unit	42C

[1)] For connection to the AS-Interface flat cable you need the AS-Interface M12 feeder, which must be ordered separately, see section "Accessories".

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Addressing units

Overview



The innovated addressing unit for AS-Interface of the AS-i Specification V3.0

The addressing unit is used to assign an address during commissioning to each AS-Interface slave. The device detects a connected slave module or a complete AS-i network and displays the found module in the LCD display. Via the Up/Down keys each address can be individually set. By turning the rotary switch to the setting there are selected further commissioning functions intuitively. The innovative device has been adapted to the current AS-i Specification V3.0 and can now control the I/O data of the latest Slaves operator control.

Functionality

- Reading out and adjusting the slave address 0 to 31 or 1A to 31A, 1B to 31B, with automatic addressing aid and prevention of double addresses
- Reading out the slave profile (IO, ID, ID2)
- Reading out and adjusting the ID1 code
- Input/output test when commissioning the slaves:
  Read input signals and write outputs
  with all digital and analog slaves according to AS-Interface Specification V 3.0, including safe input slaves and complex CTT2 slaves
- Measuring the voltage on the AS-Interface cable (measuring range from 2 to 35 V)
- Display of the operational current in case of direct connection of an AS-i slave (measuring range from 0 to 150 mA)
- Storage of complete network configurations (profiles of all slaves) to simplify the addressing
- Adjusting the Slave parameters for commissioning
- Reading out the identification and diagnostics of CTT2 slaves
- Reading out the code table of safe input slaves (ASIsafe)

Note:

For operation of the addressing unit on an AS-Interface cable with connected power supply unit the following applies:
The AS-Interface addressing unit is suitable for standard AS-i networks and AS-i Power24V networks (operational voltage on the AS-Interface cable min. 19 V).

Benefits

- Increased power supply of the slaves to 150 mA
- Better utilization of the battery capacity thanks to improved circuitry
- Support for the current AS-i Specification V3.0
- Expanded display for simultaneous displaying input and output states
- Clearly recognizable display of status digital inputs/outputs in binary format (0 / 1), optionally also available as hexadecimal values
- Intuitive display of analog data either decimal, hexadecimal or as a percentage (e. g. 100 % corresponds to input/output value 20 mA)
- I/O data of complex slaves (CTT2 profile) can be displayed
- Decoded display of the input data of safe input slaves, including code table
- Simplification of the operating steps when setting the slave address with automatic read back of the set address
- Addressing cable, with even without screwing in tight into the M12 socket ready for operation, thus faster availability of the addressing unit
- Proven compact housing with smooth keys and rotary switch
- Connection of standard AS-i networks possible with 30 V as well as networks Power24V
- Complex slaves with high operating current can be addressed without external supply
- Longer operating time per battery pack
- Can be used with all types of digital and analog slaves
- Comprehensive and fast input/output test of plants, even if A/B modules with 4 DI / 4 DO and current analog modules with an A/B address
- Faster and more reliable commissioning of the AS-Interface modules
- One-hand operation possible, with unique selection of the functions
- Universal applicability for all AS-i networks

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Technical specifications

Parameters V=		3RK1 904-2AB02 AS-Interface addressing unit
Measuring range		
• Voltage	V	2 ... 35
• Current (for slaves)	A	0 ... 0.150
Measuring accuracy in % of the measured value		
• Voltage	%	± 3.5 + 2 digits
• Current (for slaves)	%	± 5 + 2 digits
Input resistance for voltage measurement	kΩ	300
Power supply		
Standard power supply		4 batteries 1.5 V type AA, IEC LR6 (NEDA15) or corresponding batteries (preferably NiMH)
Recommendation for current-intensive application		4 high-grade alkaline manganese batteries 1.5 V type AA
Automatic disconnection for a longer battery life		Approx. 5 minutes (or approx. 1 minute when data exchange is active) after last operation
Ambient conditions		
Ambient temperature	°C	0 ... +50
Storage temperature	°C	-20 ... +75 without batteries
Relative air humidity, max.	%	75, condensation not permitted
Altitude above sea level, max.	m	2000
Location		Only indoor
Mechanical design		
Degree of protection		IP40
Dimensions, W x H x D	mm	84 x 195 x 35
Connection		M12 socket: Pin 1: ASI+; Pin 3: ASI–; Pin 2, 4, 5: Not required
Weight with batteries	kg	0.450

Selection and ordering data

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
 3RK1 904-2AB02	**AS-Interface addressing unit V 3.0** • For AS-Interface modules and sensors and actuators with integrated AS-Interface in accordance with AS-i Specification V3.0 • For setting the AS-i address of standard slaves, and slaves with extended addressing mode (A/B slaves) • With input/output test function and many other commissioning functions • Battery operation with 4 batteries type AA (IEC LR6, NEDA 15) • Scope of supply: - Addressing unit with 4 batteries - Addressing cable, with M12 plug to addressing plug (hollow plug), length 1.5 m	▶	**3RK1 904-2AB02**		1	1 unit	42C
Accessories							
	Addressing cable, with M12 plug to addressing plug (hollow plug)[1] • Included in the scope of supply of the addressing unit • Length 1.5 m		**Z236A**		On request		
 3RK1 902-4PB15-3AA0	**Addressing cable, with M12 plug to M12 socket[2]** • For addressing slaves with M12 connection, e.g K20 or K60R modules or light curtains • Length 1.5 m, 3-pole, 3 x 0.34 mm²	C	**3RK1 902-4PB15-3AA0**		1	1 unit	42D
 3RX9 801-0AA00	**AS-Interface M12 feeders** • Transition of AS-Interface cable to a standard round cable • Insulation piercing method for connection of AS-Interface cable • M12 socket for connection of standard round cable	▶	**3RX9 801-0AA00**		1	1 unit	42C
 3RK1 901-1NR10	**AS-Interface M12 feeders** • Transition of AS-Interface cable without U_{aux}, with M12 socket • Insulation piercing method for connection of AS-Interface cable • M12 socket for connection of standard round cable	A	**3RK1 901-1NR10**		1	1 unit	42C
 3RK 1902-4HB50-5AA0	**Cable plug M12[3]** • Extruded M12 plug (angled cable feeder 90°), other cable end open • Length: 5 m, 5-pole, color: Black	C	**3RK1 902-4HB50-5AA0**		1	1 unit	42D
 3RK1 902-4BA00-5AA0	**M12 plug straight[3]** • For screw fixing, 5-pole screw terminal, max. 0.75 mm², • A-coded, max. 4 A	C	**3RK1 902-4BA00-5AA0**		1	1 unit	42D

[1] Can be ordered only via GMC-I Messtechnik GmbH, see Chapter 16, "Appendix" → "External partners"

[2] Not included in scope of supply of the 3RK1 904-2AB02 addressing unit

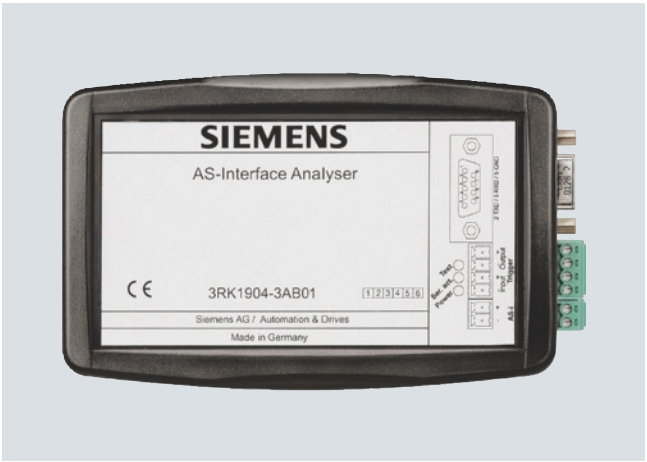
[3] For connecting the addressing unit to an AS-i network via AS-Interface M12 feeder a connecting cable (M12 plug to M12 connector) is produced and requires the following wiring:
- M12 cable plug Pin 1 / core brown <-> M12 plug: Pin 1
- M12 cable plug: Pin 3 / core blue <-> M12 plug: Pin 3
- Pin 2, 4, 5 not connected

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Analyzers

Overview



AS-Interface analyzers

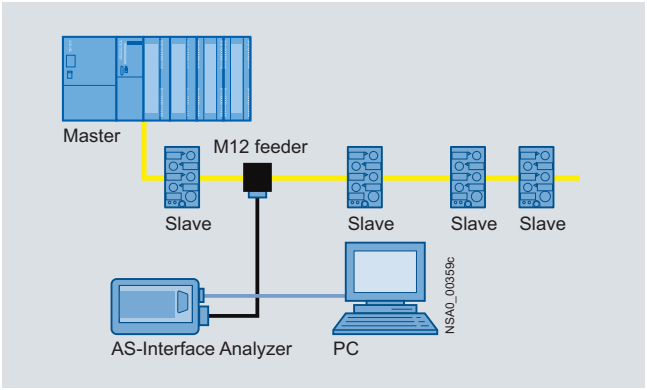
The AS-Interface analyzer is used to test AS-Interface networks. It enables systematic troubleshooting and permanent monitoring.

Installation errors, e. g. loose contacts or EMC interference under extreme loads, can be revealed by this device.

Thanks to the easy-to-use software the user can assess the quality of complete networks even if he lacks detailed specialist knowledge of AS-Interface. In addition it is an easy matter with the AS-Interface analyzer to create test logs from the records produced, thus providing documentation for start-ups and service assignments.

For advanced AS-Interface users there are trigger functions for detailed diagnostics.

Connection



The AS-Interface analyzer follows the communication on the AS-Interface network as a passive station. The unit is supplied simultaneously from the AS-Interface cable.

This analyzer interprets the physical signals on the AS-Interface network and records the communication.

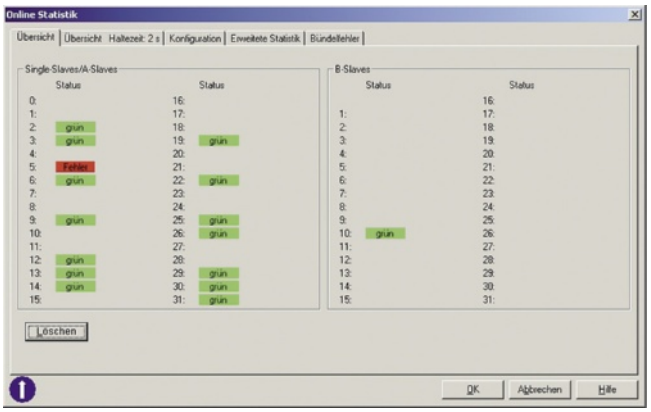
The data thus obtained are transferred through an RS 232 interface to a PC such as a notebook, for evaluation with the supplied diagnostics software.

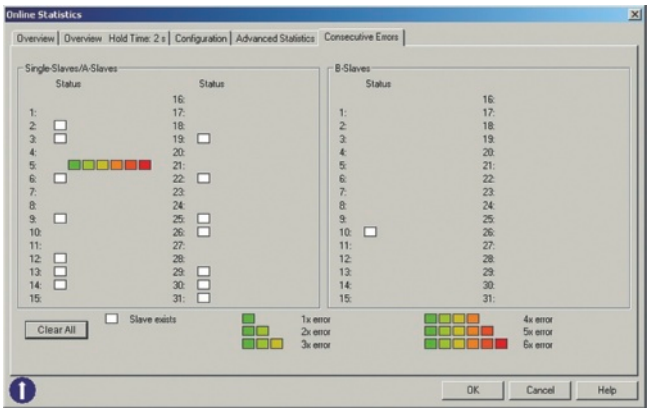
Benefits

- Simple and user-friendly operation enables diagnostics of AS-Interface networks without help from specialists
- Speedy troubleshooting thanks to intuitive display in statistics mode
- Test logs provide verification of the state and quality of the installation for service and approval
- Recorded logs facilitate remote diagnostics by technical assistance
- Comprehensive trigger functions enable exact analysis
- Process data can be monitored online

Application

Online statistics





This mode provides a quick overview of the existing AS-Interface system. The error rates are presented per slave in a traffic-light function (green, yellow, red).

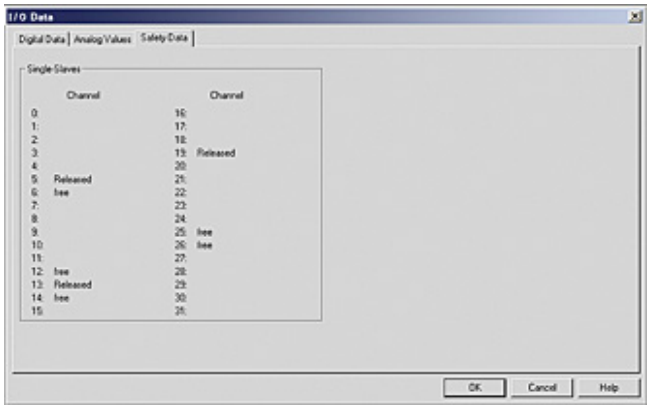
The bus configuration and the currently transmitted data of the slaves are shown in a well arranged presentation.

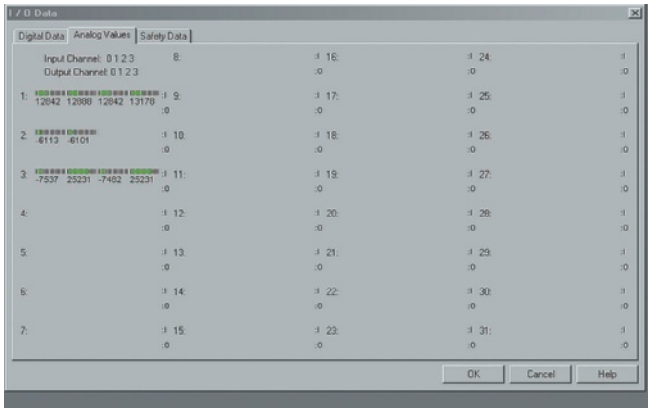
With the expanded statistics function it is possible to determine the error rates as the number of transmitted or faulty bus message frames.

The bundle error overview shows in steps how many multiple repetitions of message frames occurred in order to enable a selective and look-ahead assessment of the transmission quality.

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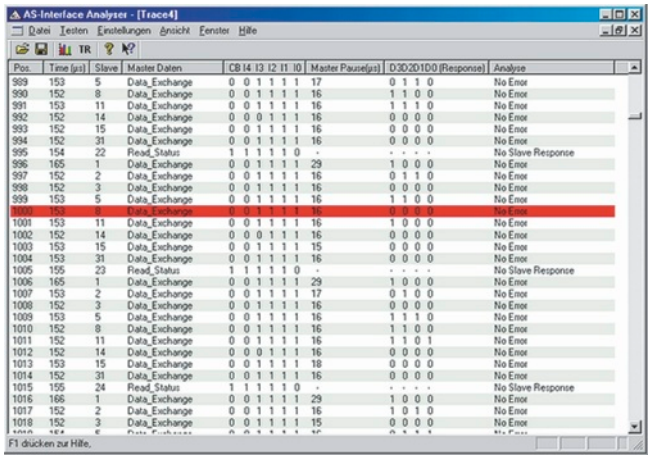
Data mode





In this mode the analyzer now shows not only the digital input/output values but also the current analog values and the input status of the safety slaves.

Trace mode

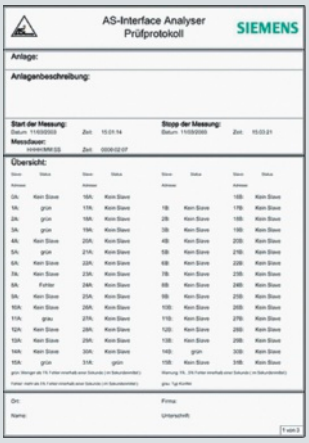


The presentation of message frames in the style of a classic field bus analyzer is indispensable for complex troubleshooting. Extensive trigger functions and recording and viewing filters are available for this purpose.

An external trigger input and trigger output round off the scope of functions in order to find even the most difficult errors.

For troubleshooting in connection with safety monitor applications, changes of status in the code tables of safety slaves are identified and assessed.

Test log



The recorded data of the online statistics are easy to output and document using a test log. Verification of the state of the plant can thus be provided for approvals or service assignments.

The new measurement assistant records the bus signals for an adjustable period, automating the creation of the test log. A standardized quality test of AS-i plants is thus possible.

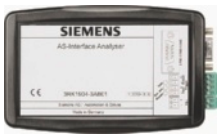
Note:

The AS-Interface analyzer is suitable for standard AS-i networks and AS-i Power24V networks (operational voltage min. 20 V).

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Analyzers

Selection and ordering data

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
 3RK1 904-3AB01	**AS-Interface analyzers** • For testing actuator/sensor interface systems • For service assignments in installations and networks with AS-Interface systems • Dimensions (W x H x D): 145 x 30 x 92 mm • Scope of supply: - AS-Interface analyzers - RS 232 cable for connecting to PC - USB/serial adapter / RS 232 adapter - Screwdriver - Magnetic adhesive tape for fastening the analyzer to metal surfaces - Service case with foam insert, dimensions (W x H x D / mm): approx. 260 x 70 x 200 - Diagnostics software (CD-ROM) for PC (Windows 95/98, ME, 2000, NT, XP, Vista Home Basic, Home Premium, Business, Ultimate, Windows 7)	►	**3RK1 904-3AB01**		1	1 unit	42C
Accessories							
	USB/serial adapters • For connection to a USB port of a PC • USB/serial adapter included in scope of supply of the 3RK1 904-3AB01 analyzer	B	**3UF7 946-0AA00-0**		1	1 unit	42J
 3RX9 801-0AA00	**AS-Interface M12 feeders** • Transition of shaped AS-Interface cable to a standard round cable • Insulation piercing method for connection of AS-Interface cable • M12 socket for connection of standard round cable • Degree of protection IP67	►	**3RX9 801-0AA00**		1	1 unit	42C
 3RK1 901-1NR10	**AS-Interface M12 feeders** • Transition of AS-Interface cable without U_{aux}, with M12 socket • Insulation piercing method for connection of AS-Interface cable • M12 socket for connection of standard round cable • Max. 4A • Degree of protection IP67/IP68/IP69K	A	**3RK1 901-1NR10**		1	1 unit	42C
 3RK1 902-4HB50-5AA0	**M12 cable plugs** • Cable: PUR, 5-pole • Length: 5 m • Color: Black • Extruded M12 plug (angled cable feeder 90°), other cable end open	C	**3RK1 902-4HB50-5AA0**		1	1 unit	42D

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
AS-Interface system manual Technical information and overview of the AS-Interface product range from Siemens, scope: approx. 600 pages						
• German edition, print version (black&white print)[1]	B	**3RK2 703-3AB02-1AA1**		1	1 unit	42C
• English edition, print version (black&white print)[1]	B	**3RK2 703-3BB02-1AA1**		1	1 unit	42C
AS-Interface compact distributors, for AS-Interface shaped cable • Current carrying capacity up to 8 A • Degree of protection IP67/IP68/IP69K	A	**3RK1 901-1NN10**		1	1 unit	42C
AS-Interface M12 feeders • Degree of protection IP67						
For shaped cable: AS-i; For: M12 socket; Cable length: --; Cable end in feeder: Available	▶	**3RX9 801-0AA00**		1	1 unit	42C
AS-Interface M12 feeders • Degree of protection IP67/IP68/IP69K						
For shaped cable: AS-i; For: M12 socket; Cable length: --; Cable end in feeder: Not available	A	**3RK1 901-1NR10**		1	1 unit	42C
For shaped cable: AS-i; For: M12 cable box; Cable length: 1 m; Cable end in feeder: Not available	A	**3RK1 901-1NR11**		1	1 unit	42C
For shaped cable: AS-i; For: M12 cable box; Cable length: 2 m; Cable end in feeder: Not available	A	**3RK1 901-1NR12**		1	1 unit	42C
For shaped cable: AS-i / U_{aux}; For: M12 socket; Cable length: --; Cable end in feeder: Not available	A	**3RK1 901-1NR20**		1	1 unit	42C
For shaped cable: AS-i / U_{aux}; For: M12 cable box; Cable length: 1 m; Cable end in feeder: Not available	A	**3RK1 901-1NR21**		1	1 unit	42C
For shaped cable: AS-i / U_{aux}; For: M12 cable box; Cable length: 2 m; Cable end in feeder: Not available	A	**3RK1 901-1NR22**		1	1 unit	42C
AS-Interface M12 feeders, 4-fold **Degree of protection IP67**						
For shaped cable: AS-i / U_{aux}; For: 4-fold M12 socket delivery includes coupling module; Cable length: --; Cable end in feeder: Not available	A	**3RK1 901-1NR04**		1	1 unit	42C
M12-T distributors • IP68 • 1 x M12 plug • 2 x M12 box	C	**3RK1 901-1TR00**		1	1 unit	42C
M12 Y-shaped coupler plugs For connection of two sensors to one M12 socket with Y assignment	A	**6ES7 194-1KA01-0XA0**		1	1 unit	250



3RK2 703-3AB02-1AA1


3RK1 901-1NN10


3RX9 801-0AA00


3RK1 901-1NR10


3RK1 901-1NR11


3RK1 901-1NR04


3RK1 901-1TR00


6ES7 194-1KA01-0XA0

[1] Free-of-charge download from the Internet at http://support.automation.siemens.com/WW/view/en/26250840

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Miscellaneous accessories

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
 3RK1 901-1KA00	**AS-Interface sealing caps M12** For free M12 sockets	►	**3RK1 901-1KA00**		100	10 units	42C
 3RK1 901-1KA01	**AS-Interface sealing caps M12, tamper-proof** For free M12 sockets	A	**3RK1 901-1KA01**		100	10 units	42C
 3RK1 901-1PN00	**AS-Interface sealing caps M8** For free M8 sockets	A	**3RK1 901-1PN00**		100	10 units	42C
 3RK1 901-1MD00	**AS-Interface seals M20** • For AS-Interface cable, shaped • For insertion in M20 glands	A	**3RK1 901-1MD00**		100	10 units	42C
 3RK1 901-3QM00	**Cable adapters for flat cables** Connection of AS-Interface cable to metric gland with insulation piercing method • Continuation using standard cable						
	- For M16 gland	B	**3RK1 901-3QM00**		1	1 unit	42C
	- For M20 gland	B	**3RK1 901-3QM10**		1	1 unit	42C
	• Continuation using pins						
	- For M16 gland	B	**3RK1 901-3QM01**		1	1 unit	42C
	- For M20 gland	B	**3RK1 901-3QM11**		1	1 unit	42C
 3RK1 901-3QA00	**Cable clips for cable adapters**	►	**3RK1 901-3QA00**		100	10 units	42C
 3RK1 901-1MN00	**Cable terminating pieces** For sealing of open cable ends (shaped AS-Interface cable) in IP67	►	**3RK1 901-1MN00**		1	10 units	42C
 3RK1 901-2EA00	**K45 mounting plates**						
	• For wall mounting	►	**3RK1 901-2EA00**		1	1 unit	42C
	• For standard rail mounting	►	**3RK1 901-2DA00**		1	1 unit	42C
 3RK1 901-0CA00	**K60 mounting plates**						
	Suitable for all K60 compact modules	►	**3RK1 901-0CA00**		1	1 unit	42C
	• For wall mounting	►	**3RK1 901-0CB01**		1	1 unit	42C
	• For standard rail mounting						

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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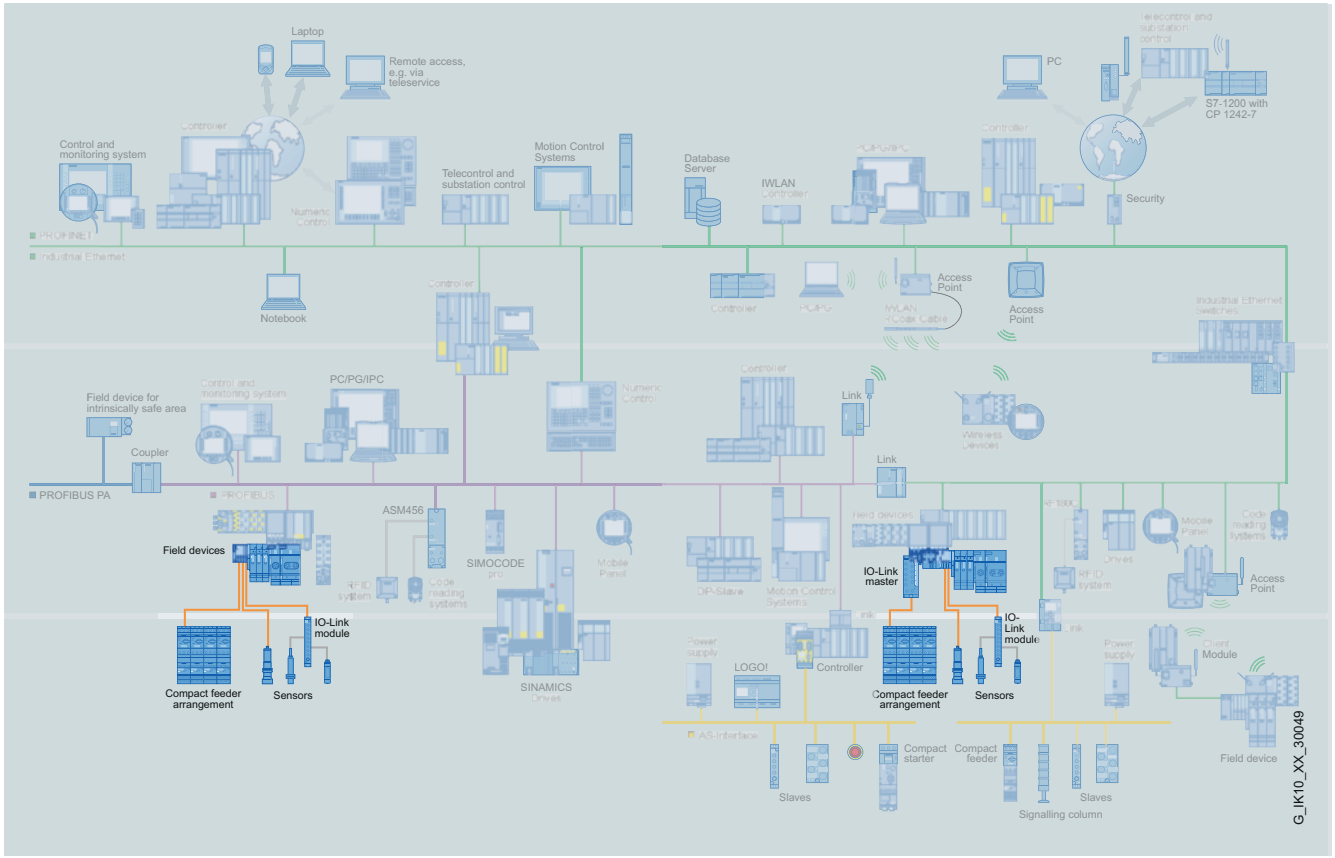
	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
 3RK1 902-0AR00	**Sealing sets** • For K60 mounting plate and standard distributor • Cannot be used for K45 mounting plate • One set contains one straight and one shaped seal	A	**3RK1 902-0AR00**		100	5 units	42D
	Inscription labels • For K45 and K60 compact modules • 20 x 9 mm, pastel turquoise • 19 frames with 20 labels each	C	**3RT1 900-1SB50**		100	380 units	41B
 3RK1 902-4GB50-4AA0	**Control cables, assembled at one end** Angular M12 socket for screw fixing, 4-pole, 4 x 0.34 mm^2 A-coded, black PUR sheath, max. 4 A • Cable length 5 m	C	**3RK1 902-4GB50-4AA0**		1	1 unit	42D
 3RK1 902-4CA00-4AA0	**Angular M12 socket** for screw fixing, 4-pole screw terminals, max. 0.75 mm^2, A-coded, max. 4 A	C	**3RK1 902-4CA00-4AA0**		1	1 unit	42D
 3RK1 902-4BA00-5AA0	**M12 plugs** For screw fixing, 5-pole screw terminals, max. 0.75 mm^2, A-coded, max. 4 A	C	**3RK1 902-4BA00-5AA0**		1	1 unit	42D
 3RK1 902-4DA00-5AA0	**M12 plugs, angled** For screw fixing, 5-pole screw terminals, max. 0.75 mm^2, A-coded, max. 4 A	C	**3RK1 902-4DA00-5AA0**		1	1 unit	42D
 3RK1 902-4H...-5AA0	**Control cables, assembled at one end** M12 plugs, angled, for screw fixing, 5-pole, 5 x 0.34 mm^2, A-coded, black PUR sheath, max. 4 A						
	• Cable length 1.5 m	C	**3RK1 902-4HB15-5AA0**		1	1 unit	42D
	• Cable length 5 m	C	**3RK1 902-4HB50-5AA0**		1	1 unit	42D
	• Cable length 10 m	C	**3RK1 902-4HC01-5AA0**		1	1 unit	42D
 3RK1 902-4PB15-3AA0	**Control cable, assembled at both ends** Straight M12 plug, straight M12 socket, for screw fixing, 3-pole, 3 x 0.34 mm^2, A-coded, black PUR sheath, max. 4 A • Cable length 1.5 m • Also for addressing AS-i slaves with M12 bus connection (e. g. K20, K60R compact modules, M200D motor starters)	C	**3RK1 902-4PB15-3AA0**		1	1 unit	42D

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

IO-Link is a new communication standard for sensors and actuators - defined by the Profibus User Organization (PNO). IO-Link technology is based on the point-to-point connection of sensors and actuators to the control system. Extensive parameter and diagnostics data are transmitted in addition to the cyclic operating data for the connected sensor/actuators. The simple, unshielded three-wire cable customary for standard sensors is used for this purpose.



Compatibility of IO-Link

IO-Link guarantees compatibility between IO-Link-capable modules and standard modules as follows:

- IO-Link sensors can be operated both on IO-Link modules (master) and standard input modules.
- IO-Link sensors/actuators as well as today's standard sensors/actuators can be used on IO-Link masters.
- If conventional components are used in the IO-Link system, then of course only the standard functions are available at this point.

Enhanced through IO-Link input modules

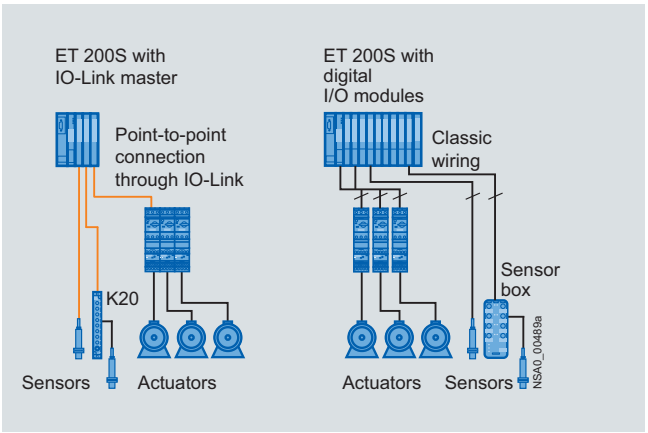
IO-Link compatibility also permits connection of standard sensors/actuators, i. e. conventional sensors/actuators can also be connected to IO-Link. This is particularly effective with the IO-Link input modules, which allow several sensors to be connected at one time via a cable to the controller.

Analog signals

Another advantage of IO-Link technology is that analog signals are digitized already in the IO-Link sensor itself and are digitally transmitted by the IO-Link communication. As the result, faults are prevented and there is no extra cost for cable shielding.

Load Feeders and Motor Starters

Through IO-Link it is possible to control not only sensors but also actuators in the form of load feeders and motor starters.



Possibilities for connecting load feeders and motor starters to IO-Link or in the conventional way

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Overview



IO-Link product family

Benefits

The IO-Link system offers decisive advantages for connecting complex (intelligent) sensors/actuators:

- Dynamic changing of sensor/actuator parameters directly by the PLC
- Consistent storage of parameters enables devices to be exchanged during operation, without a PC or programming device, through re-parameterization from the PLC
- Fast commissioning thanks to central data storage
- Consistent diagnostics information as far as the sensor/actuator level
- Uniform and greatly reduced wiring of different sensors/actuators/controls
- Integrated communication: Transmission of process data and service data between sensors/actuators and the control system
- Uniform and transparent configuring and programming through use of a parameterization tool integrated in SIMATIC STEP 7 (Port Configurator Tool, PCT)
- Transparent representation of all parameter and diagnostics data

Application

IO-Link can be used in the following main applications:

- Easy connection of complex IO-Link sensors/actuators with a large number of parameters and diagnostic data to the control system
- Replacement of sensor boxes for connecting binary sensors with the IO-Link input modules optimized in terms of cabling
- Wiring-optimized connection of controls to the control system

In these cases, all the diagnostics data are transmitted to the higher-level control system through IO-Link. The parameter settings can be changed during operation. Central data storage means that it is possible to exchange an IO-Link sensor/actuator without a PC or programming device.

Integration in STEP 7

Integration of the device configuration in the STEP 7 environment guarantees:

- Easy and quick engineering
- Consistent data storage
- Speedy locating and rectifying of faults

IO-Link components

IO-Link masters



IO-Link 4SI electronic module

Masters

IO-Link master modules for ET 200S

- IO-Link 4SI electronic modules
- SIRIUS 4SI electronic modules

IO-Link master modules for ET 200eco PN

IO-Link devices



IO-Link K20 module with 4 inputs

Input modules

IO-Link K20 modules

- IO-Link general input modules
- IO-Link K20 modules

Industrial Controls



SIRIUS 3RA27 11 function module for IO-Link

Contactors and contactor assemblies

Power contactors for switching motors

- SIRIUS 3RT2 contactors, 3-pole, up to 18.5 kW

Contactor assemblies

- SIRIUS 3RA23 reversing contactor assemblies
- SIRIUS 3RA24 contact. assemb. for wye-delta starting

SIRIUS 3RA27 function module for IO-Link

- For direct-on-line starters
- For reversing starters
- For wye-delta starters

See Chapter 3



SIRIUS 3RB24 overload relay

Overload relays

SIRIUS 3RB24 solid-state overload relays for IO-Link

- Evaluation modules
- Current measuring modules from 0.3 to 630 A
- Controlling direct-on-line, reversing and wye-delta starters via IO-Link in conjunction with contactors
- Full motor protection
- Diagnostics and current value transmission via IO-Link

See Chapter 7



SIRIUS 3RA64 direct-on-line starter

Motor starters for use in the control cabinet

SIRIUS 3RA6 compact feeders

- 3RA64 direct-on-line starters
- 3RA65 reversing starters
- Infeed systems for 3RA6

See Chapter 8



3UG48 monit. relay

Monitoring relays

SIRIUS 3UG48 monitoring relays for stand-alone installation for IO-Link

- Monitoring voltage, current, power, speed or p.f. according to device design
- On/tripping delay time can be adjusted
- Can be digitally configured on the device and via IO-Link

See Chapter 10



3RS14/3RS15 temperature monitoring relay

SIRIUS 3RS14, 3RS15 temperature monitoring relay for IO-Link

- Temperature monitoring with connected sensors
- Two limit values, can be adjusted separately
- Can be digitally configured on the device and via IO-Link

See Chapter 10

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IO-Link master modules for ET 200S
IO-Link 4SI electronic modules

Overview



IO-Link 4SI electronic module for ET 200S

The 4SI IO-Link electronic module is an IO-Link master and enables easy integration of sensors and actuators from different manufacturers in the SIMATIC ET 200S multifunctional, distributed I/O system at a total of four ports.

Features

- Up to 4 IO-Link devices (3-wire connection) can be connected to each IO-Link master module.
- Up to 4 standard sensors (2-wire/3-wire connection) can be connected.
- The 4SI IO-Link electronic module has a width of 15 mm and can be used with the following universal terminal modules:
  - TM-E15S26-A1 (screw terminals)
  - TM-E15C26-A1 (spring-type terminals)
  - TM-E15N26-A1 (Fast Connect)
- Supports firmware update (STEP 7 V5.4 SP4 and higher).

Selection and ordering data

	Version	Connection	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
 6ES7 138-4GA50-0AB0	**IO-Link 4SI electronic modules**	Screw terminals, spring-type terminals or Fast Connect	A	**6ES7 138-4GA50-0AB0**		1	1 unit	250

Accessories

	Version	Connection	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	Universal terminal modules for ET 200S							
	• TM-E15S26-A1	Screw terminals	A	**6ES7 193-4CA40-0AA0**		1	1 unit	250
	• TM-E15C26-A1	Spring-type terminals	A	**6ES7 193-4CA50-0AA0**		1	1 unit	250
	• TM-E15N26-A1	Fast Connect	A	**6ES7 193-4CA80-0AA0**		1	1 unit	250

More information

The product manual "ET 200S for IO-Link 4SI Electronic Modules" is available on the Internet, see the opening information on page 13.

More information and technical specifications
see Industry Mall under
"Automation" → "Industrial Communication"
→ "IO-Link" → "Masters" → "IO-Link Master Modules for ET 200S".

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Overview



SIRIUS 4SI electronic module for ET 200S

The 4SI SIRIUS electronic module allows the simple and cost-effective connection of SIRIUS devices with the IO-Link to the multi-functional, distributed peripheral system SIMATIC ET 200S at a total of four ports.

Features

- Up to 4 SIRIUS devices can be connected on to the 4 ports of the 4SI SIRIUS electronic module.
  3RA6 compact feeders or load feeders with 3RA27 function modules can even be bundled in groups of 4 devices on one IO-Link port.
  It is possible therefore to connect up to 16 load feeders to the control system at one IO-Link master module.
- The SIRIUS 4SI electronic module has a width of 15 mm and can be used with the following universal terminal modules:
  - TM-E15S26-A1 (screw terminals)
  - TM-E15C26-A1 (spring-type terminals)
  - TM-E15N26-A1 (Fast Connect)
- Supports firmware update (STEP 7 V5.4 SP5 and higher)

Selection and ordering data

	Version	Connection	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
 3RK1 005-00LB00 -0AA00	**SIRIUS 4SI electronic modules**	Screw terminals, spring-type terminals or Fast Connect	►	**3RK1 005-0LB00-0AA0**		1	1 unit	42F

Accessories

	Version	Connection	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	Universal terminal modules for ET 200S							
	• TM-E15S26-A1	Screw terminals	A	**6ES7 193-4CA40-0AA0**		1	1 unit	250
	• TM-E15C26-A1	Spring-type terminals	A	**6ES7 193-4CA50-0AA0**		1	1 unit	250
	• TM-E15N26-A1	Fast Connect	A	**6ES7 193-4CA80-0AA0**		1	1 unit	250
	Product manual "ET 200S for SIRIUS 4SI Electronic Modules"							
	• German		C	**3ZX1012-0LB00-0AA0**		1	1 unit	401

More information

The product manual for the SIRIUS 4SI electronic modules is available on the Internet, see the opening information on page 13.

More information and technical specifications
see Industry Mall under
"Automation" → "Industrial Communication"
→ "IO-Link" → "Masters" → "IO-Link Master Modules for ET 200S".

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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IO-Link master modules for ET200eco PN

Overview



IO-Link master module for ET 200eco PN

The ET 200eco PN IO-Link master module is an IO-Link master and enables easy connection of sensors and actuators from different manufacturers to the I/Os directly in the machine's field area.

Features

- Up to 4 IO-Link devices (3-wire connection) can be connected to each IO-Link master module.
- Up to 8 standard sensors (8 DI) and up to 4 standard actuators (4 DO) can be connected in addition.

Selection and ordering data

	Version	Connection	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
 6ES7 148-6JA00-0AB0	**IO-Link master modules for ET 200eco PN** Block I/Os in IP65	M12	A	**6ES7 148-6JA00-0AB0**		1	1 unit	250

More information

The product manual for the ET 200eco PN distributed peripherals is available on the Internet,
see the opening information on page 13.

More information and technical specifications
see Industry Mall under
"Automation" → "Industrial Communication"
→ "IO-Link" → "Masters"
→ "IO-Link Master Modules for ET 200eco PN".

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



IO-Link input modules

Using IO-Link technology it is basically possible to connect standard sensors to IO-Link masters. However, connecting standard sensors directly to the IO-Link master does not exploit the full potential of IO-Link. The solution lies in the technology of the IO-Link modules. Its use is a more economically attractive solution in comparison with the direct connection of a sensor.

IO-Link input modules are a sensible addition to the decentralize periphery ET 200S. The IO-Link input module technology enhances IO-Link via a pure point-to-point cable connection towards decentralized structures. The maximum cable length of an IO-Link connection between an IO-Link module and an IO-Link master is 20 m. The use of sensor boxes with accordingly complex and error-prone wiring is no longer necessary.

Transmission of parameter and diagnostic signals

The IO-Link input modules also offer the possibility of conveying parameters and diagnosis messages. This enables for example the inputs of modules to be parameterized as NC contacts or NO contacts through IO-Link. An overload or short circuit in the sensor supply is signaled to the control system through the IO-Link master.

M8 and M12 terminals

M8 and M12 terminals are available for connecting the sensors. Connection to the IO-Link master is made using a standard M12 connecting cable.

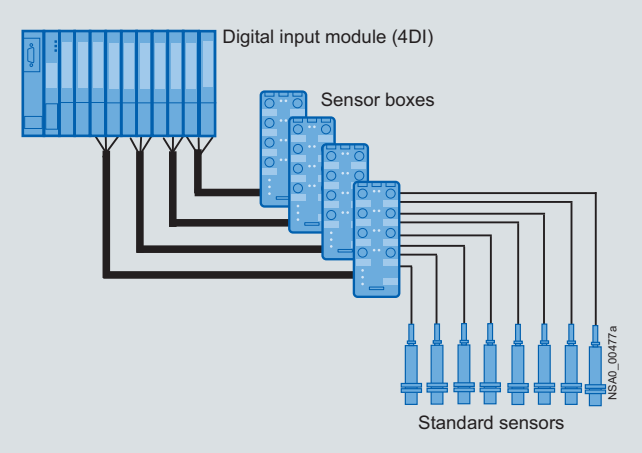
Benefits

The use of IO-Link input modules has the following benefits:

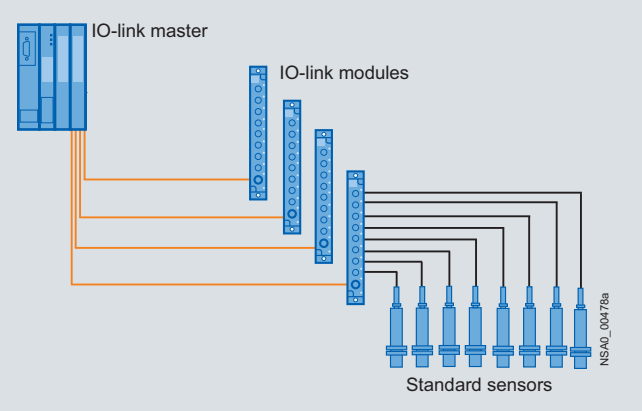
- Economical use of innovative IO-Link technology also for binary sensors
- Optimum use of all ports of the IO-Link master
- Connection of several binary sensors/actuators to one port of the IO-Link master, hence low-cost connection of also binary sensors/actuators to the control system through IO-Link
- Reduction of digital input modules in the peripheral station
- Use of parameters also for binary sensors (e. g. NC contacts, NO contacts and input delay can be parameterized)
- Reduction of cabling and hence less risk of wiring errors by dispensing with sensor boxes
- Expansion toward distributed structures using pure point-to-point wiring
- Easy and elegant integration of sensors within a radius of 20 m around an ET 200S station
- Possibility of transmitting parameter and diagnostic signals (e. g. sensor supply overload)
- Can also be used in harsh ambient conditions thanks to the very compact design and degree of protection IP67

Application

IO-Link input modules are particularly used where sensor boxes had previously been used for the connection of binary sensors.



Former technology with sensor boxes



Technology with IO-Link input modules

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IO-Link K20 modules

Selection and ordering data

	Type	Pin assign-ment	Connection methods	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	IO-Link K20 modules								
 3RK5 010-0BA10-0AA0	• 4 inputs	Y	M12	A	**3RK5 010-0BA10-0AA0**		1	1 unit	42C
 3RK5 010-0CA00-0AA0	• 8 inputs	Standard	M8	A	**3RK5 010-0CA00-0AA0**		1	1 unit	42C

Accessories

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
 3RK1 901-1KA00	**M12 sealing caps** For free M12 sockets	▶	**3RK1 901-1KA00**		100	10 units	42C
 3RK1 901-1PN00	**M8 sealing caps** For free M8 sockets	A	**3RK1 901-1PN00**		100	10 units	42C

More information

For more information and technical specifications
see Industry Mall under
"Automation" → "Industrial Communication"
→ "IO-Link" → "Input Modules" → "IO-Link K20 Modules".

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Controls – Contactors and Contactor Assemblies – for Switching Motors



Price groups
PG 41B, 41H, 42F

3/2 **Introduction**

Power contactors for switching motors
3/6 General data
3/13 SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW
3/37 Accessories for 3RT2 contactors
3/61 Spare parts for 3RT2 contactors
3/62 SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW
3/86 SIRIUS 3RT12 vacuum contactors, 3-pole, 110 ... 250 kW
3/91 Accessories for 3RT1 contactors
3/107 Spare parts for 3RT1 contactors
3/112 3TF6 vacuum contactors, 3-pole, 335 ... 450 kW
3/122 3TB5 contactors with DC solenoid system, 3-pole, 55 ... 200 kW
3/130 3TF2 contactors, 3-pole, 2.2 ... 4 kW

Coupling contactors
3/140 SIRIUS 3RT20 coupling contactors (interface), 3-pole, 3 ... 15 kW

Contactor assemblies
3RA23, 3RA13, 3RA24, 3RA14 contactor assemblies
3/145 SIRIUS 3RA23 reversing contactor assemblies
3/153 SIRIUS 3RA13 reversing contactor assemblies
3/159 SIRIUS 3RA24 contactor assemblies for wye-delta starting
3/168 SIRIUS 3RA14 contactor assemblies for wye-delta starting
3TD, 3TE contactor assemblies
3/175 3TD6 reversing contactor assemblies, 335 kW
3/176 3TE6 contactor assemblies for wye-delta starting, 630 kW

Function modules for mounting onto SIRIUS 3RT2 contactors
3/178 Introduction
3/179 SIRIUS function modules
3/183 SIRIUS function modules for IO-Link
3/188 SIRIUS function modules for AS-Interface

More information can be found on the Internet: see opening information, page 13

Note:
3RT1 contactors in sizes S00/S0 to S12 and 3RA1 contactor assemblies in sizes S00/S0 to S3 can be found

- in the Catalog Add-On IC 10 AO · 2012 in the CD/DVD box
- in the Catalog Add-On IC 10 AO · 2012 at the Information and Download Center
- in the interactive catalog CA 01
- in the Industry Mall

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Introduction

Overview





Size			S00				S0					
Type			3RT20 1				3RT20 2					
3RT20 contactors												
Type			**3RT20 15**	**3RT20 16**	**3RT20 17**	**3RT20 18**	**3RT20 23**	**3RT20 24**	**3RT20 25**	**3RT20 26**	**3RT20 27**	**3RT20 28**
AC, DC operation			(p. 3/26, 3/28)				(p. 3/31, 3/33)					
AC-3												
I_e/AC-3/400 V		A	7	9	12	16	9	12	17	25	32	38
400 V		**kW**	**3**	**4**	**5.5**	**7.5**	**4**	**5.5**	**7.5**	**11**	**15**	**18.5**
230 V		kW	2.2	3	3	4	3	3	4	5.5	7.5	7.5
500 V		kW	3.5	4.5	5.5	7.5	4.5	7.5	10	11	18.5	18.5
690 V		kW	4	5.5	5.5	7.5	5.5	7.5	11	11	18.5	18.5
1000 V		kW	--	--	--	--	--	--	--	--	--	--
AC-4 (for I_a = 6 x I_e)												
400 V		**kW**	**3**	**4**	**4**	**5.5**	**4**	**5.5**	**7.5**	**7.5**	**11**	**11**
400 V (200 000 operating cycles)		kW	1.15	2	2	2.5	2	2.6	3.5	4.4	6	6
AC-1 (40 °C, ≤ 690 V)												
I_e	3RT20	**A**	**18**	**22**	**22**	**22**	**40**	**40**	**40**	**40**	**50**	**50**
Accessories for contactors												
Auxiliary switch blocks	On front		**3RH29 11**		(p. 3/50)		**3RH29 11**		(p. 3/50)			
	Lateral		**3RH29 11**		(p. 3/52)		**3RH29 21**		(p. 3/52)			
Timing relay blocks			**3RA28 1.**		(p. 3/181)		**3RA28 1.**		(p. 3/181)			
Function modules			**3RA27 1.-. AA00**		(p. 3/152, 3/167)		**3RA27 1.-. AA00**		(p. 3/152, 3/167)			
Surge suppressors			**3RT29 16**		(p. 3/56)		**3RT29 26**		(p. 3/56)			
3RU2 and 3RB3 overload relays (Protection Equipment → Overload Relays)												
3RU21, thermal, CLASS 10			**3RU21 16**	0.11 ... 16 A	(Chap. 7)		**3RU21 26**	1.8 ... 40 A	(Chap. 7)			
3RB30/3RB31, solid-state, CLASS 5, 10, 20 and 30			**3RB30 16** **3RB31 13**	0.1 ... 16 A	(Chap. 7)		**3RB30 26** **3RB31 23**	0.1 ... 40 A	(Chap. 7)			
3RV20 motor starter protectors (Protection Equipment → Motor Starter Protectors)												
Type			**3RV20 11**	0.11 ... 16 A	(Chap. 7)		**3RV20 21**	11 ... 40 A	(Chap. 7)			
Link modules			**3RA29 11**		(Chap. 7)		**3RA29 21**		(Chap. 7)			
3RA23 reversing contactor assemblies												
Complete units	Type		**3RA23 15**	**3RA23 16**	**3RA23 17**	**3RA23 18**	**--**	**3RA23 24**	**3RA23 25**	**3RA23 26**	**3RA23 27**	**3RA23 28**
			(p. 3/148)					(p. 3/150)				
400 V		**kW**	**3**	**4**	**5.5**	**7.5**		**5.5**	**7.5**	**11**	**15**	**18.5**
Assembly kits/wiring modules			**3RA29 13-2AA.**		(p. 3/151)		**--**	**3RA29 23-2AA.**		(p. 3/151)		
Function modules			**3RA27 1.-. BA00**		(p. 3/152)		**--**	**3RA27 1.-. BA0**		(p. 3/152)		
3RA24 contactor assemblies for wye-delta starting												
Complete units	Type		**3RA24 15**	**3RA24 16**	**3RA24 17**		**3RA24 23**		**3RA24 25**	**3RA24 26**		
			(p. 3/163)				(p. 3/165)					
400 V		**kW**	**5.5**	**7.5**	**11**		**11**		**15/18.5**	**22**		
Assembly kits/wiring modules			**3RA29 13-2BB.**		(p. 3/166)		**3RA29 23-2BB.**		(p. 3/166)			
Function modules			**3RA27 1.-. CA00**		(p. 3/167)		**3RA27 1.-. CA00**		(p. 3/167)			

Note:

For safety characteristics for contactors see Chapter 16, "Appendix" → "Standards and Approvals" → "Overview".

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Size			**S2**			**S3**			**S6**		
Type			3RT10 3			3RT1. 4			3RT1. 5		
3RT10 contactors											
Type			**3RT10 34**	**3RT10 35**	**3RT10 36**	**3RT10 44**	**3RT10 45**	**3RT10 46**	**3RT10 54**	**3RT10 55**	**3RT10 56**
AC, DC operation			(p. 3/78, 3/80)			(p. 3/79, 3/81)			(p. 3/82)		
AC-3											
I_e/AC-3/400 V		A	32	40	50	65	80	95	115	150	185
400 V		**kW**	**15**	**18.5**	**22**	**30**	**37**	**45**	**55**	**75**	**90**
230 V		kW	7.5	11	15	18.5	22	22	37	45	55
500 V		kW	18.5	22	30	37	45	55	75	90	110
690 V	3RT10/12	kW	18.5	22	22	45	55	55	110	132	160
1 000 V	3RT10/12	kW	--	--	--	30	37	37	75	90	90
AC-4 (for I_a = 6 x I_e)											
400 V		**kW**	**15**	**18.5**	**22**	**30**	**37**	**45**	**55**	**75**	**90**
400 V (200 000 operating cycles)	3RT10/12	kW	8.2	9.5	12.6	15.1	17.9	22	29	38	45
AC-1 (40 °C, ≤ 690 V)											
I_e	3RT10/12	**A**	**50**	**60**	**60**	**100**	**120**	**120**	**160**	**185**	**215**
3RT14 AC-1 contactors											
Type			**--**		(Chap. 4)	**3RT14 46**		(Chap. 4)	**3RT14 56**		(Chap. 4)
I_e/AC-1/40 °C/≤ 690 V		**A**	**--**			**140**			**275**		
Accessories for contactors											
Auxiliary switch blocks	On front		**3RH19 21**		(p. 3/98)						
	Lateral		**3RH19 21**		(p. 3/100)						
Terminal covers			**3RT19 36-4EA2**		(p. 3/105)	**3RT19 46-4EA1/2**		(p. 3/105)	**3RT19 56-4EA1/2/3**		(p. 3/105)
Box terminal blocks			**--**			**--**			**3RT19 55/56-4G**		(p. 3/105)
Surge suppressors			**3RT19 26/36**		(p. 3/103)				**3RT19 56-1C** (RC element)		(p. 3/103)
3RU1 and 3RB2 overload relays (Protection Equipment → Overload Relays)											
3RU11, thermal, CLASS 10			**3RU11 36**	5.5 ... 50 A	(Chap. 7)	**3RU11 46**	18 ... 100 A	(Chap. 7)	**--**		
3RB20/3RB21, solid-state, CLASS 5, 10, 20 and 30			**3RB20 36** **3RB21 36**	6 ... 50 A	(Chap. 7)	**3RB20 46** **3RB21 46**	12.5 ... 100 A	(Chap. 7)	**3RB20 56** **3RB21 56**	50 ... 200 A	(Chap. 7)
3RB22/3RB23, solid-state, CLASS 5, 10, 20 and 30			**3RB2. 83 + 3RB29 06**	10 ... 100 A	(Chap. 7)				**3RB2. 83 + 3RB29 56**	20 ... 200 A	(Chap. 7)
3RV10 motor starter protectors (Protection Equipment → Motor Starter Protectors)											
Type			**3RV10 31**	22 ... 50 A	(Chap. 7)	**3RV10 41**	45 ... 100 A	(Chap. 7)	**--**		
Link modules			**3RA19 31**		(Chap. 7)	**3RA19 41**		(Chap. 7)	**--**		
3RA13 reversing contactor assemblies											
Complete units	Type		**3RA13 34** (p. 3/154)	**3RA13 35**	**3RA13 36**	**3RA13 44** (p. 3/155)	**3RA13 45**	**3RA13 46**	**--**		
400 V		**kW**	**15**	**18.5**	**22**	**30**	**37**	**45**	**55**	**75**	**90**
Assembly kits/wiring modules			**3RA19 33-2A**		(p. 3/157)	**3RA19 43-2A**		(p. 3/157)	**3RA19 53-2A**		(p. 3/157)
Mechanical interlocks			**3RA19 24-1A/-2B**		(p. 3/156)				**3RA19 54-2A**		(p. 3/156)
3RA14 contactor assemblies for wye-delta starting											
Complete units	Type		**3RA14 34** (p. 3/171)	**3RA14 35** (p. 3/172)	**3RA14 36**	**3RA14 44** (p. 3/173)	**3RA14 45**		**--**		
400 V		**kW**	**22/30**	**37**	**45**	**55**	**75**		**--**		
Assembly kits/wiring modules			**3RA19 33-2B/-2C**		(p. 3/174)	**3RA19 43-2B/-2C**		(p. 3/174)	**3RA19 53-2B**		(p. 3/174)

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Introduction







Size			**S10**			**S12**		**14**	
Type			3RT1. 6			3RT1. 7		3TF6	
3RT10 contactors • 3RT12 and 3TF68/69 vacuum contactors									
Type AC, DC operation			**3RT10 64** (p. 3/82)	**3RT10 65**	**3RT10 66**	**3RT10 75** (p. 3/82)	**3RT10 76**	**--**	
Type			**3RT12 64** (p. 3/90)	**3RT12 65**	**3RT12 66**	**3RT12 75** (p. 3/90)	**3RT12 76**	**3TF68** (p. 3/118)	**3TF69**
AC-3									
I_e/AC-3/400 V		A	225	265	300	400	500	630	820
400 V		**kW**	**110**	**132**	**160**	**200**	**250**	**335**	**450**
230 V		kW	55	75	90	132	160	200	260
500 V		kW	160	160	200	250	355	434	600
690 V	3RT10/3RT12	kW	200	250	250	400	400/500	600	800
1 000 V	3RT10/3RT12	kW	90/315	132/355	132/400	250/560	250/710	600	800
AC-4 (for I_a = 6 x I_e)									
400 V		**kW**	**110**	**132**	**160**	**200**	**250**	**355**	**400**
400 V (200 000 operating cycles)	3RT10/3RT12	kW	54/78	66/93	71/112	84/140	98/161	168	191
AC-1 (40 °C, ≤ 690 V)									
I_e	3RT10/3RT12	**A**	**275/330**	**330**	**330**	**430/610**	**610**	**700**	**910**
3RT14 AC-1 contactors									
Type			**3RT14 66**		(Chap. 4)	**3RT14 76**	(Chap. 4)	**--**	
I_e/AC-1/40 °C/≤ 690 V		**A**	**400**			**690**		**--**	
Accessories for contactors									
Auxiliary switch blocks	On front		**3RH19 21**		(p. 3/98)			**--**	
	Lateral		**3RH19 21**		(p. 3/100)			**3TY7 561**	(p. 3/120)
Terminal covers			**3RT19 66-4EA1/2/3**		(p. 3/105)			**3TX7 686/696**	(p. 3/120)
Box terminal blocks			**3RT19 66-4G**		(p. 3/105)			**--**	
Surge suppressors			**3RT19 56-1C** (RC element)		(p. 3/103)			**3TX7 572**	(p. 3/120)
3RU1 and 3RB2 overload relays (Protection Equipment → Overload Relays)									
3RU11, thermal, CLASS 10			**--**			**--**		**--**	
3RB20/3RB21, solid-state, CLASS 5, 10, 20 and 30			**3RB20 66** **3RB21 66**	55 ... 630 A	(Chap. 7)	**3RB20 66** **3RB21 66**	160 ... 630 A (Chap. 7)	**3RB20 66** **3RB21 66**	160 ... 630 A (Chap. 7)
3RB22/3RB23, solid-state, CLASS 5, 10, 20 and 30			**3RB2. 83 + 3RB29 66**	63 ... 630 A	(Chap. 7)				
3RV10 motor starter protectors (Protection Equipment → Motor Starter Protectors)									
Type			**--**			**--**		**--**	
Link modules			**--**			**--**		**--**	
3RA13 reversing contactor assemblies									
Complete units	Type		**--**			**--**		**3TD68 04** (p. 3/175)	
400 V		**kW**	**110**	**132**	**160**	**200**	**250**	**335**	
Assembly kits/wiring modules			**3RA19 63-2A**		(p. 3/157)	**3RA19 73-2A**	(p. 3/157)	**3TX7 680-1A**	(Industry Mall)
Mechanical interlocks			**3RA19 54-2A**		(p. 3/156)			**3TX7 686-1A**	(Industry Mall)
3RA14 contactor assemblies for wye-delta starting									
Complete units	Type		**--**			**--**		**3TE68 04** (p. 3/177)	
400 V		**kW**	**--**			**--**		**630**	
Assembly kits/wiring modules			**3RA19 63-2B**		(p. 3/174)	**3RA19 73-2B**	(p. 3/174)	**3TX7 680-1B**	(Industry Mall)

Note:

For safety characteristics for contactors see Chapter 16, "Appendix" → "Standards and Approvals" → "Overview".

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Connection methods

The contactors are available with screw terminals (box terminals or flat connectors) or with spring-type terminals.

Devices of the 3TF2 series are also available for connection with flat connectors and solder pin connectors.

As an option the devices of the 3RT2 series are also available for connection with ring terminal lugs, particularly versions for North America and Japan.

	Screw terminals
	Spring-type terminals
	Flat connectors
	Solder pin connections
	Ring terminal lug connections
	The terminals are indicated in the corresponding tables by the symbols shown on orange backgrounds.

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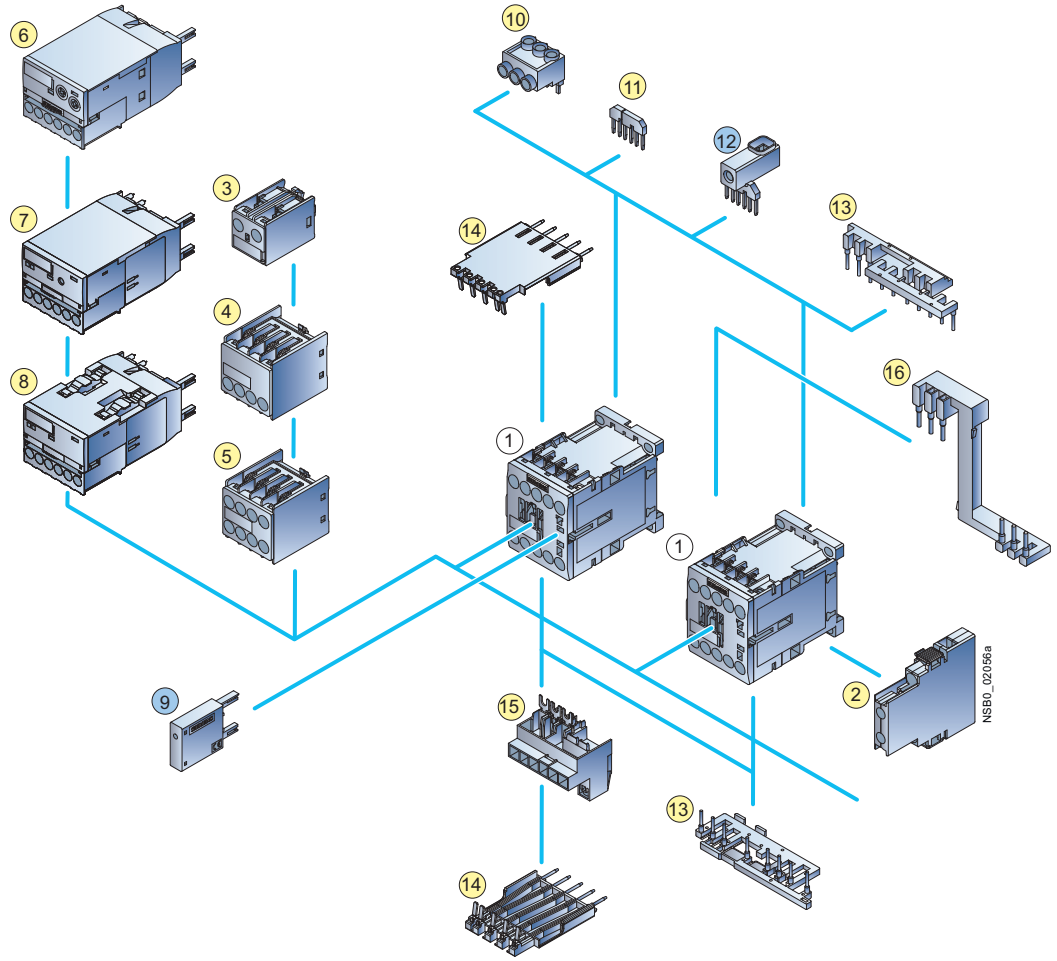
General data

Overview

The SIRIUS family of controls

The SIRIUS modular system with its components for the switching, starting, protection and monitoring of motors and industrial systems stands for the fast, flexible and space-saving construction of control cabinets.

3RT2 contactors and coupling relays
Size S00 with mountable accessories



(1) Contactor size S00

(2) 1-pole auxiliary switch block, laterally mountable
(3) 1-pole auxiliary switch block, for snapping onto the front Cable entry from the top
(4) 2-pole auxiliary switch block, for snapping onto the front Cable entry from the bottom
(5) 4-pole auxiliary switch block, for snapping onto the front
(6) 3RA28 function module
(7) 3RA27 function module for AS-Interface, direct starting
(8) 3RA27 function module for IO-Link, direct starting
(9) Surge suppressor with/without LED
(10) Three-phase feeder terminal
(11) Star jumper, 3-pole, without connecting terminal
(12) Link for paralleling, 3-pole, with connecting terminal
(13) Wiring modules, on the top and bottom (reversing duty)
(14) Solder pin adapter
(15) Connection module (adapter and connector) for contactors with screw-type connection
(16) Safety main current connector for two contactors

For contactors
For contactors and coupling contactors (interface)

For accessories see pages 3/45 to 3/60.

For contactor assemblies see pages 3/148 to 3/150.

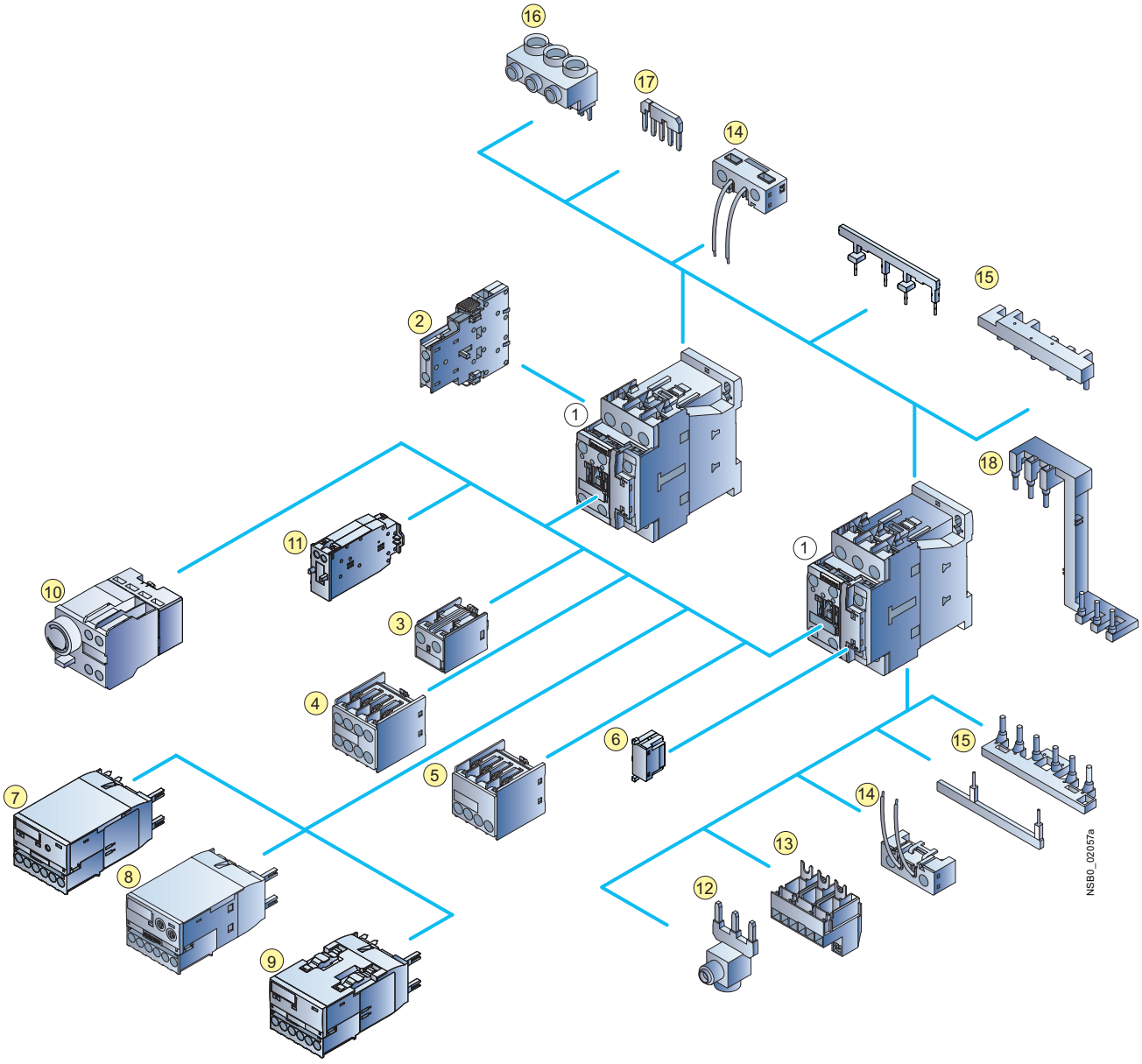
For assembly kit for reversing contactor assemblies (mech. interlocking, wiring modules) see page 3/151.

For mountable overload relays see Chapter 7, "Protection Equipment" → "Overload Relays".

For fuseless load feeders see Chapter 8, "Load Feeders and Motor Starters for Use in the Control Cabinet" → "3RA Fuseless Load Feeders".

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3RT2 contactors and coupling relays
Size S0 with mountable accessories



① Contactor size S0

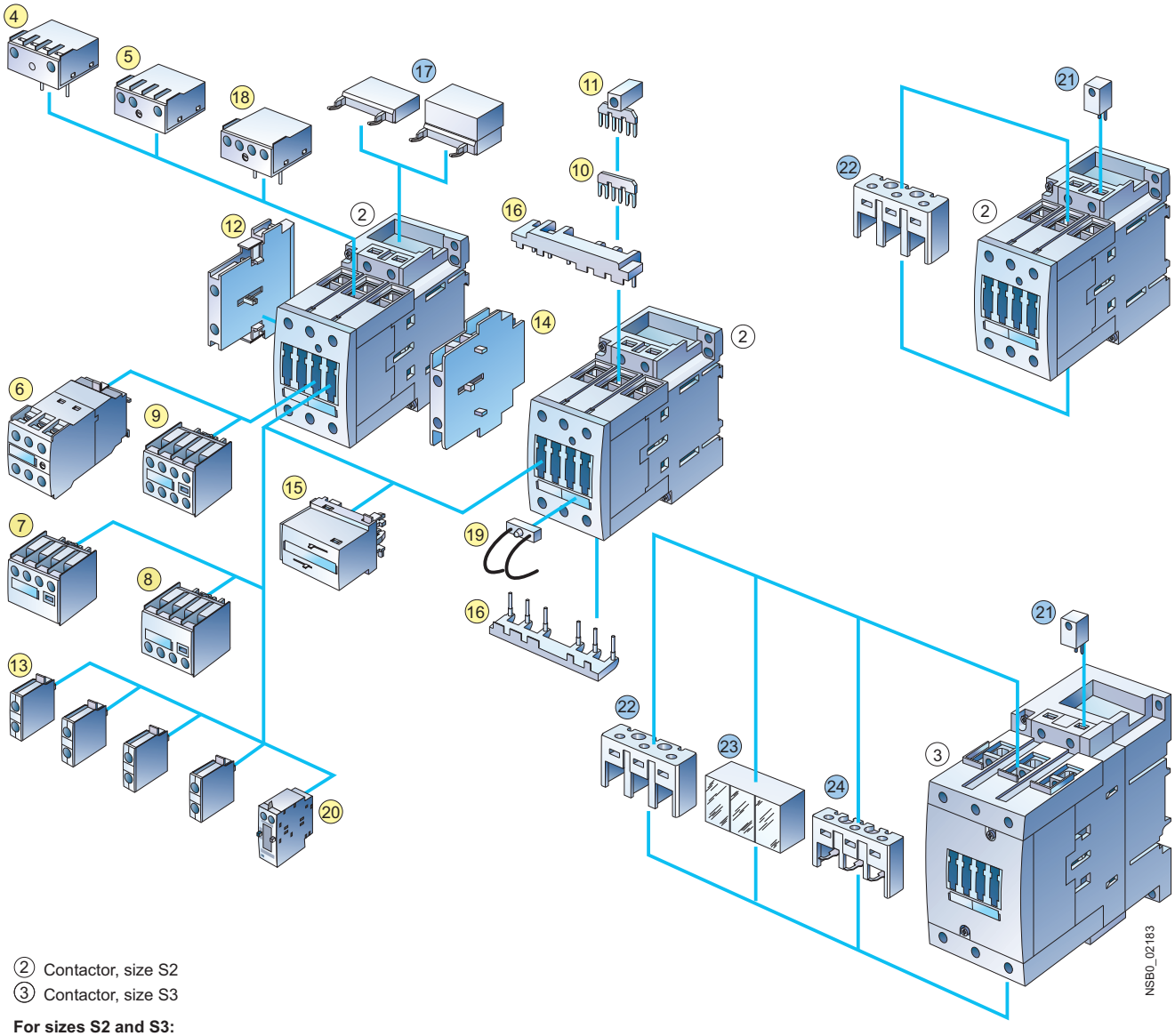
② 1-pole auxiliary switch block, laterally mountable
③ 1-pole auxiliary switch block, for snapping onto the front Cable entry from the top
④ 4-pole auxiliary switch block, for snapping onto the front
⑤ 2-pole auxiliary switch block, for snapping onto the front Cable entry from the bottom
⑥ Surge suppressor with/without LED
⑦ 3RA27 function module for AS-Interface, direct starting
⑧ 3RA28 function module
⑨ 3RA27 function module for IO-Link, direct starting
⑩ Pneumatic delay block
⑪ Mechanical latching block
⑫ Link for paralleling, 3-pole, with connecting terminal
⑬ Connection module (adapter and plug) for contactors with screw-type connection
⑭ Coil terminal module, on the top and bottom
⑮ Wiring modules, on the top and bottom (reversing duty)
⑯ Three-phase feeder terminal
⑰ Link for paralleling (star jumper), 3-pole, without connecting terminal
⑱ Safety main current connector for two contactors

For accessories see pages 3/45 to 3/60.

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General data

3RT1 contactors
Sizes S2 and S3 with mountable accessories



(2) Contactor, size S2
(3) Contactor, size S3

For sizes S2 and S3:

(4) Solid-state time-delay block, ON-delay
(5) Solid-state time-delay block, OFF-delay
(6) Auxiliary switch block, solid-state time-delay (ON or OFF-delay or wye-delta function)
(7) 2-pole auxiliary switch block, cable entry from above
(8) 2-pole auxiliary switch block, cable entry from below
(9) 4-pole auxiliary switch block (terminal designations according to EN 50012 or EN 50005)
(10) Link for paralleling (star jumper), 3-pole, without connecting terminal
(11) Link for paralleling, 3-pole, with connecting terminal
(12) 2-pole auxiliary switch block, laterally mountable left or right (terminal designations according to EN 50012 or EN 50005)
(13) Single-pole auxiliary switch block (up to 4 can be snapped on)
(14) Mechanical interlock, laterally mountable
(15) Mechanical interlock, mountable to the front
(16) Wiring connectors on the top and bottom (reversing duty)
(17) Surge suppressor (varistor, RC element, diode assembly), can be mounted on the top or bottom
(18) Mechanical latching interface for mounting directly onto contactor coil
(19) LED module for indicating contactor operation

Only for size S2:

(20) Mechanical latching

Only for sizes S2 and S3:

(21) Coil repeat terminal for making contactor assemblies
(22) Terminal cover for box terminal

Only for size S3:

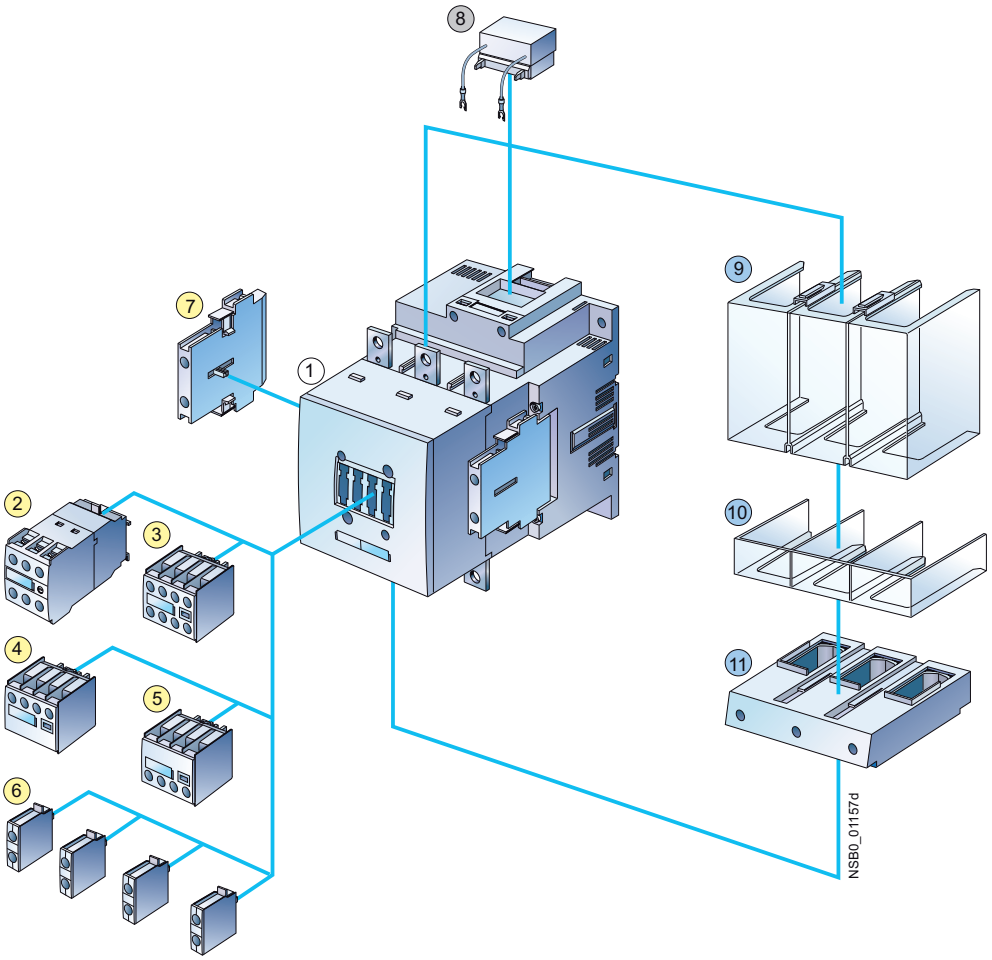
(23) Terminal cover for cable lug and bar connection
(24) Auxiliary conductor terminal, 3-pole

Accessories identical for sizes S2 and S3
Accessories differ according to size

For accessories see pages 3/98 to 3/106.

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3RT1 contactors
Sizes S6 to S12 with mountable accessories
(illustration for basic unit)



(1) 3RT10 and 3RT14 air-break contactors, sizes S6, S10 and S12

(2) Auxiliary switch block, solid-state time-delay (ON or OFF-delay or wye-delta function)
(3) 4-pole auxiliary switch block (terminal designations according to EN 50012 or EN 50005)
(4) 2-pole auxiliary switch block, cable entry from above
(5) 2-pole auxiliary switch block, cable entry from below
(6) Single-pole auxiliary switch block (up to 4 can be snapped on)
(7) 2-pole auxiliary switch block, laterally mountable left or right (terminal designations according to EN 50012 or EN 50005) (identical for S0 to S12)
(8) Surge suppressor (RC element) for plugging into top of withdrawable coil

(9) Terminal cover for cable lug and busbar connection, different for sizes S6 and S10/S12
(10) Terminal cover for box terminal, different for sizes S6 and S10/S12
(11) Box terminal block, different for sizes S6 and S10/S12

Accessories identical for sizes S0 to S12
Accessories identical for sizes S6 to S12
Accessories differ according to size

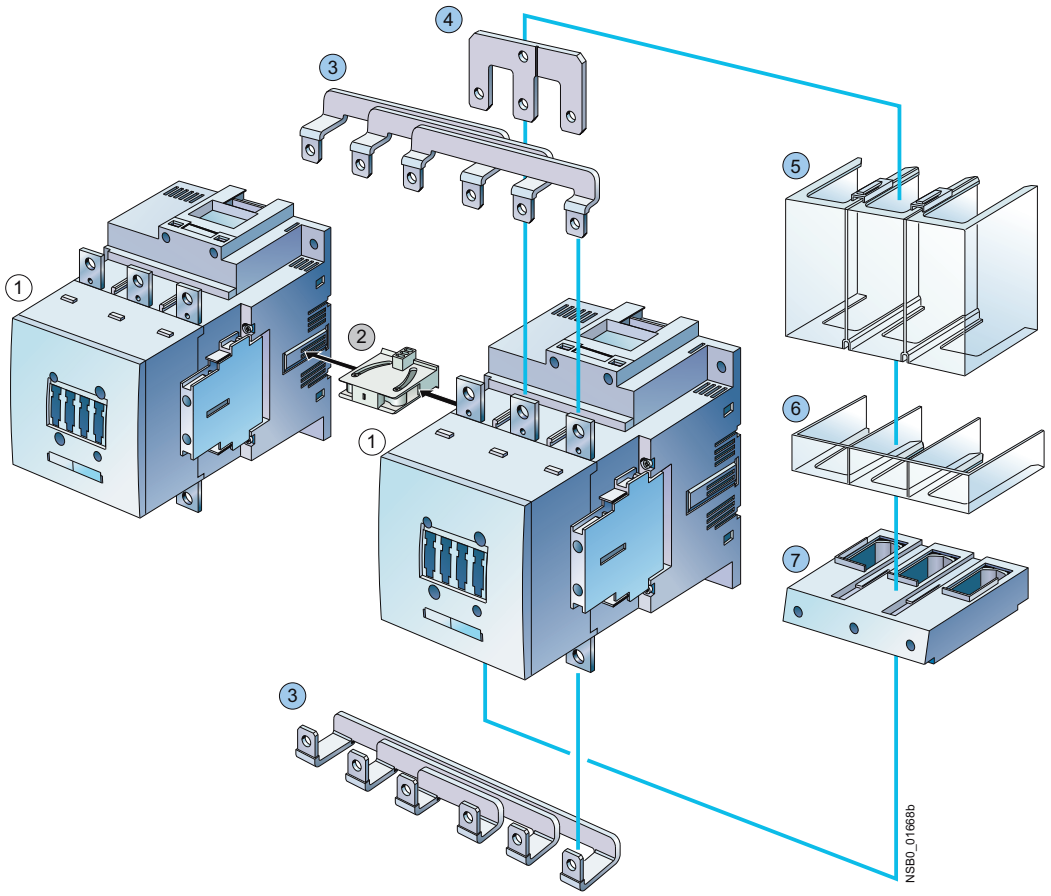
For accessories see pages 3/98 to 3/106.

For mountable overload relays see Chapter 7, "Protection Equipment" → "Overload Relays".

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General data

3RA1 contactor assemblies, 3RT1 contactors
Size S6 with accessories



(1) 3RT10 and 3RT14 air-break contactor, size S6

(2) Mechanical interlock, laterally mountable
(3) Wiring modules on the top and bottom 3RA1953-2A
(4) Link for paralleling (star jumper), 3-pole, with through-hole, 3RT1956-4BA31
(5) Terminal cover for cable lug and bar connection different for sizes S6 and S10/S12
(6) Terminal cover for box terminal different for sizes S6 and S10/S12
(7) Box terminal block, different for sizes S6 and S10/S12

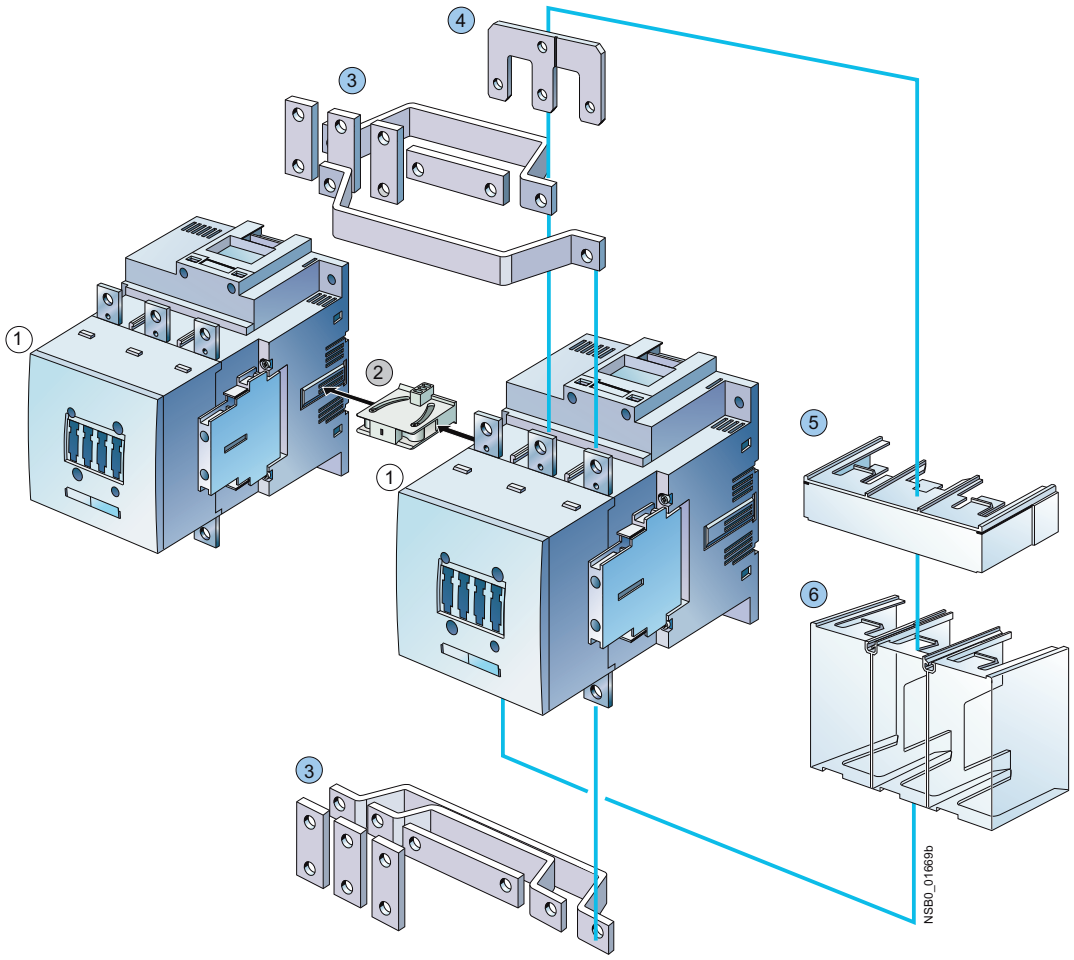
Accessories identical for sizes S6 to S12
Accessories differ according to size

For accessories see pages 3/156 to 3/158 and 3/98 to 3/106.

Mountable overload relays see Chapter 7, "Protection Equipment" → "Overload Relays".

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3RA1 contactor assemblies, 3RT1 contactors
Sizes S6, S10 and S12 with accessories



(1) 3RT10 and 3RT14 air-break contactor, sizes S6, S10 and S12 or 3RT12 vacuum contactor, sizes S10 and S12

(2) Mechanical interlock, laterally mountable
(3) Wiring modules on the top and bottom, 3RA19
(4) Link for paralleling (star jumper), 3-pole, with through-hole, 3RT19 56-4BA31
(5) Terminal cover for box terminal, different for sizes S6 and S10/S12
(6) Terminal cover for cable lug and busbar connection, different for sizes S6 and S10/S12

Accessories identical for sizes S6 to S12
Accessories different according to size

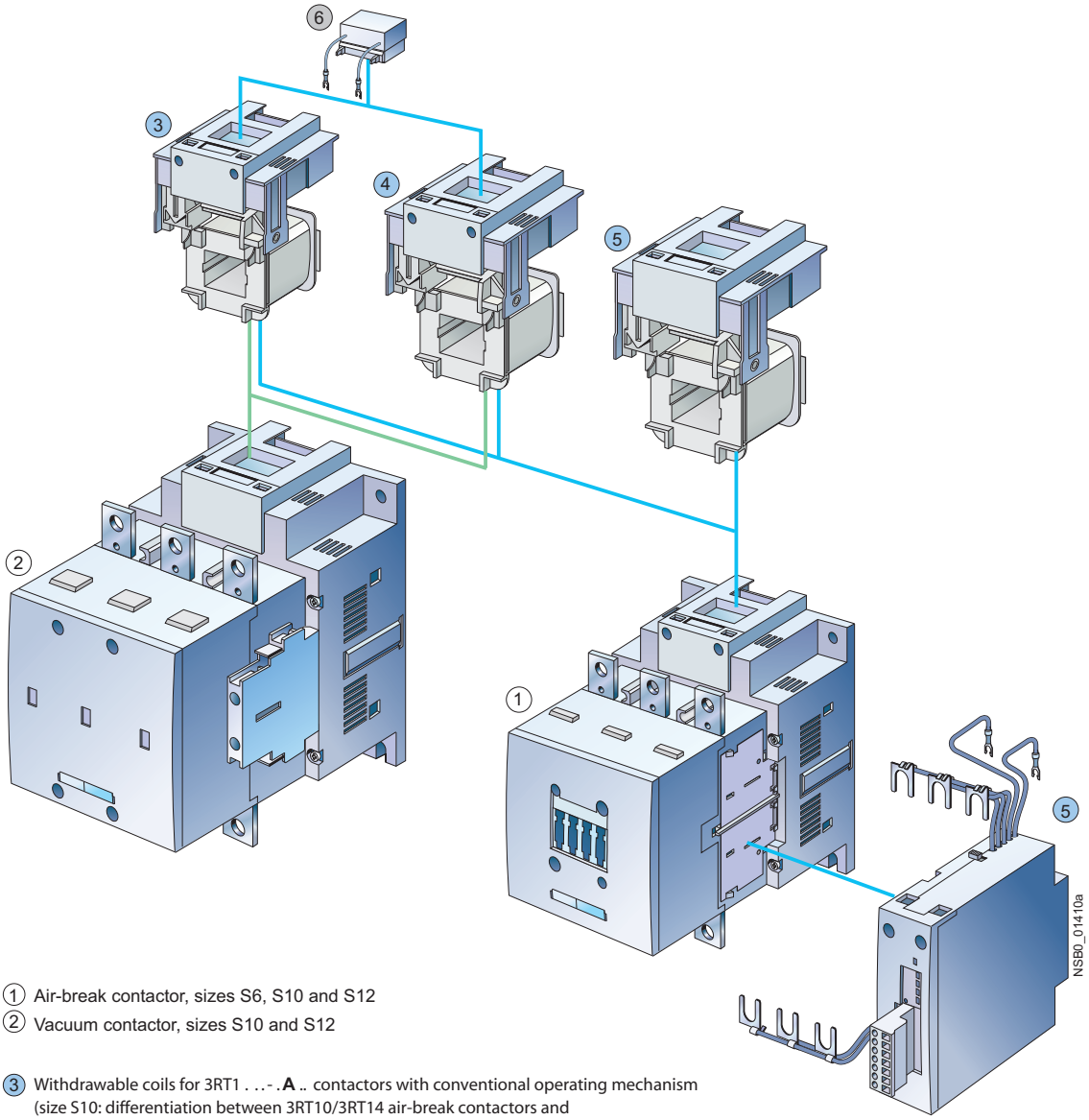
For accessories see pages 3/156 to 3/158 and 3/98 to 3/106.

For mountable overload relays see Chapter 7, "Protection Equipment" → "Overload Relays".

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General data

3RT1 contactors
Sizes S6 to S12 with accessories



① Air-break contactor, sizes S6, S10 and S12
② Vacuum contactor, sizes S10 and S12

③ Withdrawable coils for 3RT1 . ..- .**A** .. contactors with conventional operating mechanism
(size S10: differentiation between 3RT10/3RT14 air-break contactors and 3RT12 vacuum contactors)
(size S12: the same for air-break and vacuum contactors)

④ Withdrawable coils for 3RT1 . ..- .**N**.. contactors with solid-state operating mechanism.
(size S10: differentiation between 3RT10/3RT14 air-break contactors and 3RT12 vacuum contactors)
(size S12: the same for air-break and vacuum contactors)

⑤ Withdrawable coils and laterally mountable module (plug-on) for 3RT1. ..- .**P** ..and 3RT1 ...- .**Q** .. air-break contactors with solid-state operating mechanism and remaining lifetime indicator

⑥ Surge suppressor (RC element), plug-mountable on withdrawable coils
- 3RT1. ..-.**A**.. with conventional operating mechanism
- 3RT1. ..-.**N**.. with solid-state operating mechanism

Identical for sizes S6 to S12
Different according to size

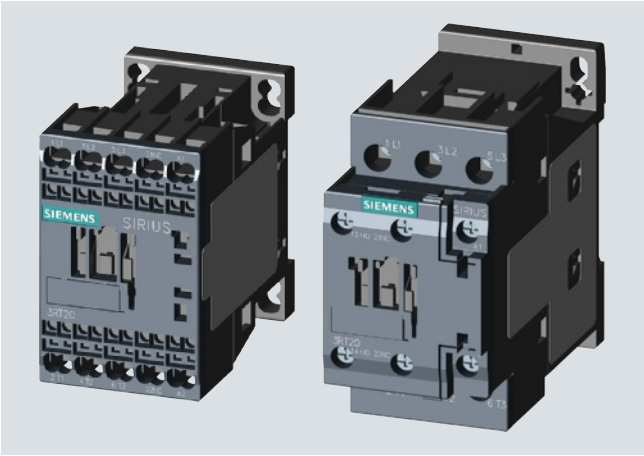
For surge suppressors see page 3/103,
withdrawable coils see pages 3/109 and 3/110.

For mountable overload relays see Chapter 7,
"Protection Equipment" → "Overload Relays".

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Overview

Sizes S00 and S0, up to 18.5 kW



Contactor size S00 with spring-type terminals and contactor size S0 with screw terminals

Compared to the former 3RT1 series, the 3RT2 series is notable for its higher rating: size S00 with up to 7.5 kW and size S0 with up to 18.5 kW.

Standards

IEC 60947-1, EN 60947-1,
IEC 60947-4-1, EN 60947-4-1,
IEC 60947-5-1, EN 60947-5-1 (auxiliary switches)

The 3RT2 contactors are climate-proof and are suitable and tested for use worldwide.

If the devices are used in ambient conditions which deviate from common industrial conditions (IEC 60721-3-3 "Stationary Use, Weather-Protected"), information must be obtained about possible restrictions with regard to the reliability and endurance of the device and possible protective measures. In this case contact our Technical Assistance.

3RT2 contactors are finger-safe according to EN 50274. The devices with ring terminal lug connection comply with degree of protection IP20 when fitted with the related terminal cover.

Auxiliary contact complement

Size S00 contactors have an auxiliary contact integrated in the basic unit. The basic units size S0 contain two integrated auxiliary contacts (1 NO + 1 NC).

All basic units (except coupling contactors) can be extended with auxiliary switch blocks:

- Additional auxiliary switches with a maximum of four auxiliary contacts can be mounted. The combination of a 2-pole auxiliary switch for mounting on the front and an auxiliary switch for mounting on the side is not permitted.
- Of the maximum number of auxiliary contacts (integrated plus mountable) possible on the device, no more than four NC contacts are permitted for both sizes.

In addition, complete units with permanently mounted auxiliary switch block (2 NO + 2 NC) are offered for sizes S00 and S0.

Contact reliability

If voltages ≤ 110 V and currents ≤ 100 mA are to be switched, the auxiliary contacts of the 3RT2 contactor or 3RH21 contactor relay should be used as they guarantee a high level of contact reliability.

These auxiliary contacts are suitable for solid-state circuits with currents ≥ 1 mA at a voltage ≥ 17 V.

Connection methods

The 3RT2 contactors are available with screw terminals, spring-type terminals or ring terminal lug connections.

Short-circuit protection of the contactors

For more information about short-circuit protection of contactors without overload relay see "Technical specifications" on pages 3/17 and 3/21. For short-circuit protection of the contactors with overload relay see Configuration Manual "Configuring SIRIUS Innovations - Selection data for Fuseless and Fused Load Feeders".

To assemble fuseless motor feeders you must select combinations of motor starter protector and contactor as explained in "3RA2 Load Feeders" (see Chapter 8, "Load Feeders and Motor Starters for Use in the Control Cabinet").

Motor protection

3RU21 thermal overload relays or 3RB30 solid-state overload relays can be fitted to the 3RT2 contactors for protection against overload. The overload relays must be ordered separately (see Chapter 7, "Overload Relays").

Ratings of induction motors

The quoted rating (in kW) refers to the output power on the motor shaft (according to the nameplate).

Control supply voltage

All contactors are available with AC or DC operation. Available in addition on the contactors size S0 is a UC operating mechanism which can be operated with AC (45 to 70 Hz) as well as with DC.

Surge suppression

3RT2 contactors can be retrofitted with RC elements, varistors, suppressor diodes or diode assemblies (assembly of diode and Zener diode for short break times) for damping opening surges in the coil.

The surge suppressors are plugged onto the front of size S00 contactors. Space is provided for them next to a snap-on auxiliary switch block.

The surge suppressors can be plugged onto the front of size S0 contactors.

Note:

The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 10 times; diode assembly 2 to 6 times, varistor and suppressor diode +2 to 5 ms).

S00 and S0 contactors with communication interface

The S00 and S0 contactors with communication interface are special versions for mounting the SIRIUS function modules for the connection to the control system through IO-Link or AS-Interface (see page 3/183 and 3/188).

When a function module is fitted, no additional auxiliary switches can be mounted. Without a function module they can be used like the standard versions.

For further information on IO-Link and AS-Interface see Chapter 2 "Industrial Communication".

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SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

Order No. scheme

Digit of the Order No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th		13th	14th	15th	16th
	□□□	□	□	□	□	–	□	□	□	□	□	–	□	□	□	□
SIRIUS power contactors	**3 R T**															
2nd generation		**2**														
Device type (e. g. 0 = 3-pole motor contactor, 3 = 4-pole AC-1 contactor)			□													
Contactor size (1 = S00, 2 = S0)				□												
Power dependent on size (e. g. 27 = 15 kW)					□											
Connection type (1 = screw, 2 = spring)							□									
Operating range / solenoid coil circuit (e. g. A = AC standard / without)								□								
Rated control supply voltage (e. g. P0 = 230 V, 50 Hz)									□	□						
Auxiliary switches (e. g. S0: 0 = 1 NO + 1 NC integrated)											□					
Special version													□	□	□	□
Example	**3 R T**	**2**	**0**	**2**	**7**	**–**	**1**	**A**	**P**	**0**	**0**					

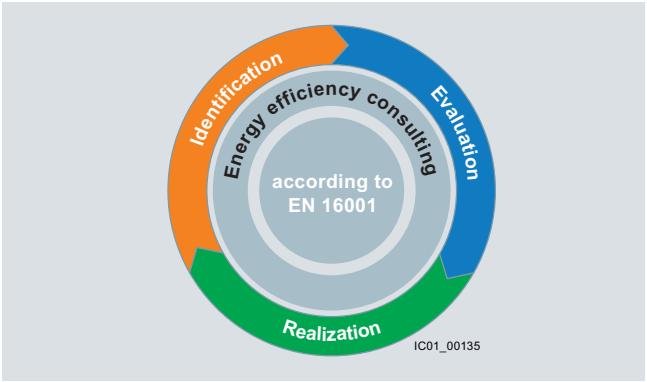
Note:

The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quoted in the catalog in the Selection and ordering data.

Benefits

Advantages through energy efficiency



Overview of the energy management process

We offer you a unique portfolio for industrial energy management, using an efficient energy management system that helps to optimally define your energy needs. We split up our industrial energy management into three phases – Identification, Evaluation and Realization – and we support you with the appropriate hardware and software solutions in every process phase.

The innovative products of the SIRIUS industrial controls portfolio can also make a substantial contribution to a plant's energy efficiency (see www.siemens.com/sirius/energysaving).

3RT20 contactors contribute to energy efficiency throughout the plant as follows:

- UC coils with electric control for reduced power consumption when closing and in the closed state
- Smaller power supply units in the control circuit through lower power consumption in the closed state with 24 V DC
- Reduced heating of the control cabinet
  Technology-reduced inherent power loss of the contactors, resulting in lower cooling costs and a more compact design

Accessories

Auxiliary switch blocks

Terminal designations according to EN 50012 or EN 50005.

Size S00 contactors have an auxiliary contact (NO or NC) integrated in the basic unit. Size S0 contactors have 2 auxiliary contacts (1 NO and 1 NC) integrated in the basic unit.

The contactors can be expanded with front-mounting 3RH29 11 auxiliary switch blocks to form contactors with up to 5 auxiliary contacts (S00) or up to 6 auxiliary contacts (S0). Of the auxiliary contacts (integrated plus mountable) possible on the device, no more than four NC contacts are permitted.

Single- or 2-pole auxiliary switch blocks with connection options from above or below enable easy and clearly arranged wiring especially for the installation of feeders. These auxiliary switch blocks are offered only with screw terminals.

All the previously mentioned auxiliary switch versions can be snap-fitted onto the front of the contactor. The auxiliary switch block has a centrally positioned release lever for disassembly.

If the installation space is limited in depth, 2-pole auxiliary switch blocks can be attached laterally on the left or on the right. These auxiliary switch blocks can be used only when no 4-pole auxiliary switch blocks are snapped onto the front.

The solid-state compatible 3RH29 11-.NF. . auxiliary switch blocks include 2 enclosed contacts. They are suitable in particular for switching small voltages and currents (hard gold-plated contacts) and for operation in dusty atmospheres. The front NC auxiliary contacts are not mirror contacts. There are also versions for mounting on the side.

For details of selecting the auxiliary switches see pages 3/44 to 3/49.

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Technical specifications

Contactor	Type		3RT2
	Size		S00 and S0
Rated data of the auxiliary contacts			
Acc. to IEC 60947-5-1/EN 60947-5-1 The data apply to integrated auxiliary contacts and contacts in the auxiliary switch blocks for contactor sizes S00 to S0[1)]			
Rated insulation voltage U_i (pollution degree 3)		V	690
Conventional thermal current I_{th} = **Rated operational current I_e/AC-12**		A	10
AC load			
Rated operational current I_e/AC-15/AC-14			
• For rated operational voltage U_e	Up to 125 V	A	6
	220 V	A	6
	230 V	A	6
	380 V	A	3
	400 V	A	3
	500 V	A	2
	660 V	A	1
	690 V	A	1
DC load			
Rated operational current I_e/DC-12			
• For rated operational voltage U_e	24 V	A	6
	60 V	A	6
	110 V	A	3
	125 V	A	2
	220 V	A	1
	440 V	A	0.3
	600 V	A	0.15
Rated operational current I_e/DC-13			
• For rated operational voltage U_e	24 V	A	6
	60 V	A	2
	110 V	A	1
	125 V	A	0.9
	220 V	A	0.3
	440 V	A	0.14
	600 V	A	0.1
Contact reliability at 17 V, 1 mA acc. to IEC 60947-5-4/EN 60947-5-4			Frequency of contact faults < 10^{-8} i. e. <1 fault per 100 million operating cycles

Endurance of the auxiliary contacts

It is assumed that the operating mechanisms are switched randomly, i. e. not synchronized with the phase angle of the supply system.

The contact endurance is mainly dependent on the breaking current.

The characteristic curves apply to:
- Integrated auxiliary contacts on 3RT20
- 3RH29 11, 3RH29 21 auxiliary switch blocks[1)]

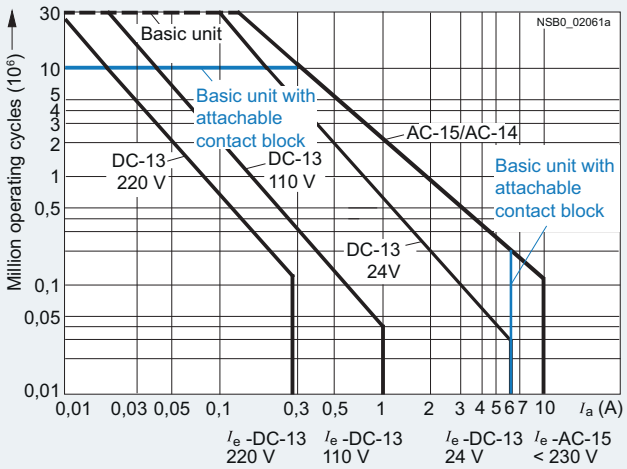


Diagram legend:
I_a = Breaking current
I_e = Rated operational current

[1)] I_e = 6 A for AC-15/AC-14.

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SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

Contactor	Type	3RT2
	Size	S00 and S0

Endurance of the main contacts

The characteristic curves show the contact endurance of the contactors when switching resistive and inductive AC loads (AC-1/AC-3) depending on the breaking current and rated operational voltage. It is assumed that the operating mechanisms are switched randomly, i. e. not synchronized with the phase angle of the supply system.

The rated operational current I_e complies with utilization category AC-4 (breaking six times the rated operational current) and is intended for a contact endurance of at least 200 000 operating cycles.

If a shorter endurance is sufficient, the rated operational current I_e/AC-4 can be increased.

If the contacts are used for **mixed operation**, i. e. normal switching (breaking the rated operational current according to utilization category AC-3) in combination with intermittent inching (breaking several times the rated operational current according to utilization category AC-4), the contact endurance can be calculated approximately from the following equation:

$$X = \frac{A}{1 + \frac{C}{100}\left(\frac{A}{B} - 1\right)}$$

Characters in the equation:

X Contact endurance for mixed operation in operating cycles

A Contact endurance for normal operation ($I_a = I_e$) in operating cycles

B Contact endurance for inching (I_a = multiple of I_e) in operating cycles

C Inching operations as a percentage of total switching operations

Size S00

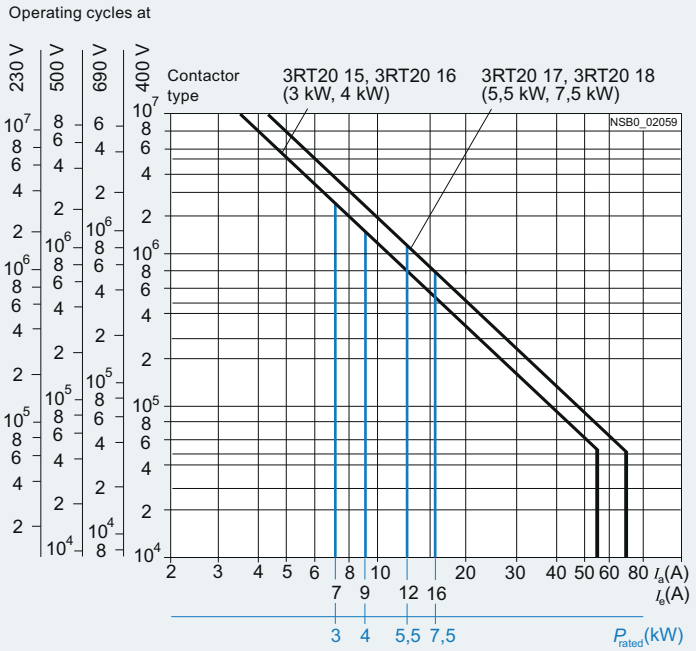


Diagram legend:
P_{rated} = Rated power for squirrel-cage motors at 400 V
I_a = Breaking current
I_e = Rated operational current

Size S0

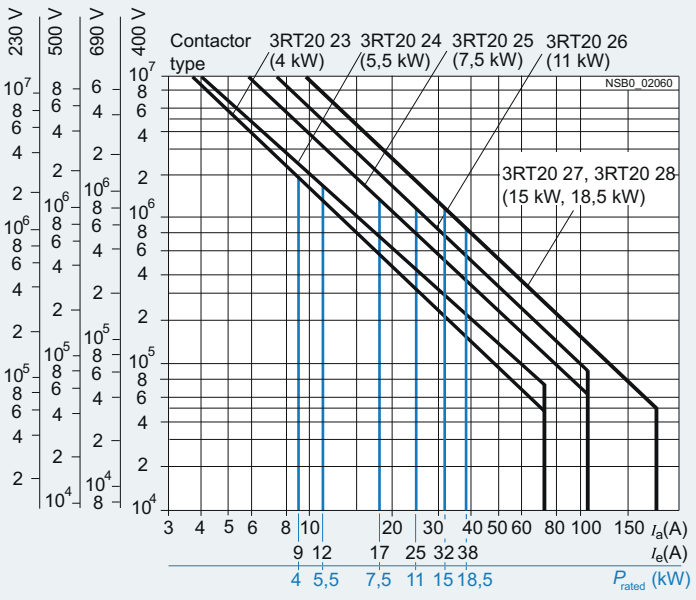
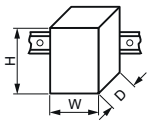
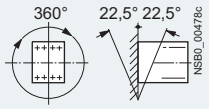


Diagram legend:
P_{rated} = Rated power for squirrel-cage motors at 400 V
I_a = Breaking current
I_e = Rated operational current

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SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

Type			**3RT20 15, 3RT20 16**	**3RT20 17, 3RT20 18**
Size			**S00**	**S00**
Dimensions (W x H x D)[1]		mm	45 x 57.5 x 73 / 45 x 70 x 73	
• With mounted auxiliary switch block		mm	45 x 57.5 x 116 / 45 x 70 x 121	
• With mounted function block		mm	45 x 57.5 x 142 / 45 x 70 x 142	
General technical specifications				
Permissible mounting positions				
The contactors are designed for operation on a vertical mounting surface.				
Upright mounting position			Special version required	
Mechanical endurance				
• Basic unit		Operating cycles	30 million	
• Basic unit with snap-on auxiliary switch block		Operating cycles	10 million	
• Solid-state compatible auxiliary switch block		Operating cycles	5 million	
Electrical endurance			[2]	
Rated insulation voltage U_i (pollution degree 3)		V	690	
Rated impulse withstand voltage U_{imp}		kV	6	
Protective separation between the coil and the main contacts acc. to IEC 60947-1, Appendix N		V	400	
Mirror contacts				
A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with a NO main contact.				
• 3RT20 1., 3RT23 1. (removable auxiliary switch block)			Yes, this applies to both the basic unit as well as to between the basic unit and the mounted auxiliary switch block acc. to IEC 60947-4-1, Appendix F	
• 3RT20 1., 3RT23 1. (permanently mounted auxiliary switch block)			Yes, acc. to IEC 60947-4-1, Appendix F, and SUVA	
• 3RH29 19-.NF.. solid-state compatible auxiliary switch blocks have no mirror contacts.				
Ambient temperature				
• During operation		°C	-25 ... +60	
• During storage		°C	-55 ... +80	
Degree of protection acc. to IEC 60947-1, Appendix C			IP20, coil assembly IP40	
Touch protection acc. to EN 50274			Finger-safe	
Shock resistance rectangular pulse				
• AC operation		*g*/ms	6.7/5 and 4.2/10	7.3/5 and 4.7/10
• DC operation		*g*/ms	6.7/5 and 4.2/10	7.3/5 and 4.7/10
Shock resistance sine pulse				
• AC operation		*g*/ms	10.5/5 and 6.6/10	11.4/5 and 7.3/10
• DC operation		*g*/ms	10.5/5 and 6.6/10	11.4/5 and 7.3/10
Conductor cross-sections			[3]	
Short-circuit protection for contactors without overload relays				
Main circuit				
• Fuse links, gG operational class: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE according to IEC 60947-4-1/EN 60947-4-1				
- Type of coordination "1"		A	35	50
- Type of coordination "2"		A	20	25
- Weld-free[4]		A	10	10
• Miniature circuit breakers (up to 230 V) with C characteristic Short-circuit current 1 kA, type of coordination "1"		A	10	10
Auxiliary circuit				
• Short-circuit test with fuse links of gG operational class: DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current I_k = 1 kA acc. to IEC 60947-5-1		A	10	
• Test with miniature circuit breaker up to 230 V with C characteristic: Short-circuit current I_k = 400 A acc. to IEC 60947-5-1		A	6	
Short-circuit protection for contactors with overload relays			See Configuration Manual "Configuring SIRIUS Innovations"	
Short-circuit protection for fuseless load feeders			See Chapter 8, "Load Feeders and Motor Starters for Use in the Control Cabinet" → "SIRIUS 3RA2 Load Feeders"	

1) Dimensions for devices with screw terminals / spring-type terminals.
2) For endurance of the main contacts see page 3/16.
3) For conductor cross-sections see page 3/20.
4) Test conditions according to IEC 60947-4-1.

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SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

Contactor	Type		3RT20 15, 3RT20 16	3RT20 17, 3RT20 18
	Size		S00	S00
Control				
Coil operating range				
• AC operation	50 Hz		0.8 ... 1.1 x U_s	
	60 Hz		0.85 ... 1.1 x U_s	
• DC operation	Up to 50 °C		0.8 ... 1.1 x U_s	
	Up to 60 °C		0.85 ... 1.1 x U_s	
Power consumption of the solenoid coils (when coil is cold and 1.0 x U_s)				
• AC operation, 50/60 Hz, standard version				
- Closing		VA	27/24.3	37/33
- P.f.			0.8/0.75	0.8/0.75
- Closed		VA	4.2/3.3	5.7/4.4
- P.f.			0.25/0.25	0.25/0.25
• AC operation, 50 Hz, for USA/Canada				
- Closing		VA	26.4	36
- P.f. for closing			0.81	0.8
- Closed		VA	4.4	5.9
- P.f. for closed			0.24	0.24
• AC operation, 60 Hz, for USA/Canada				
- Closing		VA	31.7	43
- P.f. for closing			0.81	0.8
- Closed		VA	4.8	6.5
- P.f. for closed			0.25	0.25
• DC operation (closing = closed)		W	4	4
Permissible residual current of the electronics (with 0 signal)				
• AC operation			< 3 mA x (230 V/U_s)[1]	< 4 mA x (230 V/U_s)[1]
• DC operation			< 10 mA x (24 V/U_s)[1]	
Operating times[2]				
Total break time = Opening delay + Arcing time				
• AC operation for 0.8 ... 1.1 × U_s.	Closing delay	ms	9 ... 35	8 ... 33
	Opening delay	ms	3.5 ... 14	4 ... 15
• DC operation for 0.85 ... 1.1 × U_s	Closing delay	ms	30 ... 100	30 ... 100
	Opening delay	ms	7 ... 13	7 ... 13
• Arcing time		ms	10 ... 15	10 ... 15
Operating times for 1.0 x U_s[2]				
• AC operation	Closing delay	ms	9.5 ... 24	9 ... 22
	Opening delay	ms	4 ... 14	4.5 ... 15
• DC operation	Closing delay	ms	35 ... 50	35 ... 50
	Opening delay	ms	7 ... 12	7 ... 12

1) The 3RT29 16-1GA00 additional load module is recommended for higher residual currents.

2) The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 10 times; diode assembly 2 to 6 times, suppressor diode +1 ms to 5 ms; varistor +2 ms to 5 ms).

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SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

Contactor	Type		3RT20 15	3RT20 16	3RT20 17	3RT20 18
	Size		S00	S00	S00	S00
Main circuit						
AC capacity						
Utilization category AC-1 Switching resistive loads						
• Rated operational current I_e	At 40 °C up to 690 V	A	18	22	22	22
	At 60 °C up to 690 V	A	16	20	20	20
• Rated power for AC loads[1] P.f.= 0.95 (at 60 °C)	230 V	kW	6.3	7.5	7.5	7.5
	400 V	kW	11	13	13	13
	500 V	kW	13.8	17	17	17
	690 V	kW	19	22	22	22
• Minimum conductor cross-section for loads with I_e	At 40 °C	mm^2	2.5	2.5	2.5	2.5
	At 60 °C	mm^2	2.5	2.5	2.5	2.5
Utilization categories AC-2 and AC-3						
• Rated operational currents I_e	Up to 400 V	A	7	9	12	16
	440 V	A	7	9	11	15
	500 V	A	6	7.7	9.2	12.4
	690 V	A	4.9	6.7	6.7	8.8
• Rated power for slipring or squirrel-cage motors at 50 and 60 Hz	At 230 V	kW	2.2	3	3	4
	400 V	kW	3	4	5.5	7.5
	500 V	kW	3.5	4.5	5.5	7.5
	690 V	kW	4	5.5	5.5	7.5
Thermal load capacity	10 s current[2]	A	56	72	96	128
Power loss per conducting path	At I_e/AC-3	W	0.42	0.7	1.24	2.2
Utilization category AC-4 (for I_a = 6 x I_e)[3]						
• Rated operational current I_e	Up to 400 V	A	6.5	8.5	8.5	11.5
• Rated power for squirrel-cage motors with 50 Hz and 60 Hz	Up to 400 V	kW	3	4	4	5.5
• The following applies to a contact endurance of about 200000 operating cycles:						
- Rated operational currents I_e	Up to 400 V	A	2.6	4.1	4.1	5.5
	690 V	A	1.8	3.3	3.3	4.4
- Rated power for squirrel-cage motors with 50 Hz and 60 Hz	At 230 V	kW	0.67	1.1	1.1	1.5
	400 V	kW	1.15	2	2	2.5
	500 V	kW	1.45	2	2	3
	690 V	kW	1.15	2.5	2.5	3.5
Switching frequency						
Switching frequency z in operating cycles/hour						
• Contactors without overload relay	No-load switching frequency AC	h^{-1}	10000			
Dependence of the switching frequency z' on the operational current I' and operational voltage U': $z' = z \cdot (I_e/I') \cdot (400\ V/U')^{1.5} \cdot 1/h$	No-load switching frequency DC	h^{-1}	10000			
	Rated operation					
	AC-1 (AC/DC)	h^{-1}	1000			
	AC-2 (AC/DC)	h^{-1}	750			
	AC-3 (AC/DC)	h^{-1}	750			
	AC-4 (AC/DC)	h^{-1}	250			
• Contactors with overload relays (mean value)		h^{-1}	15			

1) Industrial furnaces and electric heaters with resistance heating, etc. (increased power consumption on heating up has been taken into account).

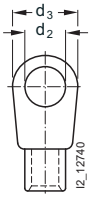
2) According to IEC 60947-4-1.
Rated values for various start-up conditions
see Chapter 7, "Protection Equipment" → "Overload Relays".

3) The data only apply to 3RT25 16 and 3RT25 17 (2 NO + 2 NC) up to a rated operational voltage of 400 V.

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SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

Contactor	Type		3RT20 15	3RT20 16	3RT20 17	3RT20 18
	Size		S00	S00	S00	S00
Conductor cross-sections						
Main conductors and auxiliary conductors [1] (1 or 2 conductors can be connected)			**Screw terminals**			
• Solid		mm^2	2 x (0.5 ... 1.5)[2]; 2 x (0.75 ... 2.5)[2] according to IEC 60947; max. 2 x (0.5 ... 4)			
• Finely stranded with end sleeve		mm^2	2 x (0.5 ... 1.5)[2]; 2 x (0.75 ... 2.5)[2]			
• AWG cables, solid or stranded		AWG	2 x (20 ... 16)[2]; 2 x (18 ... 14)[2]; 2 x 12			
• Terminal screw			M3 (for standard screwdriver size 2 and Pozidriv 2)			
• Tightening torque		Nm	0.8 ... 1.2 (7 ... 10.3 lb.in)			
Main conductors, auxiliary conductors and coil terminals [1] (1 or 2 conductors can be connected)			**Spring-type terminals**			
• Operating devices[3]		mm	3.0 x 0.5; 3.5 x 0.5			
• Solid		mm^2	2 x (0.5 ... 4)			
• Finely stranded with end sleeve		mm^2	2 x (0.5 ... 2.5)			
• Finely stranded without end sleeve		mm^2	2 x (0.5 ... 2.5)			
• AWG cables, solid or stranded		AWG	1 x (20 ... 12)			
Auxiliary conductors for front and laterally mounted auxiliary switches [1] (1 or 2 conductors can be connected)						
• Operating devices		mm	3.0 x 0.5; 3.5 x 0.5			
• Solid		mm^2	2 x (0.5 ... 2.5)			
• Finely stranded with end sleeve		mm^2	2 x (0.5 ... 1.5)			
• Finely stranded without end sleeve		mm^2	2 x (0.5 ... 2.5)			
• AWG cables, solid or stranded		AWG	2 x (20 ... 14)			
Main conductors and auxiliary conductors			**Ring terminal lug connections**			
• Terminal screw			M3, Pozidriv 2			
• Operating devices		mm	Ø 5 ... 6			
• Tightening torque		Nm	0.8 ... 1.2			
• Usable ring terminal lugs		mm	d_2 = min. 3.2			
- DIN 46234 without insulation sleeve - DIN 46225 without insulation sleeve - DIN 46237 with insulation sleeve - JIS C2805 Type R without insulation sleeve - JIS C2805 Type RAV with insulation sleeve - JIS C2805 Type RAP with insulation sleeve		mm	d_3 = max. 7.5			



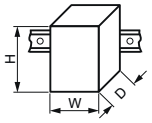
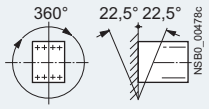
[1] Max. external diameter of the cable insulation: 3.6 mm. An insulation stop must be used for conductor cross-sections ≤ 1 mm^2 (see Accessories, page 3/60).

[2] If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

[3] Tool for opening the spring-type terminals see Accessories, page 3/60.

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SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

Type			3RT20 23	3RT20 24	3RT20 25	3RT20 26	3RT20 27	3RT20 28
Size			S0	S0	S0	S0	S0	S0
Dimensions (W x H x D) for AC operation[1]		mm	45 x 85 x 97 / 45 x 101.5 x 97					
• With mounted auxiliary switch block		mm	45 x 85 x 141 / 45 x 101.5 x 144					
• With mounted function block			45 x 85 x 166 / 45 x 101.5 x 166					
Dimensions (W x H x D) for DC operation[1]		mm	45 x 85 x 107 / 45 x 101.5 x 107					
• With mounted auxiliary switch block		mm	45 x 85 x 151 / 45 x 101.5 x 154					
• With mounted function block			45 x 85 x 176 / 45 x 101.5 x 176					
General data								
Permissible mounting positions								
The contactors are designed for operation on a vertical mounting surface.								
Upright mounting position			Special version required, also applies to 3RT20 2.-.K.40. coupling contactors.					
Mechanical endurance								
• Basic unit		Operating cycles	10 million					
• Basic unit with snap-on auxiliary switch block		Operating cycles	10 million					
• Solid-state compatible auxiliary switch block		Operating cycles	5 million					
Electrical endurance			2)					
Rated insulation voltage U_i (pollution degree 3)		V	690					
Rated impulse withstand voltage U_{imp}		kV	6					
Protective separation between the coil and the main contacts (acc. to IEC 60947-1, Appendix N)		V	400					
Mirror contacts								
A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with a NO main contact.								
• 3RT20 2., 3RT23 2. (removable auxiliary switch block)			Yes, acc. to IEC 60947-4-1, Appendix F					
• 3RT20 2., 3RT23 2. (permanently mounted auxiliary switch block)			Yes, acc. to IEC 60947-4-1, Appendix F					
Permissible ambient temperature								
• During operation		°C	-25 ... +60					
• During storage		°C	-55 ... +80					
Degree of protection acc. to IEC 60947-1, Appendix C			IP20, coil assembly IP20					
Touch protection acc. to EN 50274			Finger-safe					
Shock resistance rectangular pulse								
• AC operation		*g*/ms	7.5/5 and 4.7/10			8.3/5 and 5.310		
• DC operation		*g*/ms	10/5 and 7.5/10			10/5 and 7.5/10		
Shock resistance sine pulse								
• AC operation		*g*/ms	11.8/5 and 7.4/10			13.5/5 and 8.3/10		
• DC operation		*g*/ms	15/5 and >10/10			15/5 and >10/10		
Conductor cross-sections			3)					
Short-circuit protection for contactors without overload relays								
Main circuit			Short-circuit protection for contactors with overload relays see Configuration Manual "Configuring SIRIUS Innovations". Short-circuit protection for fuseless load feeders see Chapter 8, "Load Feeders and Motor Starters for Operation in the Control Cabinet" ➞ "SIRIUS 3RA2 Load Feeders".					
• Fuse links, gG operational class: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE according to IEC 60947-4-1/EN 60947-4-1								
- Type of coordination "1"		A	63			100	125	
- Type of coordination "2"		A	25			35	50	
- Weld-free[4]		A	10			16	16	
• Miniature circuit breakers with C characteristic (short-circuit current 3 kA, type of coordination "1")		A	25			32	40	
Auxiliary circuit								
• Short-circuit test with fuse links of gG operational class: DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current I_k = 1 kA acc. to IEC 60947-5-1		A	10					
• Test with miniature circuit breaker up to 230 V with C characteristic: Short-circuit current I_k = 400 A acc. to IEC 60947-5-1		A	10					

1) Dimensions for devices with screw terminals / spring-type terminals.

2) For endurance of the main contacts see page 3/16.

3) For conductor cross-sections see page 3/24.

4) Test conditions according to IEC 60947-4-1.

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SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

Contactor	Type	3RT20 23 ... 3RT20 25	3RT20 26 ... 3RT20 28	3RT20 2. -.NB3	3RT20 2. -.NF3..	3RT20 2. -.NP3
	Size	S0	S0	S0	S0	S0
Control						
Type of operating mechanism		AC or DC		UC (AC/DC)		
Coil operating range	AC/DC	0.8 ... 1.1 x U_s		0.7 ... 1.3 x U_s		
Power consumption of the solenoid coils (when coil is cold and 1.0 x U_s)						
• AC operation, 50 Hz, standard version						
- Closing	VA	65	77	6.5	13.6	16.1
- P.f.		0.82	0.82	0.98	0.98	0.98
- Closed	VA	7.6	9.8	1.26	1.91	3.41
- P.f.		0.25	0.25	0.25	0.25	0.25
• AC operation, 50/60 Hz, standard version						
- Closing	VA	68/67	81/79	6.5/5.7	13.6/13.2	16.1/15.9
- P.f.		0.72/0.74	0.72/0.74	0.98/0.96	0.98/0.99	0.99/0.99
- Closed	VA	7.9/6.5	10.5/8.5	1.26/1.30	1.91/1.90	3.41/3.58
- P.f.		0.25/0.28	0.25/0.28	0.78/0.8	0.61/0.61	0.36/0.45
• AC operation, 50 Hz, for USA/Canada						
- Closing	VA	65	77	--	--	--
- P.f.		0.82	0.82	--	--	--
- Closed	VA	7.6	9.8	--	--	--
- P.f.		0.25	0.28	--	--	--
• AC operation, 60 Hz, for USA/Canada						
- Closing	VA	73	87	--	--	--
- P.f.		0.76	0.76	--	--	--
- Closed	VA	7.2	9.4	--	--	--
- P.f.		0.28	0.28	--	--	--
• DC operation (closing/closed)	W	5.9/5.9	5.9/5.9	6.7/0.8	13.2/1.56	15/1.83
Permissible residual current of the electronics (with 0 signal)						
• AC operation	mA	< 6 mA x (230 V/U_s)	< 7 mA x (230 V/U_s)			
• DC operation	mA	< 16 mA x (24 V/U_s)				
Operating times for 0.8 ... 1.1 x U_s [1]						
Total break time = Opening delay + Arcing time						
• AC operation						
- Closing delay	ms	9 ... 38	8 ... 40	60 ... 80	50 ... 70	60 ... 80
- Opening delay	ms	4 ... 16	4 ... 16	30 ... 45	35 ... 45	35 ... 45
• DC operation						
- Closing delay	ms	50 ... 170	50 ... 170	60 ... 75	50 ... 70	50 ... 75
- Opening delay	ms	15 ... 17.5	15 ... 17.5	30 ... 45	35 ... 45	40 ... 50
• Arcing time	ms	10	10	10	10	10
Operating times for 1.0 x U_s [1]						
• AC operation						
- Closing delay	ms	10 ... 18	10 ... 17	65 ... 80	50 ... 70	60 ... 80
- Opening delay	ms	4 ... 16	4 ... 16	30 ... 45	35 ... 45	30 ... 50
• DC operation						
- Closing delay	ms	55 ... 80	55 ... 80	60 ... 80	56 ... 70	60 ... 80
- Opening delay	ms	16 ... 17	16 ... 17	30 ... 45	35 ... 45	30 ... 50

[1] The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (varistor +2 ms to 5 ms, diode assembly: 2 to 6 times).

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SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

Contactor		Type	3RT20 23	3RT20 24	3RT20 25	3RT20 26	3RT20 27	3RT20 28
		Size	S0	S0	S0	S0	S0	S0
Main circuit								
AC capacity								
Utilization category AC-1, switching resistive loads								
• Rated operational current I_e	At 40 °C up to 690 V	A	40				50	
	At 60 °C up to 690 V	A	35				42	
• Rated power for AC loads[1] P.f. = 0.95 (at 60 °C)	230 V	kW	13.3				16	
	400 V	kW	23				28	
	500 V	kW	29				35	
	690 V	kW	40				48	
• Minimum conductor cross-section for loads with I_e	At 40 °C	mm^2	10				10	
	At 60 °C	mm^2	10				10	
Utilization categories AC-2 and AC-3								
• Rated operational currents I_e	Up to 400 V	A	9	12	17	25	32	38
	440 V	A	9	12	17	22	32	35
	500 V	A	6.8	12.4	17	18	32	32
	690 V	A	6.7	9	13	13	21	21
• Rated power for slipring or squirrel-cage motors at 50 and 60 Hz	At 110 V	kW	1.1	1.5	2.2	3	4	4
	230 V	kW	3	3	4	5.5	7.5	7.5
	400 V	kW	4	5.5	7.5	11	15	18.5
	500 V	kW	4	7.5	10	11	18.5	18.5
	660 V / 690 V	kW	5.5	7.5	11	11	18.5	18.5
Thermal load capacity	10 s current[2]	A	80	110	150	200	260	300
Power loss per conducting path	At I_e/AC-3	W	0.4	0.5	0.9	1.6	2.7	3.8
Utilization category AC-4 (for $I_a = 6 \times I_e$)								
• Rated operational current I_e	Up to 400 V	A	8.5	12.5	15.5	15.5	22	
• Rated power for squirrel-cage motors with 50 Hz and 60 Hz	At 400 V	kW	4	5.5	7.5	7.5	11	
• The following applies to a contact endurance of about 200000 operating cycles:								
- Rated operational currents I_e	Up to 400 V	A	4.1	5.5	7.7	9	12	
	690 V	A	3.3	5.5	7.7	9	12	
- Rated power for squirrel-cage motors with 50 Hz and 60 Hz	At 110 V	kW	0.5	0.73	1	1.2	1.6	
	230 V	kW	1.1	1.5	2	2.5	3.4	
	400 V	kW	2	2.6	3.5	4.4	6	
	500 V	kW	2	3.3	4.6	5.6	7.5	
	690 V	kW	2.5	4.6	6	7.7	10.3	
Switching frequency								
Switching frequency *z* in operating cycles/hour								
• Contactors without overload relays	No-load switching frequency AC	h^{-1}	5000					
Dependence of the switching frequency z' on the operational current I' and operational voltage U': $z' = z \cdot (I_e/I') \cdot (400\ V/U')^{1.5} \cdot 1/h$	No-load switching frequency DC	h^{-1}	1500					
	AC-1 (AC/DC)	h^{-1}	1000					
	AC-2 (AC/DC)	h^{-1}	1000			750		
	AC-3 (AC/DC)	h^{-1}	1000			750		
	AC-4 (AC/DC)	h^{-1}	300			250		
• Contactors with overload relays (mean value)		h^{-1}	15					

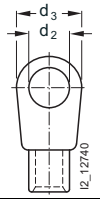
1) Industrial furnaces and electric heaters with resistance heating, etc. (increased power consumption on heating up has been taken into account).

2) According to IEC 60947-4-1.
Rated values for various start-up conditions
see Chapter 7, "Protection Equipment" → "Overload Relays".

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SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

Contactor	Type	3RT20 23	3RT20 24	3RT20 25	3RT20 26	3RT20 27	3RT20 28
	Size	S0	S0	S0	S0	S0	S0
Conductor cross-sections (1 or 2 conductors connectable)							
Main conductors[1]		**Screw terminals**					
Conductor cross-section							
• Solid	mm²	2 x (1 ... 2.5)[2]; 2 x (2.5 ... 10)[2] according to IEC 60947					
• Finely stranded with end sleeve	mm²	2 x (1 ... 2.5)[2]; 2 x (2.5 ... 6)[2]; 1 x 10					
• AWG cables, solid or stranded	AWG	2 x (16 ... 12); 2 x (14 ... 8)					
• Terminal screws		M4 (Pozidriv size 2)					
- Tightening torque	Nm	2 ... 2.5 (18 ... 22 lb.in)					
Auxiliary conductors[1]							
• Solid	mm²	2 x (0.5 ... 1.5)[2]; 2 x (0.75 ... 2.5)[2] according to IEC 60947					
• Finely stranded with end sleeve	mm²	2 x (0.5 ... 1.5)[2]; 2 x (0.75 ... 2.5)[2]					
• solid or stranded AWG (2 x)	AWG	2 x (20 ... 16)[2]; 2 x (18 ... 14)[2]; 1 x 12					
• Terminal screws		M3					
- Tightening torque	Nm	0.8 ... 1.2 (7 ... 10.3 lb.in)					
Main conductors[1]		**Spring-type terminals**					
• Operating devices[3]	mm	3.0 x 0.5; 3.5 x 0.5					
• Solid	mm²	2 x (1 ... 10)					
• Finely stranded with end sleeve	mm²	2 x (1 ... 6)					
• Finely stranded without end sleeve	mm²	2 x (1 ... 6)					
• AWG cables, solid or stranded	AWG	2 x (18 ... 8)					
Auxiliary conductors[1]							
• Operating devices		3.0 x 0.5; 3.5 x 0.5					
• Solid	mm²	2 x (0.5 ... 2.5)					
• Finely stranded with end sleeve	mm²	2 x (0.5 ... 1.5)					
• Finely stranded without end sleeve	mm²	2 x (0.5 ... 2.5)					
• AWG cables, solid or stranded	AWG	2 x (20 ... 14)					
Main conductors		**Ring terminal lug connections**					
• Terminal screw	mm	M4, Pozidriv 2					
• Operating devices	mm	Ø 5 ... 6					
• Tightening torque	Nm	2 ... 2.5					
• Usable ring terminal lugs	mm	d_2 = min. 4.3					
- DIN 46234 without insulation sleeve - DIN 46225 without insulation sleeve - DIN 46237 with insulation sleeve - JIS C2805 Type R without insulation sleeve - JIS C2805 Type RAV with insulation sleeve - JIS C2805 Type RAP with insulation sleeve	mm	d_3 = max. 12.2					
Auxiliary conductors							
• Terminal screw		M3, Pozidriv 2					
• Operating devices	mm	Ø 5 ... 6					
• Tightening torque	Nm	0.8 ... 1.2					
• Usable ring terminal lugs	mm	d_2 = min. 3.2					
	mm	d_3 = max. 7.5					



1) Max. external diameter of the cable insulation: 3.6 mm. An insulation stop must be used for conductor cross-sections ≤ 1 mm² (see Accessories, page 3/60).

2) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

3) Tool for opening the spring-type terminals see Accessories, page 3/60.

Contactor	Size	S00	S0	S0
		Screw or spring-type terminals	Screw or spring-type terminals	Screw or spring-type terminals
		Integrated or snap-on auxiliary switch block	1- and 4-pole snap-on auxiliary switch block	Laterally mountable auxiliary switch block
cULus and CSA rated data of the auxiliary contacts				
Rated voltage	V AC	600	600	600
Switching capacity		A 600, Q 600	A 600, Q 600	A 300, Q 300
Uninterrupted current	At 240 V AC A	10	10	10

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SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

Contactor	Type		3RT20 15	3RT20 16	3RT20 17	3RT20 18
	Size		S00	S00	S00	S00
cULus and cULus rated data						
Rated insulation voltage		V AC	600			
Uninterrupted current, at 40 °C, open and enclosed		A	20			
Maximum horsepower ratings (cULus and cULus approved values)						
• Rated power for induction motors at 60 Hz	At 200 V	hp	1.5	2	3	3
	230 V	hp	2	3	3	5
	460 V	hp	3	5	7.5	10
	575 V	hp	5	7.5	10	10
Short-circuit protection[1] (contactor or overload relay)	At 600 V	kA	5	5	5	5
• Fuse CLASS J[2]		A	40	40	40	40
• Circuit breakers with overload protection according to UL 489		A	50	50	50	50
• Combination motor controllers type E according to UL 508			--[3]	--[3]	--[3]	--[3]
NEMA/EEMAC ratings						
NEMA/EEMAC size		hp	--			0
• Uninterrupted current						
- Open		A	--			18
- Enclosed		A	--			18
• Rated power for induction motors at 60 Hz	At 200 V	hp	--			3
	230 V	hp	--			3
	460 V	hp	--			5
	575 V	hp	--			5
Overload relays						
• Type			3RU21 1	/ 3RB30 1		
• Setting range		A	0.11 ... 16	/ 0.1 ... 16		

Contactor	Type		3RT20 23	3RT20 24	3RT20 25	3RT20 26	3RT20 27	3RT20 28
	Size		S0	S0	S0	S0	S0	S0
cULus and cULus rated data								
Rated insulation voltage		V AC	600				600	
Uninterrupted current, at 40 °C, open and enclosed		A	35				42	
Maximum horsepower ratings (cULus and cULus approved values)								
• Rated power for induction motors at 60 Hz	At 200 V	hp	2	3	3	5	10	10
	230 V	hp	3	3	5	7.5	10	10
	460 V	hp	5	7.5	10	15	20	25
	575 V	hp	7.5	10	15	20	25	25
Short-circuit protection[1] (contactor or overload relay)	At 600 V	kA	5	5	5	5	5	5
• Fuse CLASS J[2]		A	125				150	
• Circuit breakers with overload protection according to UL 489		A	70				100	
• Combination motor controllers type E according to UL 508	At 480 V	Type	3RV20 2					
		A	--					
		kA	--[3]					
	At 600 V	Type	3RV20 2					
		A	--					
		kA	--[3]					
NEMA/EEMAC ratings								
NEMA/EEMAC size		hp	--				1	
• Uninterrupted current								
- Open		A	--				27	
- Enclosed		A	--				27	
• Rated power for induction motors at 60 Hz	At 200 V	hp	--				7.5	
	230 V	hp	--				7.5	
	460 V	hp	--				10	
	575 V	hp	--				10	
Overload relays								
• Type			3RU21 2	/ 3RB30 2				
• Setting range		A	1.8 ... 40	/ 0.1 ... 40				

[1] For more information about short-circuit values, e. g. for protection against short-circuit currents, see the UL guide (Order No.: A5E02118883 for German) or UL reports (www.siemens.com/sirius/manuals) for the individual devices.

[2] Values for RK5 fuses on request.

[3] Values on request.

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SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

Selection and ordering data

AC operation

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

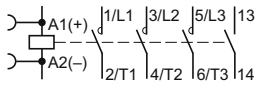


3RT20 1.-1A...

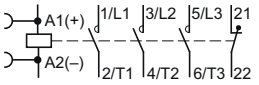


3RT20 1.-2A...

Rated data			Auxiliary contacts			Rated control supply voltage U_s at 50/60 Hz	DT	Screw terminals	DT	Spring-type terminals
AC-2 and AC-3, T_u: Up to 60 °C		AC-1, T_u: 40 °C						Configurator		Configurator
Operational current I_e up to 400 V	Rating of induction motors at 50 Hz and **400 V**	Operational current I_e up to 690 V	Ident. No.	Version NO	Version NC			Order No. / Price per PU		Order No. / Price per PU
A	**kW**	A		NO	NC	V AC				
For screw fixing and snap-on mounting onto TH 35 standard mounting rail										
Size S00[1)2)]										
• With auxiliary contact 1 NO, Ident. No. **10**										
7	**3**	18	**10**	1	--	24	▶	**3RT20 15-1AB01**	▶	**3RT20 15-2AB01**
						110	▶	**3RT20 15-1AF01**	▶	**3RT20 15-2AF01**
						230	▶	**3RT20 15-1AP01**	▶	**3RT20 15-2AP01**
			01	--	1	24	▶	**3RT20 15-1AB02**	▶	**3RT20 15-2AB02**
						110	▶	**3RT20 15-1AF02**	▶	**3RT20 15-2AF02**
						230	▶	**3RT20 15-1AP02**	▶	**3RT20 15-2AP02**
9	**4**	22	**10**	1	--	24	▶	**3RT20 16-1AB01**	▶	**3RT20 16-2AB01**
						110	▶	**3RT20 16-1AF01**	▶	**3RT20 16-2AF01**
						230	▶	**3RT20 16-1AP01**	▶	**3RT20 16-2AP01**
			01	--	1	24	▶	**3RT20 16-1AB02**	▶	**3RT20 16-2AB02**
						110	▶	**3RT20 16-1AF02**	▶	**3RT20 16-2AF02**
						230	▶	**3RT20 16-1AP02**	▶	**3RT20 16-2AP02**
12	**5.5**	22	**10**	1	--	24	▶	**3RT20 17-1AB01**	▶	**3RT20 17-2AB01**
						110	▶	**3RT20 17-1AF01**	▶	**3RT20 17-2AF01**
						230	▶	**3RT20 17-1AP01**	▶	**3RT20 17-2AP01**
			01	--	1	24	▶	**3RT20 17-1AB02**	▶	**3RT20 17-2AB02**
						110	▶	**3RT20 17-1AF02**	▶	**3RT20 17-2AF02**
						230	▶	**3RT20 17-1AP02**	▶	**3RT20 17-2AP02**
16	**7.5**	22	**10**	1	--	24	▶	**3RT20 18-1AB01**	▶	**3RT20 18-2AB01**
						110	▶	**3RT20 18-1AF01**	▶	**3RT20 18-2AF01**
						230	▶	**3RT20 18-1AP01**	▶	**3RT20 18-2AP01**
			01	--	1	24	▶	**3RT20 18-1AB02**	▶	**3RT20 18-2AB02**
						110	▶	**3RT20 18-1AF02**	▶	**3RT20 18-2AF02**
						230	▶	**3RT20 18-1AP02**	▶	**3RT20 18-2AP02**



• With auxiliary contact 1 NC, Ident. No. **01**



For online configurator see www.siemens.com/sirius/configurators.

1) The 3RT20 contactors are also available with ring terminal lug connection. Please contact your local Siemens representative for information about these versions.

2) For size S00: Coil operating range at 50 Hz: 0.8 ... 1.1 × U_s, at 60 Hz: 0.85 ... 1.1 × U_s.

Other voltages according to page 3/36 on request.

For accessories see page 3/45.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

AC operation

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

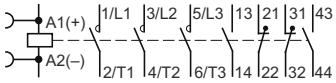


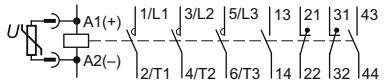
3RT20 1.-1AP04-3MA0



3RT20 1.-2AP04-3MA0

Rated data			Auxiliary contacts			Rated control supply voltage U_s at 50/60 Hz	DT	Screw terminals / Configurator	DT	Spring-type terminals / Configurator
AC-2 and AC-3, T_u: Up to 60 °C		AC-1, T_u: 40 °C								
Operational current I_e up to 400 V	Rating of induction motors at 50 Hz and 400 V	Operational current I_e up to 690 V	Ident. No.	Version NO	Version NC			Order No. / Price per PU		Order No. / Price per PU
A	**kW**	A		NO	NC	V AC				
For screw fixing and snap-on mounting onto TH 35 standard mounting rail										
***Size S00*[1)]**										
With permanently mounted auxiliary switch block										
7	**3**	18	**22**	2	2	230	B	**3RT20 15-1AP04-3MA0**	B	**3RT20 15-2AP04-3MA0**
9	**4**	22	**22**	2	2	230	B	**3RT20 16-1AP04-3MA0**	B	**3RT20 16-2AP04-3MA0**
12	**5.5**	22	**22**	2	2	230	B	**3RT20 17-1AP04-3MA0**	B	**3RT20 17-2AP04-3MA0**
16	**7.5**	22	**22**	2	2	230	▶	**3RT20 18-1AP04-3MA0**	▶	**3RT20 18-2AP04-3MA0**
With permanently mounted auxiliary switch block and varistor plugged onto the front side										
7	**3**	18	**22**	2	2	230	B	**3RT20 15-1CP04-3MA0**	B	**3RT20 15-2CP04-3MA0**
9	**4**	22	**22**	2	2	230	B	**3RT20 16-1CP04-3MA0**	B	**3RT20 16-2CP04-3MA0**
12	**5.5**	22	**22**	2	2	230	B	**3RT20 17-1CP04-3MA0**	B	**3RT20 17-2CP04-3MA0**
16	**7.5**	22	**22**	2	2	230	B	**3RT20 18-1CP04-3MA0**	B	**3RT20 18-2CP04-3MA0**





For online configurator see www.siemens.com/sirius/configurators.

1) For size S00: Coil operating range
at 50 Hz: 0.8 ... 1.1 × U_s,
at 60 Hz: 0.85 ... 1.1 × U_s.

Other voltages according to page 3/36 on request.

For accessories see page 3/45.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

AC operation

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

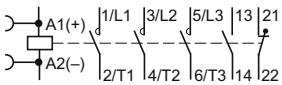


3RT20 2.-1A.00



3RT20 2.-2A.00

Rated data			Auxiliary contacts			Rated control supply voltage U_s at 50 Hz	DT	Screw terminals	DT	Spring-type terminals
AC-2 and AC-3, T_u: Up to 60 °C		AC-1, T_u: 40 °C						Configurator		Configurator
Operational current I_e up to	Rating of induction motors at 50 Hz and	Operational current I_e up to	Ident. No.	Version				Order No. Price per PU		Order No. Price per PU
400 V	**400 V**	690 V								
A	**kW**	A		NO	NC	V AC				
For screw fixing and snap-on mounting onto TH 35 standard mounting rail										
Size S0 [1]										
9	**4**	40	**11**	1	1	24	▶	**3RT20 23-1AB00**	A	**3RT20 23-2AB00**
						110	▶	**3RT20 23-1AF00**	A	**3RT20 23-2AF00**
						230	▶	**3RT20 23-1AP00**	▶	**3RT20 23-2AP00**
12	**5.5**	40	**11**	1	1	24	▶	**3RT20 24-1AB00**	A	**3RT20 24-2AB00**
						110	▶	**3RT20 24-1AF00**	A	**3RT20 24-2AF00**
						230	▶	**3RT20 24-1AP00**	▶	**3RT20 24-2AP00**
17	**7.5**	40	**11**	1	1	24	▶	**3RT20 25-1AB00**	A	**3RT20 25-2AB00**
						110	▶	**3RT20 25-1AF00**	A	**3RT20 25-2AF00**
						230	▶	**3RT20 25-1AP00**	▶	**3RT20 25-2AP00**
25	**11**	40	**11**	1	1	24	▶	**3RT20 26-1AB00**	A	**3RT20 26-2AB00**
						110	▶	**3RT20 26-1AF00**	A	**3RT20 26-2AF00**
						230	▶	**3RT20 26-1AP00**	▶	**3RT20 26-2AP00**
32	**15**	50	**11**	1	1	24	▶	**3RT20 27-1AB00**	A	**3RT20 27-2AB00**
						110	▶	**3RT20 27-1AF00**	A	**3RT20 27-2AF00**
						230	▶	**3RT20 27-1AP00**	▶	**3RT20 27-2AP00**
38	**18.5**	50	**11**	1	1	24	▶	**3RT20 28-1AB00**	A	**3RT20 28-2AB00**
						110	▶	**3RT20 28-1AF00**	A	**3RT20 28-2AF00**
						230	▶	**3RT20 28-1AP00**	B	**3RT20 28-2AP00**



For online configurator see www.siemens.com/sirius/configurators.

[1] The 3RT20 contactors are also available with ring terminal lug connection. Please contact your local Siemens representative for information about these versions.

Other voltages according to page 3/36 on request.

For accessories see page 3/45.
For spare parts see page 3/61.

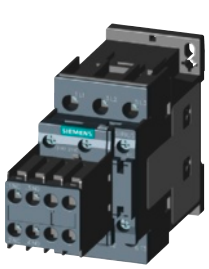
* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

AC operation

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

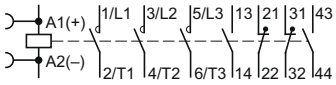


3RT20 2.-1A.04



3RT20 2.-2A.04

Rated data			Auxiliary contacts			Rated control supply voltage U_s at 50 Hz	DT	Screw terminals		DT	Spring-type terminals	
AC-2 and AC-3, T_u: Up to 60 °C		AC-1, T_u: 40 °C						Configurator			Configurator	
Operational current I_e up to	Rating of induction motors at 50 Hz and	Operational current I_e up to	Ident. No.	Version				Order No.	Price per PU		Order No.	Price per PU
400 V	**400 V**	690 V										
A	**kW**	A		NO	NC	V AC						
For screw fixing and snap-on mounting onto TH 35 standard mounting rail												
Size S0 [1]												
With mounted auxiliary switch block (removable) [2]												
9	**4**	40	**22**	2	2	24	B	**3RT20 23-1AB04**		B	**3RT20 23-2AB04**	
						230	▶	**3RT20 23-1AP04**		A	**3RT20 23-2AP04**	
12	**5.5**	40	**22**	2	2	24	B	**3RT20 24-1AB04**		B	**3RT20 24-2AB04**	
						110	B	**3RT20 24-1AF04**		B	**3RT20 24-2AF04**	
						230	▶	**3RT20 24-1AP04**		A	**3RT20 24-2AP04**	
17	**7.5**	40	**22**	2	2	24	B	**3RT20 25-1AB04**		B	**3RT20 25-2AB04**	
						110	B	**3RT20 25-1AF04**		B	**3RT20 25-2AF04**	
						230	▶	**3RT20 25-1AP04**		A	**3RT20 25-2AP04**	
25	**11**	40	**22**	2	2	24	B	**3RT20 26-1AB04**		B	**3RT20 26-2AB04**	
						110	B	**3RT20 26-1AF04**		B	**3RT20 26-2AF04**	
						230	▶	**3RT20 26-1AP04**		A	**3RT20 26-2AP04**	
32	**15**	50	**22**	2	2	24	B	**3RT20 27-1AB04**		B	**3RT20 27-2AB04**	
						110	B	**3RT20 27-1AF04**		B	**3RT20 27-2AF04**	
						230	▶	**3RT20 27-1AP04**		A	**3RT20 27-2AP04**	
38	**18.5**	50	**22**	2	2	24	B	**3RT20 28-1AB04**		B	**3RT20 28-2AB04**	
						110	B	**3RT20 28-1AF04**		B	**3RT20 28-2AF04**	
						230	▶	**3RT20 28-1AP04**		A	**3RT20 28-2AP04**	



For online configurator see www.siemens.com/sirius/configurators.

[1] The 3RT20 contactors are also available with ring terminal lug connection. Please contact your local Siemens representative for information about these versions.

[2] Order No. for the auxiliary switch block (removable): 3RH29 11-.HA11

Other voltages according to page 3/36 on request.

For accessories see page 3/45.
For spare parts see page 3/61.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

AC operation

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B



3RT20 2.-1AL24-3MA0



3RT20 2.-2AL24-3MA0

Rated data			Auxiliary contacts			Rated control supply voltage U_s at 50/60 Hz	DT	Screw terminals		DT	Spring-type terminals	
AC-2 and AC-3, T_u: Up to 60 °C		AC-1, T_u: 40 °C						Configurator			Configurator	
Operational current I_e up to	Rating of induction motors at 50 Hz and	Operational current I_e up to	Ident. No.	Version				Order No.	Price per PU		Order No.	Price per PU
400 V	**400 V**	690 V										
A	**kW**	A		NO	NC	V AC						
For screw fixing and snap-on mounting onto TH 35 standard mounting rail												
Size S0												
With permanently mounted auxiliary switch block[1]												
9	**4**	40	**22**	2	2	230	B	**3RT20 23-1AL24-3MA0**		B	**3RT20 23-2AL24-3MA0**	
12	**5.5**	40	**22**	2	2	230	B	**3RT20 24-1AL24-3MA0**		B	**3RT20 24-2AL24-3MA0**	
17	**7.5**	40	**22**	2	2	230	B	**3RT20 25-1AL24-3MA0**		B	**3RT20 25-2AL24-3MA0**	
25	**11**	40	**22**	2	2	230	B	**3RT20 26-1AL24-3MA0**		B	**3RT20 26-2AL24-3MA0**	
32	**15**	50	**22**	2	2	230	B	**3RT20 27-1AL24-3MA0**		B	**3RT20 27-2AL24-3MA0**	
38	**18.5**	50	**22**	2	2	230	B	**3RT20 28-1AL24-3MA0**		B	**3RT20 28-2AL24-3MA0**	
With permanently mounted auxiliary switch block and varistor plugged into the front side												
9	**4**	40	**22**	2	2	230	B	**3RT20 23-1CL24-3MA0**		B	**3RT20 23-2CL24-3MA0**	
12	**5.5**	40	**22**	2	2	230	B	**3RT20 24-1CL24-3MA0**		B	**3RT20 24-2CL24-3MA0**	
17	**7.5**	40	**22**	2	2	230	B	**3RT20 25-1CL24-3MA0**		B	**3RT20 25-2CL24-3MA0**	
25	**11**	40	**22**	2	2	230	B	**3RT20 26-1CL24-3MA0**		B	**3RT20 26-2CL24-3MA0**	
32	**15**	50	**22**	2	2	230	B	**3RT20 27-1CL24-3MA0**		B	**3RT20 27-2CL24-3MA0**	
38	**18.5**	50	**22**	2	2	230	B	**3RT20 28-1CL24-3MA0**		B	**3RT20 28-2CL24-3MA0**	

For online configurator see www.siemens.com/sirius/configurators.

1) No retrofitting of surge suppressors.

Other voltages according to page 3/36 on request.

For accessories see page 3/45.
For spare parts see page 3/61.

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DC operation · DC solenoid system

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B



3RT20 1.-1B...



3RT20 1.-2B...

Rated data			Auxiliary contacts			Rated control supply voltage U_s	DT	Screw terminals	DT	Spring-type terminals
AC-2 and AC-3, T_u: Up to 60 °C		AC-1, T_u: 40 °C						Configurator		Configurator
Operational current I_e up to	Rating of induction motors at 50 Hz and	Operational current I_e up to	Ident. No.	Version				Order No. Price per PU		Order No. Price per PU
400 V	**400 V**	690 V		NO	NC					
A	**kW**	A				V DC				
For screw fixing and snap-on mounting onto TH 35 standard mounting rail										
***Size S00*[1)]**										
• With auxiliary contact 1 NO, Ident. No. **10**										
• With auxiliary contact 1 NC, Ident. No. **01**										
7	**3**	18	**10**	1	--	24 220	▶ A	**3RT20 15-1BB41** **3RT20 15-1BM41**	▶ B	**3RT20 15-2BB41** **3RT20 15-2BM41**
			01	--	1	24 220	▶ B	**3RT20 15-1BB42** **3RT20 15-1BM42**	▶ B	**3RT20 15-2BB42** **3RT20 15-2BM42**
9	**4**	22	**10**	1	--	24 220	▶ B	**3RT20 16-1BB41** **3RT20 16-1BM41**	▶ B	**3RT20 16-2BB41** **3RT20 16-2BM41**
			01	--	1	24 220	▶ B	**3RT20 16-1BB42** **3RT20 16-1BM42**	▶ B	**3RT20 16-2BB42** **3RT20 16-2BM42**
12	**5.5**	22	**10**	1	--	24 220	▶ B	**3RT20 17-1BB41** **3RT20 17-1BM41**	▶ B	**3RT20 17-2BB41** **3RT20 17-2BM41**
			01	--	1	24 220	▶ B	**3RT20 17-1BB42** **3RT20 17-1BM42**	▶ B	**3RT20 17-2BB42** **3RT20 17-2BM42**
16	**7.5**	22	**10**	1	--	24 220	▶ B	**3RT20 18-1BB41** **3RT20 18-1BM41**	▶ B	**3RT20 18-2BB41** **3RT20 18-2BM41**
			01	--	1	24 220	▶ B	**3RT20 18-1BB42** **3RT20 18-1BM42**	▶ B	**3RT20 18-2BB42** **3RT20 18-2BM42**
With integrated coil circuit (diode)										
• With auxiliary contact 1 NO, Ident. No. **10**										
• With auxiliary contact 1 NC, Ident. No. **01**										
7	**3**	18	**10**	1	--	24	▶	**3RT20 15-1FB41**	▶	**3RT20 15-2FB41**
			01	--	1	24	▶	**3RT20 15-1FB42**	▶	**3RT20 15-2FB42**
9	**4**	22	**10**	1	--	24	▶	**3RT20 16-1FB41**	▶	**3RT20 16-2FB41**
			01	--	1	24	▶	**3RT20 16-1FB42**	▶	**3RT20 16-2FB42**
12	**5.5**	22	**10**	1	--	24	▶	**3RT20 17-1FB41**	▶	**3RT20 17-2FB41**
			01	--	1	24	▶	**3RT20 17-1FB42**	▶	**3RT20 17-2FB42**
16	**7.5**	22	**10**	1	--	24	▶	**3RT20 18-1FB41**	▶	**3RT20 18-2FB41**
			01	--	1	24	▶	**3RT20 18-1FB42**	▶	**3RT20 18-2FB42**

For online configurator see www.siemens.com/sirius/configurators.

1) The 3RT20 contactors are also available with ring terminal lug connection. Please contact your local Siemens representative for information about these special contactor versions with ring terminal lug connection.

Other voltages according to page 3/36 on request.

For accessories see page 3/45.

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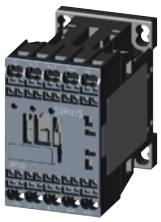
SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

DC operation · DC solenoid system

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B



3RT20 1.-1BB4.-0CC0



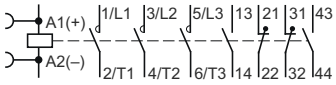
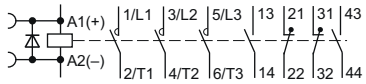
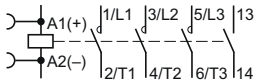
3RT20 1.-2BB4.-0CC0



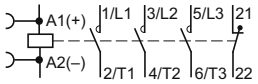
3RT20 1.-1BB44-3MA0



3RT20 1.-2BB44-3MA0

Rated data			Auxiliary contacts			Rated control supply voltage U_s	DT	Screw terminals	DT	Spring-type terminals
AC-2 and AC-3, T_u: Up to 60 °C		AC-1, T_u: 40 °C						Configurator		Configurator
Operational current I_e up to	Rating of induction motors at 50 Hz and	Operational current I_e up to	Ident. No.	Version				Order No. Price per PU		Order No. Price per PU
400 V	**400 V**	690 V								
A	**kW**	A		NO	NC	V DC				
For screw fixing and snap-on mounting onto TH 35 standard mounting rail										
Size S00										
With permanently mounted auxiliary switch block										
										
7	**3**	18	**22**	2	2	24	▶	**3RT20 15-1BB44-3MA0**	B	**3RT20 15-2BB44-3MA0**
9	**4**	22	**22**	2	2	24	▶	**3RT20 16-1BB44-3MA0**	B	**3RT20 16-2BB44-3MA0**
12	**5.5**	22	**22**	2	2	24	B	**3RT20 17-1BB44-3MA0**	B	**3RT20 17-2BB44-3MA0**
16	**7.5**	22	**22**	2	2	24	B	**3RT20 18-1BB44-3MA0**	B	**3RT20 18-2BB44-3MA0**
With permanently mounted auxiliary switch block and integrated coil circuit (diode)										
										
7	**3**	18	**22**	2	2	24	B	**3RT20 15-1FB44-3MA0**	B	**3RT20 15-2FB44-3MA0**
9	**4**	22	**22**	2	2	24	B	**3RT20 16-1FB44-3MA0**	B	**3RT20 16-2FB44-3MA0**
12	**5.5**	22	**22**	2	2	24	B	**3RT20 17-1FB44-3MA0**	B	**3RT20 17-2FB44-3MA0**
16	**7.5**	22	**22**	2	2	24	B	**3RT20 18-1FB44-3MA0**	B	**3RT20 18-2FB44-3MA0**
Contactors with communication interface										
• With auxiliary contact 1 NO, Ident. No. **10**										
										
7	**3**	18	**10**	1	--	24	A	**3RT20 15-1BB41-0CC0**	A	**3RT20 15-2BB41-0CC0**
			01	--	1	24	A	**3RT20 15-1BB42-0CC0**	A	**3RT20 15-2BB42-0CC0**
9	**4**	22	**10**	1	--	24	A	**3RT20 16-1BB41-0CC0**	A	**3RT20 16-2BB41-0CC0**
			01	--	1	24	A	**3RT20 16-1BB42-0CC0**	A	**3RT20 16-2BB42-0CC0**
12	**5.5**	22	**10**	1	--	24	A	**3RT20 17-1BB41-0CC0**	A	**3RT20 17-2BB41-0CC0**
			01	--	1	24	A	**3RT20 17-1BB42-0CC0**	A	**3RT20 17-2BB42-0CC0**
16	**7.5**	22	**10**	1	--	24	A	**3RT20 18-1BB41-0CC0**	A	**3RT20 18-2BB41-0CC0**
			01	--	1	24	A	**3RT20 18-1BB42-0CC0**	A	**3RT20 18-2BB42-0CC0**

• With auxiliary contact 1 NC, Ident. No. **01**



For online configurator see www.siemens.com/sirius/configurators.

Other voltages according to page 3/36 on request.

For accessories see page 3/45.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

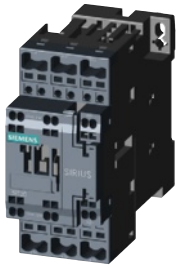
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DC operation · DC solenoid system

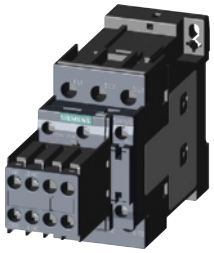
PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B



3RT20 2.-1B.40



3RT20 2.-2B.40

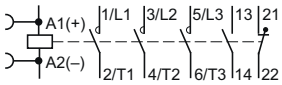


3RT20 2.-1B.44

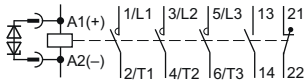


3RT20 2.-2B.44

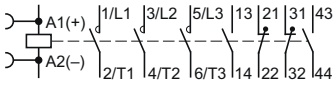
Rated data			Auxiliary contacts			Rated control supply voltage U_s	DT	Screw terminals	DT	Spring-type terminals
AC-2 and AC-3, T_u: Up to 60 °C		AC-1, T_u: 40 °C						Configurator		Configurator
Operational current I_e up to	Rating of induction motors at 50 Hz and	Operational current I_e up to	Ident. No.	Version				Order No. Price per PU		Order No. Price per PU
400 V	**400 V**	690 V		NO	NC					
A	**kW**	A				V DC				
For screw fixing and snap-on mounting onto TH 35 standard mounting rail										
Size S0 [1]										



9	**4**	40	**11**	1	1	24	▶	**3RT20 23-1BB40**	▶	**3RT20 23-2BB40**
12	**5.5**	40	**11**	1	1	24	▶	**3RT20 24-1BB40**	▶	**3RT20 24-2BB40**
						220	B	**3RT20 24-1BM40**	B	**3RT20 24-2BM40**
17	**7.5**	40	**11**	1	1	24	▶	**3RT20 25-1BB40**	▶	**3RT20 25-2BB40**
						220	B	**3RT20 25-1BM40**	B	**3RT20 25-2BM40**
25	**11**	40	**11**	1	1	24	▶	**3RT20 26-1BB40**	▶	**3RT20 26-2BB40**
						220	B	**3RT20 26-1BM40**	B	**3RT20 26-2BM40**
32	**15**	50	**11**	1	1	24	▶	**3RT20 27-1BB40**	▶	**3RT20 27-2BB40**
						220	B	**3RT20 27-1BM40**	B	**3RT20 27-2BM40**
38	**18.5**	50	**11**	1	1	24	▶	**3RT20 28-1BB40**	▶	**3RT20 28-2BB40**
						220	B	**3RT20 28-1BM40**	B	**3RT20 28-2BM40**
With coil circuit plugged in (diode assembly)										



9	**4**	40	**11**	1	1	24	▶	**3RT20 23-1FB40**	▶	**3RT20 23-2FB40**
12	**5.5**	40	**11**	1	1	24	▶	**3RT20 24-1FB40**	▶	**3RT20 24-2FB40**
17	**7.5**	40	**11**	1	1	24	▶	**3RT20 25-1FB40**	▶	**3RT20 25-2FB40**
25	**11**	40	**11**	1	1	24	▶	**3RT20 26-1FB40**	▶	**3RT20 26-2FB40**
32	**15**	50	**11**	1	1	24	▶	**3RT20 27-1FB40**	▶	**3RT20 27-2FB40**
38	**18.5**	50	**11**	1	1	24	▶	**3RT20 28-1FB40**	▶	**3RT20 28-2FB40**
With mounted auxiliary switch block (removable) [2]										



9	**4**	40	**22**	2	2	24	▶	**3RT20 23-1BB44**	▶	**3RT20 23-2BB44**
12	**5.5**	40	**22**	2	2	24	▶	**3RT20 24-1BB44**	▶	**3RT20 24-2BB44**
17	**7.5**	40	**22**	2	2	24	▶	**3RT20 25-1BB44**	▶	**3RT20 25-2BB44**
25	**11**	40	**22**	2	2	24	▶	**3RT20 26-1BB44**	▶	**3RT20 26-2BB44**
32	**15**	50	**22**	2	2	24	▶	**3RT20 27-1BB44**	▶	**3RT20 27-2BB44**
38	**18.5**	50	**22**	2	2	24	▶	**3RT20 28-1BB44**	▶	**3RT20 28-2BB44**

For online configurator see www.siemens.com/sirius/configurators.

[1] The 3RT20 contactors are also available with ring terminal lug connection. Please contact your local Siemens representative for information about these versions.

[2] Order No. for the auxiliary switch block (removable): 3RH29 11-.HA11

Other voltages according to page 3/36 on request.

For accessories see page 3/45.

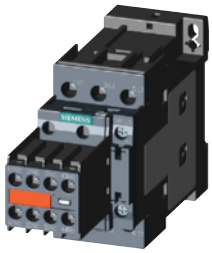
*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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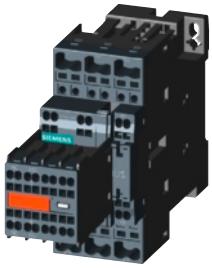
SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

DC operation · DC solenoid system

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B



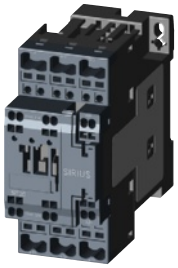
3RT20 2.-1BB44-3MA0



3RT20 2.-2BB44-3MA0



3RT20 2.-1BB40-0CC0



3RT20 2.-2BB40-0CC0

Rated data			Auxiliary contacts			Rated control supply voltage U_s	DT	Screw terminals	DT	Spring-type terminals
AC-2 and AC-3, T_u: Up to 60 °C		AC-1, T_u: 40 °C						Configurator		Configurator
Operational current I_e up to	Rating of induction motors at 50 Hz and	Operational current I_e up to	Ident. No.	Version				Order No. Price per PU		Order No. Price per PU
400 V	**400 V**	690 V								
A	**kW**	A		NO	NC	V DC				
For screw fixing and snap-on mounting onto TH 35 standard mounting rail										
Size S0										
With permanently mounted auxiliary switch block[1]										
9	**4**	40	**22**	2	2	24	B	**3RT20 23-1BB44-3MA0**	B	**3RT20 23-2BB44-3MA0**
12	**5.5**	40	**22**	2	2	24	B	**3RT20 24-1BB44-3MA0**	B	**3RT20 24-2BB44-3MA0**
17	**7.5**	40	**22**	2	2	24	B	**3RT20 25-1BB44-3MA0**	B	**3RT20 25-2BB44-3MA0**
25	**11**	40	**22**	2	2	24	B	**3RT20 26-1BB44-3MA0**	B	**3RT20 26-2BB44-3MA0**
32	**15**	50	**22**	2	2	24	B	**3RT20 27-1BB44-3MA0**	B	**3RT20 27-2BB44-3MA0**
38	**18.5**	50	**22**	2	2	24	B	**3RT20 28-1BB44-3MA0**	B	**3RT20 28-2BB44-3MA0**
With permanently mounted auxiliary switch block and coil circuit plugged in (diode assembly)										
9	**4**	40	**22**	2	2	24	B	**3RT20 23-1FB44-3MA0**	B	**3RT20 23-2FB44-3MA0**
12	**5.5**	40	**22**	2	2	24	B	**3RT20 24-1FB44-3MA0**	B	**3RT20 24-2FB44-3MA0**
17	**7.5**	40	**22**	2	2	24	B	**3RT20 25-1FB44-3MA0**	B	**3RT20 25-2FB44-3MA0**
25	**11**	40	**22**	2	2	24	B	**3RT20 26-1FB44-3MA0**	B	**3RT20 26-2FB44-3MA0**
32	**15**	50	**22**	2	2	24	B	**3RT20 27-1FB44-3MA0**	B	**3RT20 27-2FB44-3MA0**
38	**18.5**	50	**22**	2	2	24	B	**3RT20 28-1FB44-3MA0**	B	**3RT20 28-2FB44-3MA0**
Contactors with communication interface										
9	**4**	40	**11**	1	1	24	A	**3RT20 23-1BB40-0CC0**	A	**3RT20 23-2BB40-0CC0**
12	**5.5**	40	**11**	1	1	24	A	**3RT20 24-1BB40-0CC0**	A	**3RT20 24-2BB40-0CC0**
17	**7.5**	40	**11**	1	1	24	A	**3RT20 25-1BB40-0CC0**	A	**3RT20 25-2BB40-0CC0**
25	**11**	40	**11**	1	1	24	A	**3RT20 26-1BB40-0CC0**	A	**3RT20 26-2BB40-0CC0**
32	**15**	50	**11**	1	1	24	A	**3RT20 27-1BB40-0CC0**	A	**3RT20 27-2BB40-0CC0**
38	**18.5**	50	**11**	1	1	24	A	**3RT20 28-1BB40-0CC0**	A	**3RT20 28-2BB40-0CC0**

For online configurator see www.siemens.com/sirius/configurators.

[1] No retrofitting of surge suppressors.

Other voltages according to page 3/36 on request.

For accessories see page 3/45.

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SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

UC operation · AC or DC operation
Extended operating range of the solenoid coil 0.7 ... 1.3 x U_S
Integrated coil circuit

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B



3RT20 2.-1N.30



3RT20 2.-2N.30

Rated data			Auxiliary contacts			Rated control supply voltage U_S	DT	**Screw terminals**	DT	**Spring-type terminals**
AC-2 and AC-3, T_u: Up to 60 °C		AC-1, T_u: 40 °C						**Configurator**		**Configurator**
Operational current I_e up to	Rating of induction motors at 50 Hz and	Operational current I_e up to	Ident. No.	Version				Order No. Price per PU		Order No. Price per PU
400 V	**400 V**	690 V								
A	**kW**	A		NO	NC	V AC/DC				
For screw fixing and snap-on mounting onto TH 35 standard mounting rail										
Size S0 [1]										
With integrated coil circuit (varistor)										
12	**5.5**	40	**11**	1	1	21 ... 28	▶	**3RT20 24-1NB30**	B	**3RT20 24-2NB30**
						95 ... 130	▶	**3RT20 24-1NF30**	B	**3RT20 24-2NF30**
						200 ... 280 [1]	▶	**3RT20 24-1NP30**	▶	**3RT20 24-2NP30**
17	**7.5**	40	**11**	1	1	21 ... 28	▶	**3RT20 25-1NB30**	B	**3RT20 25-2NB30**
						95 ... 130	▶	**3RT20 25-1NF30**	B	**3RT20 25-2NF30**
						200 ... 280 [1]	▶	**3RT20 25-1NP30**	▶	**3RT20 25-2NP30**
25	**11**	40	**11**	1	1	21 ... 28	▶	**3RT20 26-1NB30**	▶	**3RT20 26-2NB30**
						95 ... 130	▶	**3RT20 26-1NF30**	▶	**3RT20 26-2NF30**
						200 ... 280 [1]	▶	**3RT20 26-1NP30**	▶	**3RT20 26-2NP30**
32	**15**	50	**11**	1	1	21 ... 28	▶	**3RT20 27-1NB30**	▶	**3RT20 27-2NB30**
						95 ... 130	▶	**3RT20 27-1NF30**	B	**3RT20 27-2NF30**
						200 ... 280 [1]	▶	**3RT20 27-1NP30**	▶	**3RT20 27-2NP30**
38	**18.5**	50	**11**	1	1	21 ... 28	B	**3RT20 28-1NB30**	B	**3RT20 28-2NB30**
						95 ... 130	B	**3RT20 28-1NF30**	B	**3RT20 28-2NF30**
						200 ... 280 [1]	▶	**3RT20 28-1NP30**	▶	**3RT20 28-2NP30**

For online configurator see www.siemens.com/sirius/configurators.

[1] At 280 V: upper limit =1.1 x U_S

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 3RT20 contactors, 3-pole, 3 ... 18.5 kW

Options

Rated control supply voltages, possible on request
(the 10th and 11th position of the order number must be changed)

Rated control supply voltage U_s	Contactor type	3RT20 1	3RT20 2	3RT23 1, 3RT25 1	3RT23 2, 3RT25 2
	Size	S00	S0	S00	S0
Sizes S00 and S0					
AC operation[1]					
Solenoid coils for 50 Hz (exception: Size S00: 50 and 60 Hz[2])					
24 V AC		B0	B0	B0	B0
42 V AC		D0	D0	D0	--
48 V AC		H0	H0	H0	--
110 V AC		F0	F0	F0	F0
230 V AC		P0	P0	P0	P0
400 V AC		V0	V0	V0	V0
Solenoid coils for 50 and 60 Hz[2]					
24 V AC		B0	C2	B0	C2
42 V AC		D0	D2	D0	D2
48 V AC		H0	H2	H0	H2
110 V AC		F0	G2	F0	G2
220 V AC		N2	N2	N2	N2
230 V AC		P0	L2	P0	L2
240 V AC		P2	P2	P2	P2
Solenoid coils (for USA and Canada[3]**)**					
50 Hz	**60 Hz**				
110 V AC	120 V AC	K6	K6	K6	K6
220 V AC	240 V AC	P6	P6	P6	P6
Solenoid coils (for Japan)					
50/60 Hz[4]	**60 Hz**[5]				
100 V AC	110 V AC	G6	G6	G6	G6
200 V AC	220 V AC	N6	N6	N6	N6
400 V AC	440 V AC	R6	R6	R6	R6
DC operation[1]					
12 V DC		A4	--	A4	--
24 V DC		B4	B4	B4	B4
42 V DC		D4	D4	D4	D4
48 V DC		W4	W4	W4	--
60 V DC		E4	E4	--	--
110 V DC		F4	F4	F4	F4
125 V DC		G4	G4	G4	G4
220 V DC		M4	M4	M4	M4
230 V DC		P4	P4	P4	--

Examples

AC operation	3RT20 23-1A**P0**0	Contactor with screw terminals; with solenoid coil for 50 Hz for rated control supply voltage 230 V AC.
	3RT20 23-1A**G2**0	Contactor with screw terminals; with solenoid coil for 50/60 Hz for rated control supply voltage 110 V AC.
DC operation	3RT20 25-2B**B4**0	Contactor with spring-type terminals; for rated control supply voltage 24 V DC.
	3RT20 25-2B**G4**0	Contactor with spring-type terminals; for rated control supply voltage 125 V DC.

Rated control supply voltage $U_{s\,min}$ ... $U_{s\,max}$[6]	Contactor type	--	3RT2. 2.-.N
	Size	S00	S0
Size S0			
UC operation (AC 50 to 60 Hz and DC)			
21 ... 28 V AC/DC		--	B3
95 ... 130 V AC/DC		--	F3
200 ... 280 V AC/DC[7]		--	P3

1) For deviating coil voltages and coil operating ranges of sizes S00 and S0, the 24 V DC SITOP Power power supply unit with wide range input (93 to 264 V AC; 30 to 264 V DC) can be used for coil excitation (see Chapter 15, "Products for Specific Requirements" → "Stabilized Power Supplies" → "SITOP 6EP Power Supplies").

2) Coil operating range
at 50 Hz: 0.8 ... 1.1 x U_s
at 60 Hz: 0.85 ... 1.1 x U_s.

3) Coil operating range
Size S00: at 50 Hz: 0.85.... 1.1 x U_s
at 60 Hz: 0.8 ... 1.1 x U_s
Size S0: at 50 Hz and 60 Hz: 0.8 ... 1.1 x U_s.

4) Coil operating range
Size S00: at 50/60 Hz: 0.85 ... 1.1 x U_s
Size S0: at 50 Hz: 0.8 ... 1.1 x U_s
at 60 Hz: 0.85 ... 1.1 x U_s.

5) Coil operating range
at 60 Hz: 0.8 ... 1.1 x U_s.

6) Coil operating range: 0.7 x $U_{s\,min}$ ... 1.3 x $U_{s\,max}$.

7) At 280 V: upper limit =1.1 x U_s

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Overview

Auxiliary switches

See also pages 3/14 and 3/44.

Positively-driven contacts (contactor relays)

Definition according to IEC 60947-5-1, Appendix L:



Positively-driven contact elements are a combination of "n" NO contact and "m" NC contact which are designed such that they cannot be closed simultaneously.

Mirror contacts (power contactors)

Definition according to IEC 60947-4-1, Appendix F:



A mirror contact is an NC contact that cannot be closed simultaneously with an NO main contact.

Solid-state time-delay auxiliary switches

The 3RA28 solid-state delayed auxiliary switches which can be mounted onto the contactor are designed for applications in the range from 24 to 240 V AC/DC (wide voltage range). Both the electrical and mechanical connection are made by simple snapping on and locking.

The time-delay auxiliary switch is supplied with power directly by two plug-in contacts through the coil terminals of the contactor, in parallel with A./A2.

A protection circuit (varistor) is integrated in each module.

A sealable cover is available to protect against careless adjustment of the set times.

Note:

Mounting more auxiliary switches to the contactor is not permitted.

OFF-delay devices for contactors

AC and DC operation

IEC 60947, EN 60947

For screw fixing and snap-on mounting onto TH 35 standard mounting rails. The OFF-delay devices have screw terminals.

The OFF-delay device prevents a contactor from dropping out unintentionally when there is a short-time voltage dip or voltage failure. It supplies a downstream, DC-operated contactor with the necessary energy during a voltage dip, ensuring that the contactor does not trip. The 3RA29 16 OFF-delay devices are specifically designed for operation with the 3RT contactors and 3RH contactor relays in the SIRIUS series.

The OFF-delay device operates without external voltage on a capacitive basis, and can be energized with either AC or DC (24 V version only for DC operation). Voltage matching, which is only necessary with AC operation, is performed using a rectifier bridge.

A contactor opens after a delay when the capacitors of the solenoid coil, built into the OFF-delay device, are switched in parallel. In the event of voltage failures, the capacitors are discharged via the solenoid coil and thereby delay the opening of the contactor.

If the command devices are upstream of the OFF-delay device in the circuit, the OFF-delay takes effect with every opening operation. If the opening operation is downstream of the OFF-delay device, an OFF-delay only applies in the event of failure of the mains voltage.

Operation

In the case of the versions for rated control supply voltages of 110 and 230 V, either AC voltage or DC voltage can be applied on the line side, whereas the version for 24 V is designed for DC operation only.

A DC-operated contactor is connected to the output in accordance with the input voltage that is applied.

The mean value of the OFF-delay is approximately 1.5 times the specified minimum time.

Additional load module

Size S00 for plugging onto the front of the contactors with and without auxiliary switch block.

The module is used for increasing the permissible residual current and for limiting the residual voltage. It ensures the safe opening of contactors with direct control via 230 V AC semiconductor outputs of SIMATIC controllers. It acts simultaneously as a surge suppressor.

Surge suppressors

- Without LED (also for spring-type terminals)
  Sizes S00 and S0
- With LED (also for spring-type terminals)
  Sizes S00 and S0

All 3RT2 contactors and 3RH2 contactor relays can be retrofitted with RC elements or varistors for damping opening surges in the coil. Diodes or diode assemblies (comprising noise suppression diodes and Zener diodes for short break times) can be used.

The surge suppressors are plugged onto the front of size S00 contactors. Space is provided for them next to a snap-on auxiliary switch block.

Varistors, RC elements or diode assemblies can be plugged onto the front of size S0 contactors.

Coupling contactors are supplied either without overvoltage damping or with a suppressor diode, varistor or diode connected as standard, according to the version.

Note:

The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 10 times; diode assembly 2 to 6 times, varistor +2 to 5 ms).

Coupling links for control by PLC

DC operation

IEC 60947 and EN 60947

The coupling link is suitable for use in any climate. It is finger-safe according to EN 50274. The terminal designations comply with EN 50005.

System-compatible operation with 24 V DC,
operating range 17 to 30 V.

Low power consumption of 0.5 W in conformity with the technical specifications of the solid-state systems. An LED indicates the switching state.

Surge suppression

The 3RH29 24-1GP11 coupling link has an integrated surge suppressor (varistor) for the contactor coil being switched.

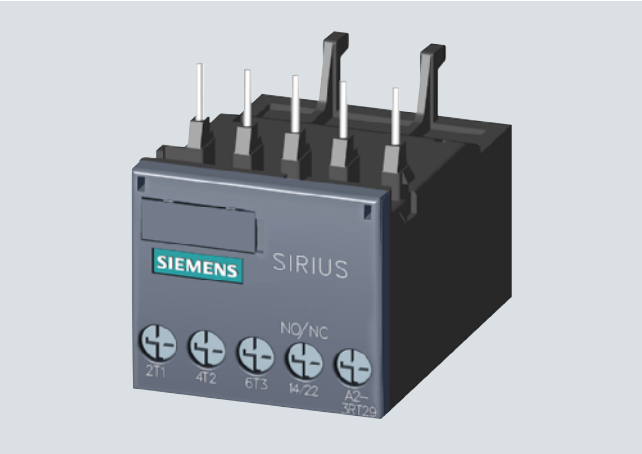
Mounting

The 3RH29 24-1GP11 coupling link is mounted on the contactor coil size S0 using a coil connection module.

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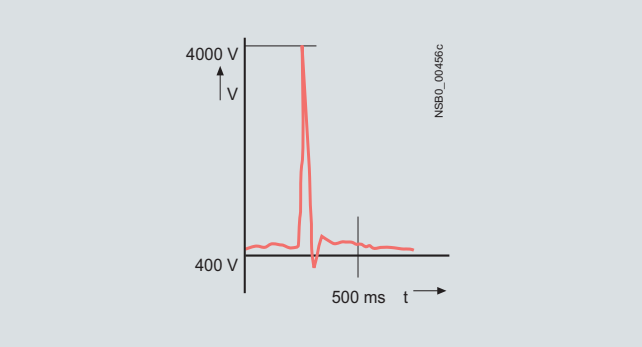
General data

EMC suppression module, three-phase for size S00 contactors



EMC suppression modules

A so-called counter-e.m.f. (electromotive force) is produced when motors or various inductive loads are turned off. Voltage peaks of up to 4000 V may occur as a result, with a frequency spectrum from 1 kHz to 10 MHz and a rate of voltage variation from 0.1 to 20 V/ns.



Voltage curve without suppression

Capacitive input to various analog and digital signals makes it necessary to suppress interference in the load circuit.

Reducing contact arcing

The connection between the main current path and the EMC suppression module enables contact arcing, which is responsible for contact erosion and the majority of clicking noises, to be reduced; this in turn is conducive to an electromagnetically compatible design.

Higher operational reliability

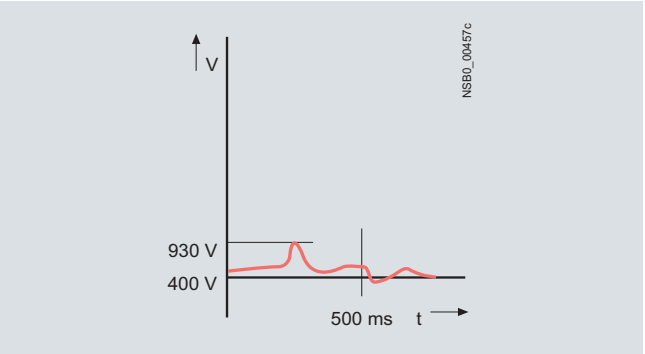
Since the EMC suppression module achieves a significant reduction in radio-frequency components and the voltage level in three phases, the contact endurance is also improved considerably. This makes an important contribution towards enhancing the reliability and availability of the system as a whole.

Dispensing with fine graduations

There is no need for fine graduations within each performance class, as smaller motors inherently have a higher inductance, so that one solution for all fixed-speed operating mechanisms up to 5.5 kW is adequate.

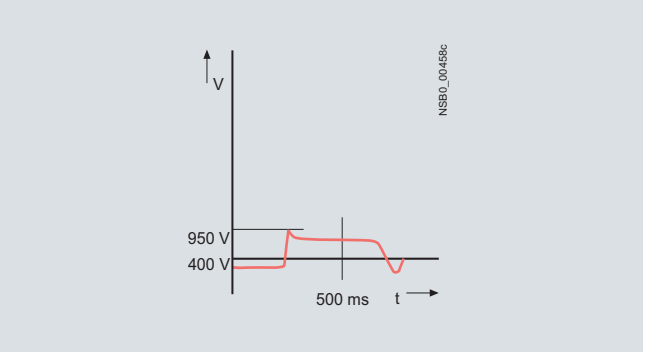
Two electrical versions are available:

- The advantages of the RC circuit lie mainly in the reduction in the rate of rise and in its RF damping ability. The selected values ensure effective interference suppression over a wide range.



Voltage curve with RC circuit

- The varistor circuit can absorb a high energy level and can also be used for frequencies ranging from 10 to 400 Hz (closed-loop controlled operating mechanisms). There is no limiting below the knee-point voltage, however.



Voltage curve with varistor circuit

Sealable covers

When contactors and contactor relays are used in safety-oriented applications, it must be ensured that it is impossible to operate the contactors manually.

For SIRIUS contactors there are sealable covers available for this purpose as accessories; these prevent accidental manual operation. These are transparent molded-plastic caps with a bracket that enables the contactor to be sealed.

Solder pin adapters

The solder pin adapters for the contactors size S00, up to 5.5 kW or 12 A (AC-1/AC-3), are available in two versions:

- Solder pin adapter for contactors with one integrated auxiliary contact
- Solder pin adapter for contactors with mounted 4-pole auxiliary switch block

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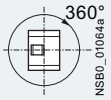
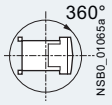
Technical specifications

Version	Type		3RA28 13	3RA28 14	3RA28 15
	Function		With ON-delay	OFF-delay with auxiliary voltage	OFF-delay without auxiliary voltage
	Dimensions		1)		
General data					
Rated insulation voltage U_i Pollution degree 3 Overvoltage category III		V AC	300		
Operating range of excitation			0.85 ... 1.1 x U_S, 0.95 ... 1.05 times the rated frequency		
Rated power		W	1		
• Power consumption at 230 V AC, 50 Hz		VA	2		
Rated operational currents I_e					
• AC-140	At 24 ... 240 V, 50 Hz	A	--		
• AC-15	At 24 ... 240 V, 50 Hz	A	3		
• DC-13	At 24 V	A	1		
	At 125 V	A	0.2		
	At 250 V	A	0.1		
Short-circuit protection					
• Fuse links, gG operational class: DIAZED, type 5SB		A	4		
Switching frequency for load					
• With I_e at 230 V AC		h^{-1}	2500		
• With 3RT2 contactor at 230 V AC		h^{-1}	2500		
Recovery time		ms	150		--
Minimum ON period		ms	--	35	200
Residual current, max.		mA	--		
Voltage drop, max. with conducting output		VA	--		
Short-time loading capacity up to 10 ms		A	--		
Setting accuracy, typ. with reference to upper limit of scale			±15 %		
Repeat accuracy, max.			±1 %		
Mechanical endurance		Operating cycles	10 x 10^6		
Permissible ambient temperature					
• During operation		°C	-25 ... +60		
• During storage		°C	-40 ... +80		
Degree of protection acc. to IEC 60947-1, Appendix C			IP20		
Shock resistance Half-sine acc. to IEC 60068-2-27		g/ms	15/11		
Vibration resistance according to IEC 60068-2-6		Hz/mm	10 ... 55/0.35		
Electromagnetic compatibility (EMC)			IEC 61000-6-2, IEC 61000-6-4, IEC 61812-1, IEC 60947-1		
Overvoltage protection			Varistor integrated		
Permissible mounting positions			Any		
Conductor cross-sections					
Connection type			**Screw terminals**		
• Solid		mm^2	1 x (0.5 ... 4), 2 x (0.5 ... 2.5)		
• Finely stranded with end sleeve		mm^2	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5)		
• AWG cables, solid or stranded		AWG	2 x (20 ... 14)		
• Terminal screws			M3 (for standard screw driver size 2 or Pozidriv 2)		
• Tightening torque		Nm	0.8 ... 1.2		
Connection type			**Spring-type terminals**		
• Operating devices		mm	3.0 x 0.5		
• Solid		mm^2	2 x (0.25 ... 1.5)		
• Finely stranded with end sleeve		mm^2	2 x (0.25 ... 1.5)		
• Finely stranded		mm^2	2 x (0.25 ... 1.5)		
• AWG cables, solid or stranded		AWG	2 x (24 ... 16)		

1) For dimensions with mounted function module see 3RT20 contactors, pages 3/17 and 3/21.

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General data

Version	Type		3RT29 16-2BE01	3RT29 16-2BK01	3RT29 16-2BL01
	Function		OFF-delay devices		
General data					
Connectable contactor sizes Caution! Only contactors and contactor relays with DC operation can be connected.					
• DC supply			S00 ... S3	S00/S0	S00/S0
• AC supply			--	S00/S0	S00/S0
	Type		3RT20 . .-1BB4., 3RH2. . .-1BB40	3RT20 1.-1BF4, 3RT20 2.-1BF4, 3RH2. . .-1BF40	3RT20 1.-1BM4./1BP4., 3RT20 2.-1BM4./1BP4., 3RH2. . .-1BM40/1BP40
Permissible mounting positions					
Mechanical endurance		Operating cycles	30 million		
Endurance, electrical approx.		Operating cycles	>1 million		
Switching frequency z max. (at T_u = 60 °C)		h^{-1}	300		
Permissible ambient temperature T_u					
• During operation					
- Side-by-side mounting without distance		°C	-25 ... +50		
- Side-by-side mounting with 5 mm distance		°C	-25 ... +60		
• During storage		°C	-40 ... +80		
Conductor cross-sections			2)		
U_{sp} = Coil voltage T_{sp} = Coil temperature					
Control					
Rated control supply voltage U_s Operating range		V	24 (DC) 0.9 ... 1.1 U_s	110 (AC/DC)	220/230 (AC/DC)
Rated frequency *f* with AC supply		Hz ±5 %	--	50/60	50/60
OFF-delay[1]					
(minimum times at U_{sp} = 0.9 x U_s, T_{sp} = 20 °C)			Note: In practice the mean value is 1.5 times the minimum time.		
• S00	t_{off} >	ms	200	100	500
• S0	t_{off} >	ms	100	80	300
ON-delay			Note: The total ON-delay = Contactor make-time + t_{on}		
(maximum at U_{sp} = 0.9 x U_s, T_{sp} = 20 °C)					
• S00	t_{on} <	ms	10	60	200
• S0	t_{on} <	ms	10	80	250
Installed capacity C 3RT19 16-2B.01 Capacitor voltage		µF V	2000 35	68 180	68 350
Power loss P_v max. approx.		W	0.4	0.5	1
Surge suppression			With varistor, integrated		

1) Doubling the delay time can be achieved by doubling the capacitance. Commercially available capacitors can be used, which can be connected to terminals C+ and Z–.

2) See 3RT20 1 contactors, page 3/17.

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Version	Type Function		3RT29 26-2P Pneumatic delay block[1]
General data			
Rated insulation voltage U_i (pollution degree 3)		V	690
Mechanical endurance		Operating cycles	5 million
Electrical endurance at I_e		Operating cycles	1 million
Permissible ambient temperature			
• During operation		°C	-25 ... +60
• During storage		°C	-50 ... +80
Rated operational currents I_e According to IEC 60947 utilization categories			
• AC-12		A	10
• AC-15/AC-14 at U_e	Up to 230/220 V 400/380 V 500 V 690/660 V	A A A A	6 4 2.5 1.5
• DC-13 at U_e	At 24 V 48 V 110 V 220 V 440 V	A A A A A	4 2 0.7 0.3 0.15
Conductor cross-sections			
• Solid, stranded:		mm^2	2 x 0.5 ... 1.5[2] or 2 x 0.75 ... 2.5[2]
• Finely stranded with end sleeve		mm^2	2 x 0.5 ... 1.5[2] or 2 x 0.75 ... 2.5[2]
• AWG cables		AWG	2 x 20 ... 16[2] or 2 x 18 ... 14[2]
• Tightening torque of the terminal screws		Nm	0.8 ... 1.1
Time delay			
• Accuracy			±10 %
CSA and UL rated data			
• Rated voltage		V AC	600
• Switching capacity			A 600, Q 600

[1] For size S0.
In addition to the pneumatic delay block, no other auxiliary contacts are permitted.

[2] If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

Version	Type Function		3RT29 26-3A Mechanical latching block for 3RT2. 2. contactors
General data			
Standard, specification			IEC 61812-1
Rated insulation voltage U_i (pollution degree 3)		V	690
Mechanical endurance			
• With 3RT2. 2. contactor		Operating cycles	3 million
Permissible ambient temperature			
• During operation		°C	-25 ... +60
• During storage		°C	-50 ... +80
Degree of protection acc. to IEC 60947-1, Appendix C			IP20
Operating range of the solenoid coil At AC 50/60 Hz and DC			0.85 ... 1.1 x U_s
Power consumption of the solenoid coils of the unlocking magnet (for cold coil and 1.0 x U_s) AC and DC operation		W	Approx. 4
Command duration for de-energizing			
• AC operation		ms	18 ... 31
• DC operation		ms	18 ... 26
Conductor cross-sections			
• Solid		mm^2	2 x (0.5 ... 2.5); 1 x 4
• AWG cables, solid		AWG	2 x 14; 1 x 12
• Finely stranded with end sleeve		mm^2	2 x (0.5 ... 2.5); 1 x 2.5
• AWG cables, finely stranded with end sleeve		AWG	2 x 14; 1 x 12
Tightening torque of the terminal screws		Nm lb.in	0.8 ... 1.1 7 ... 9.5

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General data

Version	Type		3RT1900-4RE01	3RT1916-4RD01	3RT1926-4RD01
Connection modules for contactors with screw terminals			S00, S0 connectors	S00 adapters	S0 adapters
General data					
Rated insulation voltage U_i (pollution degree 3)		V	690		
Rated impulse withstand voltage U_{imp} (pollution degree 3)		kV	6		
Rated operational voltage U_e		V	440		
Rated frequency f For AC operation		Hz	50/60		
Rated operational current I_e AC-3 at 400 V		A	25	20	25
Mechanical endurance		Operating cycles	10 million		
Electrical endurance at I_e		Operating cycles	1 million		
Protective separation according to IEC 60947-1 (pollution degree 3)		V	400		
Permissible ambient temperature					
• During operation		°C	-25 ... +60		
• During storage		°C	-50 ... +80		
Degree of protection acc. to IEC 60529			IP20		
Conductor cross-sections					
Connection type			**Screw terminals**		
• Solid		mm^2	1 x (0.5 ... 6)		
• Finely stranded without/with end sleeve		mm^2	1 x (0.5 ... 6)		
• Stranded		mm^2	1 x (0.5 ... 6)		
• AWG cables, solid or stranded		AWG	1 x (20 ... 10)		
• Tightening torque		Nm	0.6 ... 0.8		
• Corresponding opening tool			Short-slot screwdriver PZ2		
cULus and cULus rated data					
Rated operational voltage U_e		V	480		
Rated insulation voltage U_i		V	600		
Uninterrupted current, at 40 °C		A	16/25	16	25
Short-circuit protection[1]					
• At 600 V		kA	5		
• CLASS RK5 fuse		A	100	60	100
• Circuit breakers with overload protection acc. to UL 489		A	100	60	100
Combination motor controllers type E according to UL 508					
	At 480 V	Type	3RV20 2		
		A	22	--	22
		kA	65	--	65
	At 600 V	Type	3RV20 2		
		A	22	--	22
		kA	10	--	10

[1] For more information about short-circuit values, e.g. for protection against short-circuit currents, see the UL guide (Order No.: A5E02118883) or UL reports (www.siemens.com/sirius/manuals) for the individual devices.

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Version	Type Function	3RH29 24-1GP11 Coupling links for PLC for mounting on contactors acc. to IEC 60947/EN 60947
General data		
Rated insulation voltage U_i (pollution degree 3)	V	300
Protective separation between coil and contacts acc. to IEC 60947-1, Appendix N	V AC	Up to 300
Degree of protection acc. to IEC 60947-1, Appendix C		
• Connections		IP20
• Enclosure		IP40
Permissible ambient temperature		
• During operation	°C	-25 ... +60
• During storage	°C	-40 ... +80
Conductor cross-section		
• Solid	mm^2	2 x (0.5 ... 2.5)
• Finely stranded with end sleeve	mm^2	2 x (0.5 ... 1.5)
Terminal screws		M3
Control side		
Rated control supply voltage U_s	V DC	24
Operating range	V DC	17 ... 30
Power consumption at U_s	W	0.5
Nominal current input	mA	20
Release voltage	V	≥ 4
Function display		Yellow LED
Protection circuit		Varistor
Load side		
Mechanical endurance	Operating cycles	20 million
Electrical endurance at I_e	Operating cycles	0.1 million
Switching frequency	h^{-1}	5000 operating cycles
Make-time	ms	Approx. 7
Break-time	ms	Approx. 4
Bounce time	ms	Approx. 2
Contact material		AgSnO
Switching voltage	V AC/DC	24 ... 250
Permissible residual current of the electronics (with 0 signal)	mA	2.5

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General data

Options

Auxiliary switch: Terminal designations and identification numbers for auxiliary contacts

Terminal designations

The terminal designations are 2-digit, e.g. 13, 14, 21, 22:

- Tens digit: Sequence digit
  - Related terminals have the same sequence digit
- Units digit: Function digit
  - 1-2 for normally closed contacts (NC)
  - 3-4 for normally open contacts (NO)

Identification numbers

The identification number indicates the number and type of the auxiliary contacts, e.g. 40, 31, 22, 13:

- 1st digit: number of normally open contacts (NO)
- 2nd digit: number of normally closed contacts (NC)

Examples:

- 31 = 3 NO + 1 NC
- 40 = 4 NO

Selection aid for mountable auxiliary switch blocks for power contactors and contactor relays

The auxiliary switch blocks of the 3RH29 series for mounting on the front and side can be used for power contactors as well as for contactor relays.

The possible combinations of basic unit and mounted auxiliary switch block can be found in the tables on pages 3/45 to 3/48.

Where the columns and lines intersect (blue and green in the example) you will find the identification number for the combination of basic unit (column) and auxiliary switch block (line).

Additional auxiliary switch blocks			3-pole contactors		
Order No.	Auxiliary contacts		3RT20 1	3RT20 1	3RT20 2
	Version		S00	S00	S0
	NO	NC	10	01	11
			13 / 14	21 / 22	13 / 21 / 14 / 22
			2. 3. 4. 5.	5. 6. 7. 8.	3. 4. 5. 6.
			According to EN 50012[1]		
Auxiliary switches without NO contact					
3RH29 11-.HA01	--	1	**11**	02	**12**
3RH29 11-.HA02	--	2	**12**	03	**13**
3RH29 11-.HA03	--	3	**13**	04	14
3RH29 11-.FA04	--	4	14	--	--
Auxiliary switches with 1 NO contact					
3RH29 11-.HA10	1	--	20	11	**21**
3RH29 11-.HA11	1	1	**21**	12	**22**

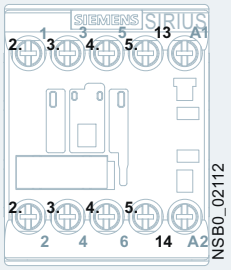
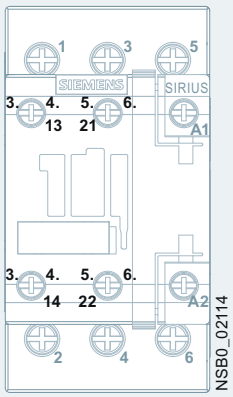
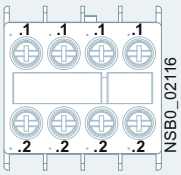
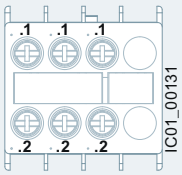
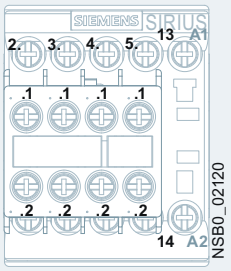
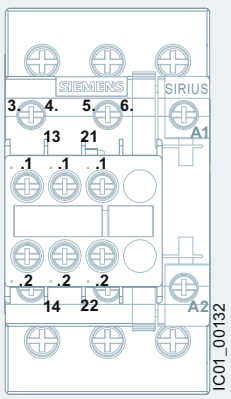
[1] Combinations according to EN 50012, EN 50011 and IEC 60947-5-1 are in **bold print**. All combinations comply with EN 50005.

Example 1

Basic unit: 3-pole 3RT20 17 motor contactor with 1 NO
Required: 1 NO + 4 NC (Ident. No. 14)
Result: 3RH29 11-.FA04 auxiliary switch block

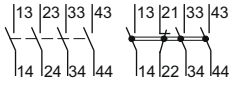
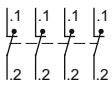
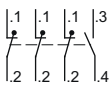
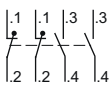
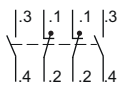
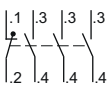
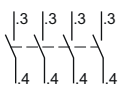
Example 2

Basic unit: 3-pole 3RT20 23 motor contactor with 1 NO + 1 NC
Required: 1 NO + 4 NC (Ident. No. 14)
Result: 3RH29 11-.HA03 auxiliary switch block

	Example 1	*Example 2*
Type	**3RT20 motor contactor, S00 with 1 NO**	**3RT20 motor contactor, S0 with 1 NO + 1 NC**
		
Sequence digit	**2. 3. 4. 5.**	**3. 4. 5. 6.**
Type	**Auxiliary switch with 4 NC, 3RH29 11-.FA04**	**Auxiliary switch with 3 NC, 3RH29 11-.HA03**
		
Function digit	**.1 .1 .1 .1 .2 .2 .2 .2**	**.1 .1 .1 .2 .2 .2**
Combination	**3RT20 motor contactor, S00 with aux. switch block**	**3RT20 motor contactor, S0 with aux. switch block**
		
Terminal design.	**13 21 31 41 51 / 14 22 32 42 52**	**13 21 31 41 51 / 14 22 32 42 52**
Result	**Ident. No. 14**	**Ident. No. 14**

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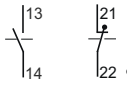
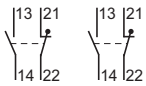
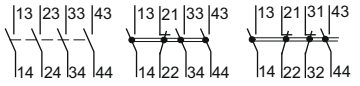
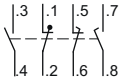
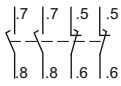
Selection and ordering data

Additional auxiliary switch blocks		3-pole contactors			4-pole contactors				Contactor relays		
Order No.	Auxiliary contacts	S00		S0	S00		S0		S00		
	Version	3RT20 1	3RT20 1	3RT20 2	3RT23 1	3RT25 1	3RT23 2	3RT25 2	3RH21		
	NO NC	10	01	11	--	--	11	11	40E	31E	22E
											
		2. 3. 4. 5.	5. 6. 7. 8.	3. 4. 5. 6.	1. 2. 3. 4.	1. 2. 3. 4.	3. 4. 5. 6.	3. 4. 5. 6.	5. 6. 7. 8	5. 6. 7. 8	5. 6. 7. 8
		According to EN 50012[1]			According to EN 50012[1]				According to EN 50011[1]		
Front auxiliary switches											
Without NO contact											
3RH29 11-.HA01	-- 1		**11**	02	**12**	01	01	**12**	**12**	**41X**	**32X**	**23X**
3RH29 11-.HA02	-- 2		**12**	03	**13**	02	02	**13**	--	**42E**	**33X**	24
3RH29 11-.HA03	-- 3		**13**	04	14	03	--	--	--	43	34	--
3RH29 11-.FA04	-- 4		14	--	--	--	--	--	--	**44E**	--	--
With 1 NO contact											
3RH29 11-.HA10	1 --		20	11	**21**	**10**	**10**	**21**	**21**	**50E**	**41E**	**32E**
3RH29 11-.HA11	1 1		**21**	12	**22**	11	11	**22**	**22**	**51X**	**42X**	**33X**
3RH29 11-.HA12	1 2		**22**	13	**23**	12	12	**23**	--	52	43	34
3RH29 11-.HA13	1 3		**23**	14	24	13	--	24	24	**53X**	**44X**	--
With 2 NO contacts											
3RH29 11-.HA20	2 --		30	21	**31**	20	20	**31**	**31**	**60E**	**51X**	**42X**
3RH29 11-.HA21	2 1		**31**	22	**32**	21	21	**32**	**32**	61	52	43
3RH29 11-.HA22	2 2		**32**	23	33	22	22	33	--	**62X**	53	**44X**
3RH29 11-.FA22	2 2		32	23	33	**22**	**22**	33	--	**62X**	53	**44X**
With 3 NO contacts											
3RH29 11-.HA30	3 --		40	31	**41**	30	30	**41**	**41**	70	61	52
3RH29 11-.HA31	3 1		**41**	32	42	31	31	42	42	**71X**	**62X**	**53X**
With 4 NO contacts											
3RH29 11-.FA40	4 --		50	41	51	40	40	51	51	**80E**	**71X**	**62X**

[1] Combinations according to EN 50012, EN 50011 and IEC 60947-5-1 are in **bold print**. All combinations comply with EN 50005.

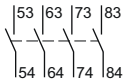
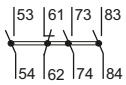
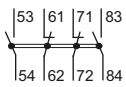
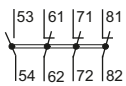
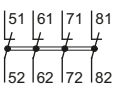
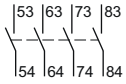
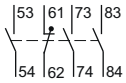
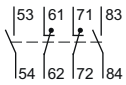
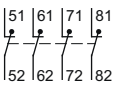
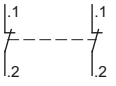
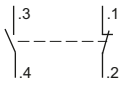
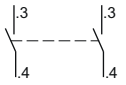
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Auxiliary switch blocks

Additional auxiliary switch blocks		3-pole contactors			4-pole contactors				Contactor relays		
Order No.	Auxiliary contacts	S00		S0	S00		S0		S00		
	Version	3RT20 1	3RT20 1	3RT20 2	3RT23 1	3RT25 1	3RT23 2	3RT25 2	3RH21		
	NO NC	10	01	11	--	--	11	11	40E	31E	22E
											
		2. 3. 4. 5.	5. 6. 7. 8.	3. 4. 5. 6.	1. 2. 3. 4.	1. 2. 3. 4.	3. 4. 5. 6.	3. 4. 5. 6.	5. 6. 7. 8	5. 6. 7. 8	5. 6. 7. 8
		According to EN 50005			According to EN 50005				According to EN 50005		
Front auxiliary switches											
With make-before-break											
3RH29 11-.FB11	-- 1										
		21	12	22	11	11	22	22	51	42	33
3RH29 11-.FB22	-- 2										
		32	23	33	22	22	33	--	62	53	44
3RH29 11-.FC22	-- 3										
		32	23	33	22	22	33	--	62	53	44
With complete inscription[1]											
3RH29 11-1AA10	1 --										
		20	11	21	10	10	21	21	50	41	32
3RH29 11-1BA10	1 --										
		20	11	21	10	10	21	21	50	41	32
3RH29 11-1AA01	-- 1										
		11	02	12	01	01	12	12	41	32	23
3RH29 11-1BA01	-- 1										
		11	02	12	01	01	12	12	41	32	23
3RH29 11-1LA11	1 1										
		21	12	22	11	11	22	22	51	42	33
3RH29 11-1MA11	1 1										
		21	12	22	11	11	22	22	51	42	33
3RH29 11-1LA20	2 --										
		30	21	31	20	20	31	31	60	51	42
3RH29 11-1MA20	2 --										
		30	21	31	20	20	31	31	60	51	42

[1] For terminals from the top or bottom; see page 3/51.

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Additional auxiliary switch blocks			3-pole contactors			4-pole contactors				Contactor relays		
Order No.	Auxiliary contacts		S00		S0	S00		S0		S00		
	Version		3RT20 1	3RT20 1	3RT20 2	3RT23 1	3RT25 1	3RT23 2	3RT25 2	3RH21		
	NO	NC	10	01	11	--	--	11	11	40E	31E	22E
												
			2. 3. 4. 5.	5. 6. 7. 8.	3. 4. 5. 6.	1. 2. 3. 4.	1. 2. 3. 4.	3. 4. 5. 6.	3. 4. 5. 6.	5. 6. 7. 8	5. 6. 7. 8	5. 6. 7. 8
			According to EN 50005			According to EN 50005				According to EN 50011[1]		
Front auxiliary switches												
With complete inscription (for contactor relays)[2]												
3RH29 11-.GA40	4	--		--	--	--	--	--	--	--	**80E**	--	--
3RH29 11-.GA31	3	1		--	--	--	--	--	--	--	**71E**	--	--
3RH29 11-.GA22	2	2		--	--	--	--	--	--	--	**62E**	--	--
3RH29 11-.GA13	1	3		--	--	--	--	--	--	--	**53E**	--	--
3RH29 11-.GA04	--	4		--	--	--	--	--	--	--	**44E**	--	--
Complete inscription, special version												
3RH29 11-.XA40 -0MA0	4	--		50	41	51	40	40	51	51	**80E**	**71X**	**62X**
3RH29 11-.XA31 -0MA0	3	1		41	32	42	31	31	42	42	**71E**	**62X**	53
3RH29 11-.XA22 -0MA0	2	2		32	23	33	22	22	33	--	**62E**	53	**44X**
3RH29 11-.XA04 -0MA0	--	4		14	--	--	--	--	--	--	**44E**	--	--
Solid-state compatible												
3RH29 11-.NF02	--	2		12	03	13	02	02	13	--	42	33	24
3RH29 11-.NF11	1	1		21	12	22	11	11	22	22	51	42	33
3RH29 11-.NF20	2	--		30	21	31	20	20	31	31	60	51	42

[1] Combinations according to EN 50012, EN 50011 and IEC 60947-5-1 are in **bold print**. All combinations comply with EN 50005.

[2] Ordering data see Accessories for 3RH2 Contactor Relays, Chapter 5.

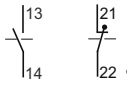
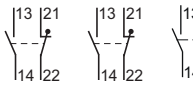
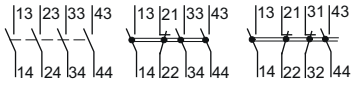
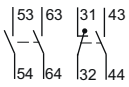
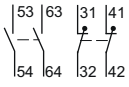
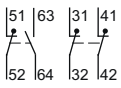
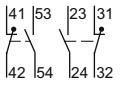
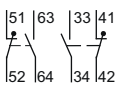
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Auxiliary switch blocks

Additional auxiliary switch blocks			3-pole contactors			4-pole contactors				Contactor relays		
Order No.	Auxiliary contacts		S00		S0	S00		S0		S00		
	Version		3RT20 1	3RT20 1	3RT20 2	3RT23 1	3RT25 1	3RT23 2	3RT25 2	3RH21		
	NO	NC	10	01	11	--	--	11	11	40E	31E	22E
												
			2. 3. 4. 5.	5. 6. 7. 8.	3. 4. 5. 6.	1. 2. 3. 4.	1. 2. 3. 4.	3. 4. 5. 6.	3. 4. 5. 6.	5. 6. 7. 8	5. 6. 7. 8	5. 6. 7. 8
			According to EN 50012[1]			According to EN 50012[1]				According to EN 50011[1]		
Lateral auxiliary switches												
For size S00		Left	Right									
3RH29 11-.DA02	--	2			**12**	--	--	02	02	--	--	--	--
3RH29 11-.DA02	--	2			14	--	--	--	--	--	--	--	--
3RH29 11-.DA11	1	1			**21**	--	--	11	11	--	--	--	--
3RH29 11-.DA11	1	1			32	--	--	22	22	--	--	--	--
3RH29 11-.DA20	2	--			30	--	--	20	20	--	--	--	--
3RH29 11-.DA20	2	--			50	--	--	40	40	--	--	--	--
3RH29 11-.DA20 + **3RH29 11-.DA11**	2 1	-- 1			**41**	--	--	31	31	--	--	--	--
3RH29 11-.DA20 + **3RH29 11-.DA02**	2 --	-- 2			**32**	--	--	22	22	--	--	--	--
3RH29 11-.DA11 + **3RH29 11-.DA02**	1 --	1 2			**23**	--	--	13	--	--	--	--	--
For size S0, S00		Left	Right										
3RH29 21-.DA02	--	2			12	03	**13**	02	02	**13**	--	--	--
3RH29 21-.DA02	--	2			14	--	--	--	--	--	--	--	--
3RH29 21-.DA11	1	1			21	12	**22**	11	11	**22**	**22**	--	--
3RH29 21-.DA11	1	1			32	23	33	22	22	33	--	--	--
3RH29 21-.DA20	2	--			30	21	**31**	20	20	**31**	**31**	--	--
3RH29 21-.DA20	2	--			50	41	51	40	40	51	51	--	--

[1] Combinations according to EN 50012, EN 50011 and IEC 60947-5-1 are in **bold print**. All combinations comply with EN 50005.

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Additional auxiliary switch blocks			3-pole contactors			4-pole contactors				Contactor relays		
Order No.	Auxiliary contacts		S00		S0	S00		S0		S00		
	Version		3RT20 1	3RT20 1	3RT20 2	3RT23 1	3RT25 1	3RT23 2	3RT25 2	3RH21		
	NO	NC	10	01	11	--	--	11	11	40E	31E	22E
												
			2. 3. 4. 5.	5. 6. 7. 8.	3. 4. 5. 6.	1. 2. 3. 4.	1. 2. 3. 4.	3. 4. 5. 6.	3. 4. 5. 6.	5. 6. 7. 8	5. 6. 7. 8	5. 6. 7. 8
			According to EN 50012[1]			According to EN 50012[1]				According to EN 50011[1]		
Lateral auxiliary switches												
For size S0, S00			Left Right									
3RH29 21-.DA20 + **3RH29 21-.DA11**	2	--				41	32	42	31	31	42	42	--	--	--
	1	1													
3RH29 21-.DA20 + **3RH29 21-.DA02**	2	--				32	23	33	22	22	33	--	--	--	--
	--	2													
3RH29 21-.DA11 + **3RH29 21-.DA02**	1	1				23	14	24	13	--	--	--	--	--	--
	--	2													
For contactor relays			Left												
3RH29 21-.DA02	--	2				--	--	--	--	--	--	--	**42Z**	**33X**	24
3RH29 21-.DA11	1	1				--	--	--	--	--	--	--	**51X**	**42X**	**33X**
3RH29 21-.DA20	2	--				--	--	--	--	--	--	--	**60Z**	**51X**	**42X**
Solid-state compatible															
For size S00			Left Right												
3RH29 11-2DE11	1	1				21	--	--	11	11	--	--	--	--	--
3RH29 11-2DE11	1	1				32	--	--	22	22	--	--	--	--	--
For size S0, S00			Left Right												
3RH29 21-2DE11	1	1				21	12	22	11	11	22	22	--	--	--
3RH29 21-2DE11	1	1				32	23	33	22	22	33	--	--	--	--
For contactor relays			Left												
3RH29 21-.DE11	1	1				--	--	--	--	--	--	--	**51X**	**42X**	**33X**

[1] Combinations according to EN 50012, EN 50011 and IEC 60947-5-1 are in **bold print**. All combinations comply with EN 50005.

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Power Contactors for Switching Motors

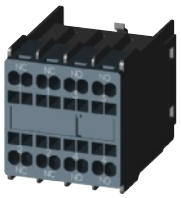
Accessories for 3RT2 Contactors

Auxiliary switch blocks

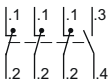
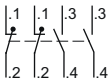
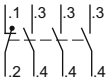
PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41A



3RH29 11-1HA22



3RH29 11-2HA22

For contactors / contactor relays[1]	Auxiliary contacts Version			DT	Screw terminals		DT	Spring-type terminals	
					Order No.	Price per PU		Order No.	Price per PU
Type	NO	NC							
Auxiliary switch blocks for snapping onto the front									
Sizes S00 and S0[2]									
3RT2. 1., 3RT2. 2. 3RH21 .., 3RH24 ..	--	1		▶	**3RH29 11-1HA01**		▶	**3RH29 11-2HA01**	
	--	2		▶	**3RH29 11-1HA02**		▶	**3RH29 11-2HA02**	
	--	3		B	**3RH29 11-1HA03**		B	**3RH29 11-2HA03**	
	1	--		B	**3RH29 11-1HA10**		B	**3RH29 11-2HA10**	
	1	1		▶	**3RH29 11-1HA11**		▶	**3RH29 11-2HA11**	
	1	2		▶	**3RH29 11-1HA12**		▶	**3RH29 11-2HA12**	
	1	3		▶	**3RH29 11-1HA13**		▶	**3RH29 11-2HA13**	
	2	--		▶	**3RH29 11-1HA20**		▶	**3RH29 11-2HA20**	
	2	1		B	**3RH29 11-1HA21**		B	**3RH29 11-2HA21**	
	2	2		▶	**3RH29 11-1HA22**		▶	**3RH29 11-2HA22**	
	3	--		B	**3RH29 11-1HA30**		B	**3RH29 11-2HA30**	
	3	1		▶	**3RH29 11-1HA31**		▶	**3RH29 11-2HA31**	

[1] For detailed information on use see page 3/45.

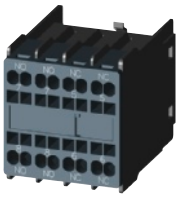
[2] The 3RH29 auxiliary switches are also available with ring terminal lug connection. In the 8th position of the Order No. the **"1"** must be replaced with **"4"**, e.g. 3RH29 11-1HA22 ➞ 3RH29 11-**4**HA22.

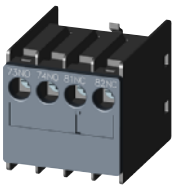
* You can order this quantity or a multiple thereof.
Illustrations are approximate

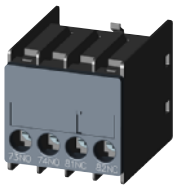
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PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41A


3RH29 11-1FC22

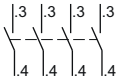
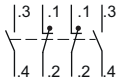
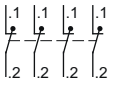
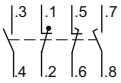
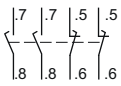

3RH29 11-2FC22


3RH29 11-1LA11


3RH29 11-1MA11


3RH29 11-1AA01


3RH29 11-1BA01

For contactors / contactor relays[1]	Connections Position	Auxiliary contacts Version					DT	Screw terminals Order No.	Price per PU	DT	Spring-type terminals Order No.	Price per PU
Type		NO	NC	NO	NC							
Auxiliary switch blocks for snapping onto the front												
Sizes S00 and S0												
3RT2. 1., 3RT2. 2. 3RH21 .., 3RH24 ..		4	--	--	--		▶	**3RH29 11-1FA40**		▶	**3RH29 11-2FA40**	
		2	2	--	--		B	**3RH29 11-1FA22**		B	**3RH29 11-2FA22**	
		--	4	--	--		B	**3RH29 11-1FA04**		B	**3RH29 11-2FA04**	
		--	--	1	1		▶	**3RH29 11-1FB11**		▶	**3RH29 11-2FB11**	
		1	1	1	1		▶	**3RH29 11-1FB22**		▶	**3RH29 11-2FB22**	
		--	--	2	2		▶	**3RH29 11-1FC22**		▶	**3RH29 11-2FC22**	
1- and 2-pole auxiliary switch blocks, cable entry from above or below												
3RT2. 1., 3RT2. 2. 3RH21 .., 3RH24 ..	Top	1	--	--	--		▶	**3RH29 11-1AA10**			--	
	Bottom	1	--	--	--		▶	**3RH29 11-1BA10**			--	
	Top	--	1	--	--		▶	**3RH29 11-1AA01**			--	
	Bottom	--	1	--	--		▶	**3RH29 11-1BA01**			--	
	Top	1	1	--	--		▶	**3RH29 11-1LA11**			--	
	Bottom	1	1	--	--		▶	**3RH29 11-1MA11**			--	
	Top	2	--	--	--		▶	**3RH29 11-1LA20**			--	
	Bottom	2	--	--	--		▶	**3RH29 11-1MA20**			--	

[1] For detailed information on use see pages 3/45 and 3/46.

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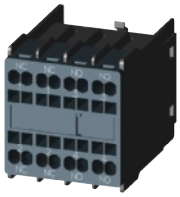
Auxiliary switch blocks

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41A


3RH29 11-1DA02


3RH29 11-2DA02


3RH29 11-1XA22-0MA0


3RH29 11-2XA22-0MA0

For contactors / contactor relays	Auxiliary contacts Version			DT	Screw terminals		DT	Spring-type terminals	
					Order No.	Price per PU		Order No.	Price per PU
Type	NO	NC							
Auxiliary switch blocks for snapping onto the front									
Sizes S00 and S0									
3RT2. 1. 3RT2. 2.[1] 3RH21 ... 3RH24 ..[1]	4	--	53 63 73 83 / 54 64 74 84	B	**3RH29 11-1XA40-0MA0**		B	**3RH29 11-2XA40-0MA0**	
	3	1	53 61 73 83 / 54 62 74 84	B	**3RH29 11-1XA31-0MA0**		B	**3RH29 11-2XA31-0MA0**	
	2	2	53 61 71 83 / 54 62 72 84	B	**3RH29 11-1XA22-0MA0**		B	**3RH29 11-2XA22-0MA0**	
	--	4	51 61 71 81 / 52 62 72 82	B	**3RH29 11-1XA04-0MA0**		B	**3RH29 11-2XA04-0MA0**	
Laterally mountable auxiliary switch blocks, mounting on the right and/or on the left									
Size S00			Left / Right						
3RT2. 1.[2]	--	2	41 51 / 42 52 ; 21 31 / 22 32	A	**3RH29 11-1DA02**		A	**3RH29 11-2DA02**	
	1	1	41 53 / 42 54 ; 21 33 / 22 34	A	**3RH29 11-1DA11**		A	**3RH29 11-2DA11**	
	2	--	43 53 / 44 54 ; 23 33 / 24 34	A	**3RH29 11-1DA20**		A	**3RH29 11-2DA20**	
Size S0			Left / Right						
3RT2. 2.[2][3]	--	2	51 61 / 52 62 ; 31 41 / 32 42	A	**3RH29 21-1DA02**		A	**3RH29 21-2DA02**	
	1	1	51 63 / 52 64 ; 31 43 / 32 44	A	**3RH29 21-1DA11**		A	**3RH29 21-2DA11**	
	2	--	53 63 / 54 64 ; 33 43 / 34 44	A	**3RH29 21-1DA20**		A	**3RH29 21-2DA20**	

[1] For detailed information on use see page 3/47.
[2] For detailed information on use see pages 3/48 and 3/49.
[3] With 3RT23 2., 3RT25. 2. mountable only on the right.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Auxiliary switch blocks

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41A



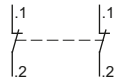
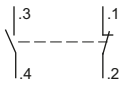
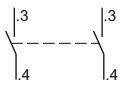
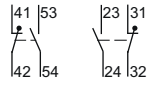
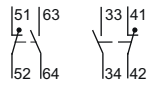
3RH29 11-2DE11



3RH29 11-1NF. .



3RH29 11-2NF. .

For contactors / contactor relays[1]	Contacts Version			DT	Screw terminals		DT	Spring-type terminals	
					Order No.	Price per PU		Order No.	Price per PU
Type	NO	NC							
Solid-state compatible auxiliary switch blocks									
• For operation in dusty atmospheres • For solid-state circuits with rated operational currents I_e/AC-14 and DC-13 of 1 ... 300 mA at 3 ... 60 V • Hard gold-plated contacts • Mirror contacts acc. to IEC 60947-4-1, Appendix F, for auxiliary switches for snapping onto the front with contactors of size S0 only and for auxiliary switches for mounting on the side									
Auxiliary switch blocks for snapping onto the front[2]									
Sizes S00 and S0[3]									
3RT2. 1., 3RT2. 2. 3RH21	--	2		A	**3RH29 11-1NF02**		A	**3RH29 11-2NF02**	
	1	1		▶	**3RH29 11-1NF11**		▶	**3RH29 11-2NF11**	
	2	--		▶	**3RH29 11-1NF20**		▶	**3RH29 11-2NF20**	
Laterally mountable auxiliary switch blocks, mounting on the right and/or on the left									
Size S00			Left Right						
3RT2. 1.	1	1			--		A	**3RH29 11-2DE11**	
Size S0			Left Right						
3RT2. 2.	1	1			--		A	**3RH29 21-2DE11**	

[1] For detailed information on use see pages 3/47 and 3/49.

[2] The 3RH29 11-.NF. . auxiliary switches are also available with ring terminal lug connection. In the 8th position of the Order No. the **"1"** must be replaced with **"4"**, e.g.: 3RH29 11-**1**NF11 ➞ 3RH2911-**4**NF11

[3] NC contacts are mirror contacts when combined with contactors of size S0.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Auxiliary switch blocks, delayed

Selection and ordering data

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B



3RA28 13-1AW10



3RA28 13-2AW10

For contactors	Rated control supply voltage U_s [1]	Time setting range *t*	Output / auxiliary contacts	DT	Screw terminals		DT	Spring-type terminals	
Type	V	s			Order No.	Price per PU		Order No.	Price per PU
Solid-state time-delay auxiliary switch blocks for snapping onto the front, terminal designations according to DIN 46199-5									
Sizes S00 and S0									
	The electrical connection between the solid-state time-delay auxiliary switch and the contactor underneath is established automatically when it is snapped on and locked.								
	ON-delay Varistor integrated								
3RT2.., 3RH21[2] 3RH24	24 ... 240 AC/DC	0.05 ...100, (1, 10, 100 selectable)	1 CO	A	**3RA28 13-1AW10**		A	**3RA28 13-2AW10**	
			1 NO + 1 NC	A	**3RA28 13-1FW10**		A	**3RA28 13-2FW10**	
	OFF-delay with auxiliary voltage Varistor integrated								
3RT2.., 3RH21[2] 3RH24	24 ... 240 AC/DC	0.05 ...100, (1, 10, 100 selectable)	1 CO	A	**3RA28 14-1AW10**		A	**3RA28 14-2AW10**	
			1 NO + 1 NC	A	**3RA28 14-1FW10**		A	**3RA28 14-2FW10**	
	OFF-delay without auxiliary voltage[3] Varistor integrated								
3RT2.., 3RH21[2] 3RH24	24 ... 240 AC/DC	0.05 ...100, (1, 10, 100 selectable)	1 CO	A	**3RA28 15-1AW10**		A	**3RA28 15-2AW10**	
			1 NO + 1 NC	A	**3RA28 15-1FW10**		A	**3RA28 15-2FW10**	

[1] AC voltage values apply for 50 Hz and 60 Hz.

[2] Cannot be fitted onto coupling contactors.

[3] Setting of output contacts in as-supplied state not defined (bistable relay). Application of the control supply voltage once results in contact change-over to the correct setting.

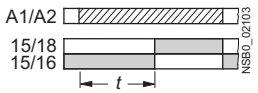
For technical specifications see page 3/39.

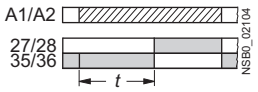
Note:

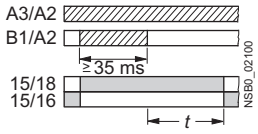
When using the solid-state time-delay auxiliary switches, no other auxiliary switches are allowed to be connected to the basic units.

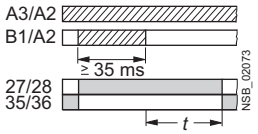
Technical specifications

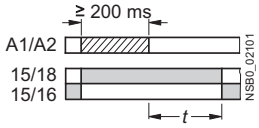
Function	Function charts	
	Timing relay energized Contact closed Contact open	
Solid-state time-delay auxiliary switches	**With 1 CO contact**	**With 1 NO contact + 1 NC contact**
ON-delay (varistor integrated)	3RA28 13-.AW10	3RA28 13-.FW10
OFF-delay with auxiliary voltage (varistor integrated)	3RA28 14-.AW10	3RA28 14-.FW10
OFF-delay without auxiliary voltage (varistor integrated)	3RA28 15-.AW10	3RA28 15-.FW10

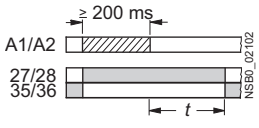












* You can order this quantity or a multiple thereof.
Illustrations are approximate

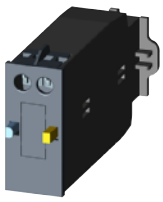
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Selection and ordering data

For contactors	Rated control supply voltage U_s	Time setting range t	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
Type	V	s		Order No. / Price per PU			
OFF-delay devices							
Sizes S00 and S0							
For contactors with DC operation							
Non-adjustable delay time							
3RT2. 1, 3RT2. 2, 3RH2. ..-1BF40	110 AC/DC	S00: > 0.1 S0: > 0.08	D	**3RT29 16-2BK01**	1	1 unit	41B
3RT2. 1, 3RT2. 2, 3RH2. ..-1BM40	220/230 AC/DC	S00: > 0.5 S0: > 0.3	D	**3RT29 16-2BL01**	1	1 unit	41B
3RT2. 1, 3RT2. 2, 3RH2. ..-1BB40	24 DC	S00: > 0.2 S0: > 0.1	A	**3RT29 16-2BE01**	1	1 unit	41B
Pneumatic delay blocks, terminal designation according to EN 50005							
Size S0							
For snapping onto the front of contactors[1)2)]							
Auxiliary contacts 1 NO and 1 NC							
• With ON-delay							
3RT2. 2	--	0.1 ... 30	C	**3RT29 26-2PA01**	1	1 unit	41B
		1 ... 60	C	**3RT29 26-2PA11**	1	1 unit	41B
• OFF-delay							
3RT2. 2	--	0.1 ... 30	C	**3RT29 26-2PR01**	1	1 unit	41B
		1 ... 60	C	**3RT29 26-2PR11**	1	1 unit	41B
Mechanical latching blocks							
Size S0							
For snapping onto the front of contactors							
The contactor remains in the energized state after a voltage failure							
3RT2. 2	24 AC/DC	--	B	**3RT29 26-3AB31**	1	1 unit	41B
	110 AC/DC	--	B	**3RT29 26-3AF31**	1	1 unit	41B
	230 AC/DC	--	B	**3RT29 26-3AP31**	1	1 unit	41B


3RT29 16-2B.01


3RT29 26-2P...


3RT29 26-3A.31

For technical specifications see pages 3/40 and 3/41.

1) In addition to these, no other auxiliary contacts are permitted.

2) Versions for furnaces according to DIN VDE 0116 on request.

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Surge suppressors

Selection and ordering data

For contactors	Version	Rated control supply voltage U_s [1] AC operation	DC operation	DT	Order No. [2]	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type		V AC	V DC						
Surge suppressors without LED (also for spring-type terminals)									
Size S00									
	For plugging onto the front side of the contactors (with and without auxiliary switch block)								
3RT2.1, 3RH2.	**Varistor**	24 ... 48	24 ... 70	▶	**3RT29 16-1BB00**		1	1 unit	41B
		48 ... 127	70 ... 150	▶	**3RT29 16-1BC00**		1	1 unit	41B
		127 ... 240	150 ... 250	▶	**3RT29 16-1BD00**		1	1 unit	41B
		240 ... 400	--	▶	**3RT29 16-1BE00**		1	1 unit	41B
		400 ... 600	--	A	**3RT29 16-1BF00**		1	1 unit	41B
3RT2.1, 3RH2.	**RC elements**	24 ... 48	24 ... 70	▶	**3RT29 16-1CB00**		1	1 unit	41B
		48 ... 127	70 ... 150	▶	**3RT29 16-1CC00**		1	1 unit	41B
		127 ... 240	150 ... 250	▶	**3RT29 16-1CD00**		1	1 unit	41B
		240 ... 400	--	A	**3RT29 16-1CE00**		1	1 unit	41B
		400 ... 600	--	A	**3RT29 16-1CF00**		1	1 unit	41B
3RT2.1, 3RH2.	**Noise suppression diodes**	--	12 ... 250	▶	**3RT29 16-1DG00**		1	1 unit	41B
3RT2.1, 3RH2.	**Diode assemblies** (diode and Zener diode) for DC operation	--	12 ... 250	▶	**3RT29 16-1EH00**		1	1 unit	41B
Size S0									
	For plugging onto the front side of the contactors (prior to mounting of the auxiliary switch block)								
3RT2. 2	**Varistor**	24 ... 48	24 ... 70	▶	**3RT29 26-1BB00**		1	1 unit	41B
		48 ... 127	70 ... 150	▶	**3RT29 26-1BC00**		1	1 unit	41B
		127 ... 240	150 ... 250	▶	**3RT29 26-1BD00**		1	1 unit	41B
		240 ... 400	--	▶	**3RT29 26-1BE00**		1	1 unit	41B
		400 ... 600	--	A	**3RT29 26-1BF00**		1	1 unit	41B
3RT2. 2	**RC elements**	24 ... 48	24 ... 70	▶	**3RT29 26-1CB00**		1	1 unit	41B
		48 ... 127	70 ... 150	▶	**3RT29 26-1CC00**		1	1 unit	41B
		127 ... 240	150 ... 250	▶	**3RT29 26-1CD00**		1	1 unit	41B
		240 ... 400	--	A	**3RT29 26-1CE00**		1	1 unit	41B
		400 ... 600	--	A	**3RT29 26-1CF00**		1	1 unit	41B
3RT2. 2	**Diode assembly** for DC operation	--	24	▶	**3RT29 26-1ER00**		1	1 unit	41B
		--	30 ... 250	▶	**3RT29 26-1ES00**		1	1 unit	41B


3RT29 16-1B.00

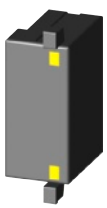

3RT29 26-1E.00

[1] Can be used for AC operation for 50/60 Hz. Please inquire about further voltages.

[2] For packs of 10 or 5 units **"-Z"** and order code **"X90"** must be added to the Order No.

For contactors	Version	Rated control supply voltage U_s [1] AC operation	DC operation	Power consumption P of the LED at U_s	DT	Order No. [2]	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type		V AC	V DC	mW						
Surge suppressors with LED (also for spring-type terminals)										
Size S00										
	For plugging onto the front side of the contactors (with and without auxiliary switch block)									
3RT2.1, 3RH2.	**Varistor**	24 ... 48	12 ... 24	10 ... 120	▶	**3RT29 16-1JJ00**		1	1 unit	41B
		48 ... 127	24 ... 70	20 ... 470	▶	**3RT29 16-1JK00**		1	1 unit	41B
		127 ... 240	70 ... 150	50 ... 700	▶	**3RT29 16-1JL00**		1	1 unit	41B
		--	150 ... 250	160 ... 950	A	**3RT29 16-1JP00**		1	1 unit	41B
3RT2.1, 3RH2.	**Noise suppression diodes**	--	24 ... 70	20 ... 470	▶	**3RT29 16-1LM00**		1	1 unit	41B
		--	50 ... 150	50 ... 700	A	**3RT29 16-1LN00**		1	1 unit	41B
		--	150 ... 250	160 ... 950	▶	**3RT29 16-1LP00**		1	1 unit	41B
Size S0										
	For plugging onto the front side of the contactors (prior to mounting of the auxiliary switch block)									
3RT2. 2	**Varistor**	24 ... 48	12 ... 24	10 ... 120	▶	**3RT29 26-1JJ00**		1	1 unit	41B
		48 ... 127	24 ... 70	20 ... 470	▶	**3RT29 26-1JK00**		1	1 unit	41B
		127 ... 240	70 ... 150	50 ... 700	▶	**3RT29 26-1JL00**		1	1 unit	41B
3RT2. 2	**Diode assembly**	--	24	20 ... 470	▶	**3RT29 26-1MR00**		1	1 unit	41B


3RT29 16-1J.00


3RT29 26-1MR00

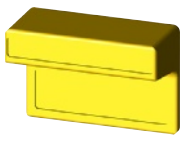
[1] Can be used for AC operation for 50/60 Hz. Please inquire about further voltages.

[2] For packs of 10 or 5 units **"-Z"** and order code **"X90"** must be added to the Order No.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

	For contactors Type	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
EMC suppression modules; 3-phase, up to 7.5 kW								
	Size S00 (for contactors with AC or DC operation)[1]							
				Screw terminals				
 3RT29 16-1PA.	3RT20 1	**RC elements** (3 x 220 Ω/0.22 µF)						
		Up to 400 V	▶	**3RT29 16-1PA1**		1	1 unit	41B
		Up to 575 V	A	**3RT29 16-1PA2**		1	1 unit	41B
		Up to 690 V	C	**3RT29 16-1PA3**		1	1 unit	41B
	3RT20 1	**Varistor**						
		Up to 400 V	A	**3RT29 16-1PB1**		1	1 unit	41B
		Up to 575 V	A	**3RT29 16-1PB2**		1	1 unit	41B
		Up to 690 V	C	**3RT29 16-1PB3**		1	1 unit	41B
Additional load modules								
	Size S00							
 3RT29 16-1GA00	3RT2. 1, 3RH2.	**For plugging onto the front side of the contactors with or without auxiliary switch blocks**[2] For increasing the permissible residual current and for limiting the residual voltage. It ensures the safe opening of contactors with direct control via 230 V AC semiconductor outputs of SIMATIC controllers. It acts simultaneously as a surge suppressor. Rated voltage: AC 50/60 Hz, 180 to 255 V. Operating range: 0.8 to 1.1 x U_s	▶	**3RT29 16-1GA00**		1	1 unit	41B
LED module for displaying contactor operation								
	Size S0							
 3RT29 26-1QT00	3RT2. 2	For snapping into the location hole of an inscription label on the front of a contactor either directly on the contactor or on the front auxiliary switch. The LED module is connected to coil terminals A1 and A2 of the contactor and indicates its energized state. Yellow LED. Rated voltage: 24 ... 240 V AC/DC with reverse polarity protection.	B	**3RT29 26-1QT00**		1	5 units	41B
Coupling links for control by PLC								
	Size S0							
 3RH29 24-1GP11	3RT2. 2	**For mounting onto the coil terminals of the contactors** With LED for indicating switching state. With integrated varistor for damping opening surges. Operating range 17 ... 30 V DC Power consumption: 0.5 W at 24 V DC Permissible residual current of the electronics (with 0 signal): 2.5 mA Rated operational current I_e: • AC-15/AC-14 at 230 V: 3 A • DC-13 at 230 V: 0.1 A	▶	**3RH29 24-1GP11**		1	1 unit	41A
Control kit								
	Size S00							
 3RT29 16-4MC00	3RT2. 1, 3RH2.	For manual operation of the contactor contacts for start-up and service[3]	A	**3RT29 16-4MC00**		1	5 units	41B

For technical specifications for coupling links see page 3/43.

1) See also description on page 3/38.

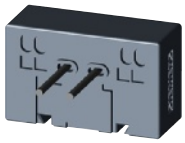
2) For packs of 10 units, the Order No. must be supplemented with "**-Z**" and the order code "**X90**".

3) See also Chapter 8, "Load Feeders and Motor Starters for Operation in the Control Cabinet" → "ET 200S Motor Starters" → "Accessories", Order No. 3RK1 903-0CA00.

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Terminals, covers, adapters, connectors

Selection and ordering data

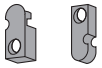
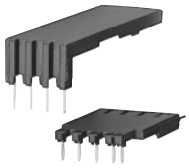
	For contactors Type	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Sealable covers								
	Sizes S00 and S0							
 3RT29 16-4MA10	3RT2. 1, 3RT2. 2, 3RH2. [1]	Sealable covers for preventing manual operation	A	**3RT29 16-4MA10**		1	5 units	41B
Connection modules for contactors with screw terminals								
	Sizes S00 and S0							
 3RT19 26-4RD01		**Adapters for contactors** Ambient temperature $T_{u\,max.}$ = 60 °C		**Screw terminals**				
	3RT2. 1, 3RH2.	Size S00, rated operational current I_e at AC-3/400 V: 20 A	C	**3RT19 16-4RD01**		1	1 unit	41B
	3RT2. 2	Size S0, rated operational current I_e at AC-3/400 V: 25 A	C	**3RT19 26-4RD01**		1	1 unit	41B
 3RT19 00-4RE01	3RT2. 1, 3RT2. 2, 3RH2.	**Plugs for contactors** Size S00, S0	B	**3RT19 00-4RE01**		1	1 unit	41B
Coil connection modules								
	Size S0							
 3RT29 26-4RA11	3RT2. 2	Connection from top	A	**3RT29 26-4RA11**	**4.10**	1	1 unit	41B
		Connection from below	A	**3RT29 26-4RB11**	**4.10**	1	1 unit	41B
		Connection diagonally	A	**3RT29 26-4RC11**	**6.40**	1	1 unit	41B
				Spring-type terminals				
 3RT29 26-4RA12	3RT2. 2	Connection from top	▶	**3RT29 26-4RA12**	**4.40**	1	1 unit	41B
		Connection from below	A	**3RT29 26-4RB12**	**4.40**	1	1 unit	41B
Covers for contactors with ring terminal lug connection								
	Size S00							
				Ring terminal lug connections				
 3RT29 16-4EA13	3RT2. 1, 3RH2	**Covers for ring terminal lug connections** Single covers	B	**3RT29 16-4EA13**		1	10 units	41B
	Size S0							
 3RT29 26-4EB13	3RT2. 2	**Covers for ring terminal lug connections** Set for one device, comprising 4 single covers	B	**3RT29 26-4EB13**		1	1 unit	41B

For technical specifications for connection modules see page 3/42.

[1] Exception: contactors and contactor relays auxiliary switch block mounted onto the front.

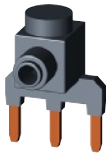
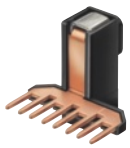
* You can order this quantity or a multiple thereof.
Illustrations are approximate

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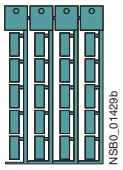
Type	For contactors	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Screw adapters for fixing the contactors								
	Size S0							
 NSB0_01470 3RT19 26-4P	3RT2. 2	Screw adapters for easier screw fixing 2 units required per contactor (1 pack contains 10 sets for 10 contactors)	C	**3RT19 26-4P**		1	10 units	41B
Solder pin adapters for contactors up to 5.5 kW / 12 A								
	Size S00, up to 5.5 kW							
				Screw terminals				
  3RT19 16-4KA1	3RT2. 1, 3RH21	Assembly kit for soldering contactors onto a printed circuit board. For 1 contactor, 1 set is required.	A	**3RT19 16-4KA1**		1	4 units	41B
Solder pin adapters for contactors up to 5.5 kW / 12 A with mounted 4-pole auxiliary switch block								
	Size S00, up to 5.5 kW							
   3RT19 16-4KA2	3RT2. 1, 3RH21	Assembly kit for soldering contactors with an auxiliary switch block onto a printed circuit board. For 1 contactor, 1 set is required.	B	**3RT19 16-4KA2**		1	4 units	41B
Safety main current connectors for 2 contactors								
	Sizes S00 and S0							
 3RA29 26-1A		**For series connection of 2 contactors**						
	3RT2. 1		A	**3RA29 16-1A**		1	1 unit	41B
	3RT2. 2		A	**3RA29 26-1A**		1	1 unit	41B

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Terminals, covers, adapters, connectors

	For contactors Type	Max. conductor cross-sections mm²	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Links for paralleling								
	Sizes S00 and S0							
 3RT19 16-4BB31	**3-pole, with connection terminal**[1)2)]			**Screw terminals**				
	3RT20 1	25, stranded	▶	**3RT19 16-4BB31**		1	1 unit	41B
	3RT20 2	50, stranded	A	**3RT29 26-4BB31**		1	1 unit	41B
 3RT29 26-4BB31								
 3RT19 16-4BB41	**4-pole, with connection terminal**[1)2)]							
	3RT23 1, 3RT25 1	25, stranded	C	**3RT19 16-4BB41**		1	1 unit	41B

[1)] The links for paralleling can be reduced by one pole.
[2)] With sizes S00 and S0 the links for paralleling are insulated.

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Insulation stop for securely holding back the conductor insulation on conductors up to 1 mm²							
			Spring-type terminals				
 3RT19 16-4JA02	**Insulation stop strip** can be inserted in cable entry of the spring-type terminal (2 strips per contactor required)						
	• For basic devices S00 (3RT20 1. or 3RH2.), removable individually	B	**3RT29 16-4JA02**		1	20 units	41B
	• For auxiliary and control current on basic devices size S0 (3RT20 2.) and for mountable 3RH29 auxiliary switches, removable in pairs	B	**3RT19 16-4JA02**		1	20 units	41B
Tools for opening spring-type terminals							
 3RA29 08-1A	**Screwdrivers** for all SIRIUS devices with spring-type terminals Length: approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray/black, partially insulated	A	**3RA29 08-1A**		1	1 unit	41B
Blank labels							
 3RT19 00-1SB20	**Unit labeling plates**[1)] for SIRIUS devices						
	• 20 mm × 7 mm, titanium gray	D	**3RT29 00-1SB20**		100	340 units	41B
	• 20 mm × 7 mm, pastel turquoise	D	**3RT19 00-1SB20**		100	340 units	41B
System Manuals "Industrial Controls - SIRIUS Innovations"							
	• English	C	**3ZX1012-0RA01-1AC1**		1	1 unit	401
	• French	C	**3ZX1012-0RA01-1AD1**		1	1 unit	401
	• German	C	**3ZX1012-0RA01-1AB1**		1	1 unit	401
	• Spanish	C	**3ZX1012-0RA01-1AE1**		1	1 unit	401

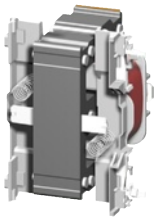
[1)] PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH
(see Chapter 16, "Appendix" → "External Partners").

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

For screw, spring-type and ring terminal lug connection



3RT29 24-5A.01

For contactors		Rated control supply voltage U_s			DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Size	Type	50 Hz	50/60 Hz	60 Hz						
		V	V	V						
Solenoid coils · AC operation										
S0	3RT20 23, 3RT20 24, 3RT20 25	24	--	--	B	**3RT29 24-5AB01**		1	1 unit	41B
		42	--	--	B	**3RT29 24-5AD01**		1	1 unit	41B
		48	--	--	B	**3RT29 24-5AH01**		1	1 unit	41B
		110	--	--	B	**3RT29 24-5AF01**		1	1 unit	41B
		230	--	--	B	**3RT29 24-5AP01**		1	1 unit	41B
		400	--	--	B	**3RT29 24-5AV01**		1	1 unit	41B
		--	24	--	B	**3RT29 24-5AC21**		1	1 unit	41B
		--	42	--	B	**3RT29 24-5AD21**		1	1 unit	41B
		--	48	--	B	**3RT29 24-5AH21**		1	1 unit	41B
		--	110	--	B	**3RT29 24-5AG21**		1	1 unit	41B
		--	220	--	B	**3RT29 24-5AN21**		1	1 unit	41B
		--	230	--	B	**3RT29 24-5AL21**		1	1 unit	41B
		110	--	120	B	**3RT29 24-5AK61**		1	1 unit	41B
		220	--	240	B	**3RT29 24-5AP61**		1	1 unit	41B
		--	100	110	B	**3RT29 24-5AG61**		1	1 unit	41B
		--	200	220	B	**3RT29 24-5AN61**		1	1 unit	41B
		--	400	440	B	**3RT29 24-5AR61**		1	1 unit	41B
S0	3RT20 26, 3RT20 27, 3RT20 28 3RT23 25, 3RT23 26, 3RT23 27 3RT25 26	24	--	--	B	**3RT29 26-5AB01**		1	1 unit	41B
		42	--	--	B	**3RT29 26-5AD01**		1	1 unit	41B
		48	--	--	B	**3RT29 26-5AH01**		1	1 unit	41B
		110	--	--	B	**3RT29 26-5AF01**		1	1 unit	41B
		230	--	--	B	**3RT29 26-5AP01**		1	1 unit	41B
		400	--	--	B	**3RT29 26-5AV01**		1	1 unit	41B
		--	24	--	B	**3RT29 26-5AC21**		1	1 unit	41B
		--	42	--	B	**3RT29 26-5AD21**		1	1 unit	41B
		--	48	--	B	**3RT29 26-5AH21**		1	1 unit	41B
		--	110	--	B	**3RT29 26-5AG21**		1	1 unit	41B
		--	220	--	B	**3RT29 26-5AN21**		1	1 unit	41B
		--	230	--	B	**3RT29 26-5AL21**		1	1 unit	41B
		110	--	120	B	**3RT29 26-5AK61**		1	1 unit	41B
		220	--	240	B	**3RT29 26-5AP61**		1	1 unit	41B
		--	100	110	B	**3RT29 26-5AG61**		1	1 unit	41B
		--	200	220	B	**3RT29 26-5AN61**		1	1 unit	41B
		--	400	440	B	**3RT29 26-5AR61**		1	1 unit	41B

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

Overview

Standards

IEC 60947-1, EN 60947-1,
IEC 60947-4-1, EN 60947-4-1,
IEC 60947-5-1, EN 60947-5-1 (auxiliary switches)

The 3RT1 contactors are climate-proof. They are finger-safe according to EN 50274.

Connection methods

The 3RT1 contactors are available with screw terminals (box terminals) or spring-type terminals.

The size S3 contactors have removable box terminals for the main conductor connections. This permits connection of ring terminal lugs or busbars.

Contact reliability

If voltages ≤ 110 V and currents ≤ 100 mA are to be switched, the auxiliary contacts of the 3RT1 contactor or 3RH11 contactor relay should be used as they guarantee a high level of contact reliability.

These auxiliary contacts are particularly suitable for solid-state circuits with currents ≥ 1 mA at a voltage ≥ 17 V.

Short-circuit protection of the contactors

Short-circuit protection of contactors without overload relay see "Technical specifications", pages 3/68 and 3/72. For short-circuit protection of the contactors with overload relay see Configuration Manual "SIRIUS Configuration - Selection data for Fuseless Load Feeders".

To assemble fuseless motor feeders you must select combinations of motor starter protector and contactor as explained in "Fuseless Load Feeders".

Motor protection

3RU11 thermal overload relays or 3RB20/3RB21 solid-state overload relays can be fitted to the 3RT1 contactors for protection against overload. The overload relays must be ordered separately.

Ratings of induction motors

The quoted rating (in kW) refers to the output power on the motor shaft (according to the nameplate).

Surge suppression

3RT1 contactors can be retrofitted with RC elements, varistors, diodes or diode assemblies (assembly of diode and Zener diode for short break times) for damping opening surges in the coil.

Note:

The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 10 times; diode assembly 2 to 6 times, varistor +2 to 5 ms).

Sizes S00 and S0, up to 11 kW

For 3RT1 devices in these sizes see Catalog IC 10 AO · 2012.

Sizes S2 and S3, up to 45 kW

Auxiliary contact complement

The basic units of sizes S2 and S3 are delivered only with the main contacts and can be extended with auxiliary switch blocks.

For sizes S2 and S3, complete units with mounted auxiliary switch block 2 NO + 2 NC are available (terminal designation according to EN 50012); the auxiliary switch block can be removed (for more information see Accessories on page 3/91).

Note:

Auxiliary contact complement according to SUVA: Contactors with permanently mounted auxiliary switch block 2 NO + 2 NC are available for safety applications according to SUVA.

Surge suppression

For size S2 and S3 contactors, varistors and RC elements can be snapped on either on the top or directly below the coil terminals. Diode assemblies are available in 2 different versions on account of their polarity. Depending on the application they can be connected either only at the bottom (assembly with motor starter protector) or only at the top (assembly with overload relay).

The plug-in direction of the diodes and diode assemblies is specified by coding.
Exceptions:
3RT19 26-1T.00 and 3RT19 36-1T.00,
in this case the plug-in direction is marked with "+" and "-".

Sizes S6 to S12, > 45 to 250 kW

- 3RT10, contactors for switching motors,
- 3RT12, vacuum contactors for switching motors,
- 3RT14, contactors for AC-1 applications (see Chapter 4).

Operating mechanism types

Two types of solenoid operation are available:

- Conventional operating mechanism
- Solid-state operating mechanism (with 3 performance levels)

Control supply voltage

The contactors have a UC operating mechanism which can be operated with AC (40 to 60 Hz) as well as with DC.

Withdrawable coils

For simple coil replacement, e.g. if the application is replaced, the solenoid coil can be pulled out upwards after the release mechanism has been actuated and can be replaced by any other coil of the same size.

Auxiliary contact complement

Contactor sizes S6 to S12 are supplied with mounted auxiliary switch blocks.

For detailed information about the fitting of auxiliary switches see "Accessories", page 3/91.

- 3RT10 and 3RT14 contactors:
  Auxiliary contacts mounted laterally and on front
- 3RT12 vacuum contactors:
  Auxiliary contacts mounted laterally

Contactors with conventional operating mechanism

Version 3RT1. ..-.A:

The solenoid coil is switched directly on and off with the control supply voltage U_s by way of terminals A1/A2.

Multi-voltage range for the control supply voltage U_s:

Only one coil covers several close-lying control supply voltages which are used worldwide, e.g. 110–115–120–127 V AC/DC or 220–230–240 V AC/DC. Allowance is made in addition for an operating range of 0.8 times the lower ($U_{s\,min}$) and 1.1 times the upper ($U_{s\,max}$) rated control supply voltage within which the contactor switches reliably and no thermal overload occurs.

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Contactors with solid-state operating mechanism

The solenoid coil is supplied selectively with the power required for reliable switching and holding by upstream control electronics.

- Wide voltage range for the control supply voltage U_S:
  Compared with the conventional operating mechanism, the solid-state operating mechanism covers an even broader range of control supply voltages used worldwide within one coil version. For example, the coil for 200 to 277 V AC/DC ($U_{S\ min}$ to $U_{S\ max}$) covers the voltages 200-208-220-230-240-254-277 V used worldwide.
- Extended operating range 0.7 to 1.25 x U_S:
  The wide range for the rated control supply voltage and the additionally allowed coil operating range of 0.8 x $U_{S\ min}$ to 1.1 x $U_{S\ max}$ results in an extended coil operating range of at least 0.7 to 1.25 x U_S, within which the contactors will operate reliably, for the most common control supply voltages of 24, 110 and 230 V.
- Bridging temporary voltage dips:
  Control voltage failures dipping to 0 V (at A1/A2) are bridged for up to approx. 25 ms to avoid unintentional tripping.
- Defined ON and OFF thresholds:
  For voltages above 0.8 x $U_{S\ min}$ the electronics will reliably switch the contactor ON, and for voltages below the value 0.5 x $U_{S\ min}$ it is reliably switched OFF. The hysteresis in the switching thresholds prevents the main contacts from chattering as well as increased wear or welding when operated in weak, unstable networks. This also prevents thermal overloading of the contactor coil if the voltage applied is too low (contactor does not close properly and is continuously operated with overexcitation).
- Low control power consumption when closing and in the closed state.

Electromagnetic compatibility (EMC)

The contactors with solid-state operating mechanism conform to the requirements for operation in industrial plants:

- Interference immunity
  - Burst (IEC 61000-4-4): 4 kV
  - Surge (IEC 61000-4-5): 4 kV
  - Electrostatic discharge, ESD (IEC 61000-4-2): 8/15 kV
  - Electromagnetic field (IEC 61000-4-3): 10 V/m
- Emitted interference
  - Limit value class A according to EN 55011

Note:

In connection with converters, the control cables must be routed separately from the load cables to the converter.

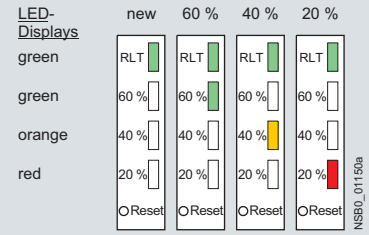
Indication of remaining lifetime (RLT)

Main contactor contacts are working parts which therefore must be replaced in good time when the end of their service life has been reached. The degree of contact erosion and thus the electrical endurance (= number of operating cycles) depends on the loading, utilization category, operating mode, etc. Up to now, routine checks/visual inspections by the maintenance personnel were needed in order to gain an insight into the state of the main contacts.

The remaining lifetime indication function now takes over this task. It does not count the number of operating cycles – which does not provide information about contact erosion – but instead electronically identifies, evaluates and stores the actual progress of erosion of each one of the three main contacts, and outputs a warning when specified limits are reached. The stored data are not lost even if the control supply voltage for A1/A2 fails. After replacement of the main contacts, measurement the remaining lifetime must be reset using the "RESET" button (hold down RESET button for about 2 seconds using a pen or similar tool).

Advantages:

- Signaling through relay contact or AS-i when remaining lifetime is 20 %, i.e. contact material wear is 80 %.
- Additional visual display of various levels of erosion by means of LEDs on the laterally mounted solid-state module when remaining lifetime is 60 % (green), 40 % (orange) and 20 % (red).

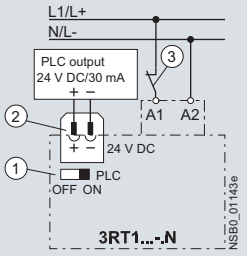


- Early warning to replace contacts
- Optimum utilization of contact material
- Visual inspection of the condition of contacts no longer necessary
- Reduction of ongoing operating costs
- Optimum planning of maintenance measures
- Avoidance of unforeseen plant downtimes

Version 3RT1. ..-.N: for 24 V DC PLC output

2 control options:

■ Control without a coupling link directly through a 24 V DC/ ≥ 30 mA PLC output (IEC 61131-2). Connection by means of 2-pole plug-in connection. The screwless spring-type connection is part of the scope of supply. The control supply voltage which supplies the solenoid operating mechanism must be connected to A1/A2.

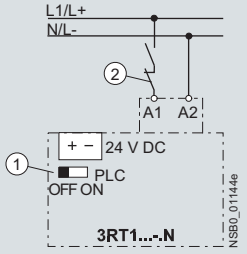


① Slide switch, must be in position PLC "ON"
② Plug-in connection, 2-pole
③ Shutdown in an emergency (EMERGENCY-STOP) – optional

Note:

Before start-up, the slide switch for PLC operation must be moved to the "PLC ON" position (setting ex works: "PLC OFF").

■ Conventional control by applying the control supply voltage at A1/A2 through a switching contact.



① Slide switch, must be in position PLC "OFF"
② Shutdown in an emergency (EMERGENCY-STOP) – optional

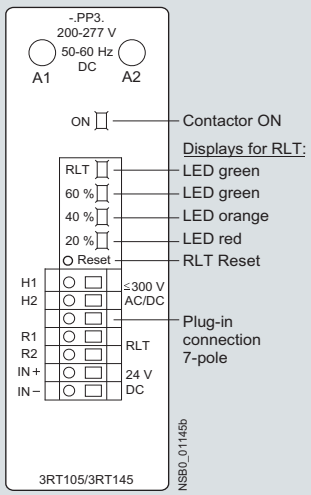
Note:

The slide switch must be in the "PLC OFF" position (= setting ex works).

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SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

Version 3RT1. . .-.P: for 24 V DC PLC output or PLC relay output, with remaining lifetime indicator (RLT)

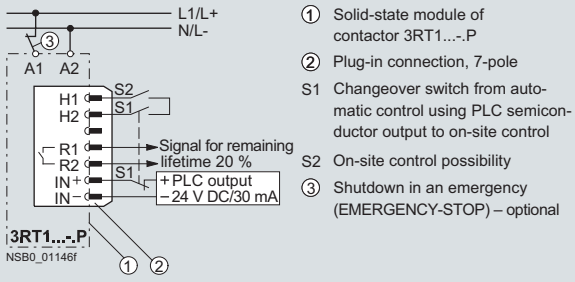


To supply the solenoid and the remaining lifetime indicator with power, the control supply voltage U_S must be connected to terminals A1/A2 of the laterally mounted solid-state module. The control inputs of the contactor are connected to a 7-pole plug-in connection; the screwless spring-type connection is part of the scope of supply.

- The "Remaining Lifetime RLT" status signal is available at terminals R1/R2 through a floating relay contact (hard gold-plated, enclosed) and can be input to SIMOCODE, PLC or other devices for processing, for example.
  Permissible current-carrying capacity of the R1/R2 relay output:
  - I_e/AC-15/24 to 230 V: 3 A
  - I_e/DC-13/24 V: 1 A
- LED displays
  The following states are indicated by means of LEDs on the laterally mounted solid-state module:
  - Contactor ON (energized state): green LED ("ON")
  - Indication of remaining lifetime

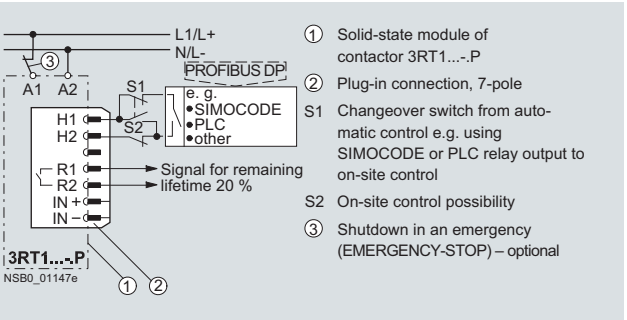
2 control options:

■ Contactor control without a coupling link directly through a 24 V DC/≥ 30 mA PLC output (IEC 61131-2) by way of terminals IN+/IN-.



Possibility of switching from automatic control to local control by way of terminals H1/H2, i.e. automatic control through PLC or SIMOCODE/PROFIBUS DP can be deactivated e.g. at start-up or in the event of a fault and the contactor can be controlled manually.

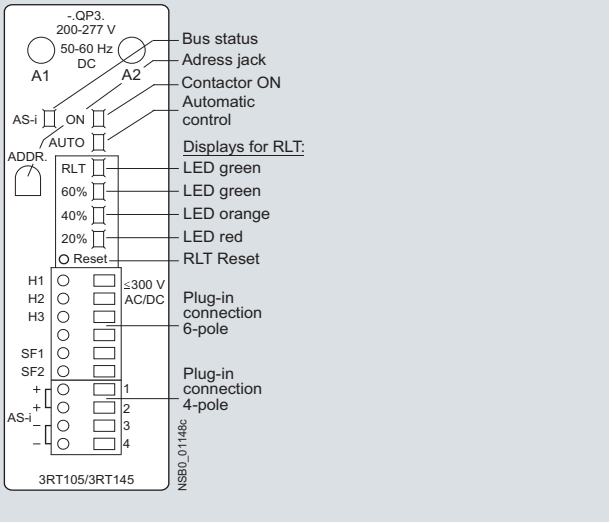
■ Contactor control through relay outputs at connections H1/H2, e.g. by
- PLC or
- SIMOCODE



Contact loading: U_S/approx. 5 mA.

When operated through SIMOCODE, a communication link to PROFIBUS DP is also provided.

Version 3RT1. . .-.Q: Communication-capable with integrated AS-Interface and remaining lifetime indicator (RLT)



To supply the solenoid and the remaining lifetime indicator with power, the control supply voltage U_S must be connected to terminals A1/A2 of the laterally mounted solid-state module. The contactor itself is controlled by way of the integrated interface AS-Interface. The inputs and outputs are connected to a 10-pole plug-in connection; the screwless spring-type connections (6-pole for external connection and 4-pole for AS-Interface connection) are part of the scope of supply.

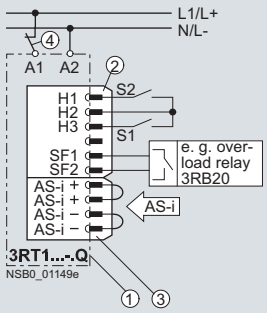
- LED displays:
  The following states are indicated by means of LEDs on the laterally mounted solid-state module:
  - Contactor ON (energized state): green LED ("ON")
  - Automatic/local control: Green LED ("AUTO")
  - Bus status: Green/red dual LED ("AS-i")
  - Indication of remaining lifetime (RLT)
- AS-Interface addressing socket "ADDR":
  The contactor address can be assigned after installation.

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SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

Control circuit:

- Contactor control through AS-Interface by way of terminals AS-i +/AS-i –. Each of these terminals is jumpered and connected twice to a 4-pole connector which is separate from the other control inputs.
  Advantages:
  - The AS-Interface cable is not interrupted if the connector is pulled out
  - The contactor remains functional through the local control inputs and its own 6-pole connector.
- Control signals through AS-i:
  - Contactor ON/OFF
- Status signals through AS-i:
  - Contactor ON/OFF
  - Automatic/local control
  - Indication of remaining lifetime (RLT)
  - Signal through free input, e.g. overload relay tripped.



① Solid-state module of contactor 3RT1...-.Q
② Plug-in connection, 6-pole
③ Plug-in connection, 4-pole
S1 Changeover switch from automatic control using AS-Interface to on-site control
• S1 open: automatic mode
S2 On-site control possibility
④ Shutdown in an emergency (EMERGENCY-STOP) – optional

Possibility of switching from automatic control to local control by means of terminals H1/H2/H3, i.e. automatic control through AS-Interface can be deactivated e.g. during start-up or in the event of a fault and the contactor can be controlled manually.

Technical specifications

AS-Interface		
I/O configuration (hex)		7
ID code (hex)		F
Power supply (acc. to AS-Interface Specification)	V	26.5 ... 31.6
Power consumption, max.	mA	20
Contact loading at SF1/2	mA	3 ... 6
Watchdog function (disconnects outputs in the event of AS-Interface fault)		Built-in

Display behavior of the LEDs

State		LEDs
AS-Interface Communication	OK	On
	Fault	On
Station address	0 (zero)	Flashing
		Flashing

Contactor diagnostics using the user program

• Inputs

Input signals			Device status
DI 0	"Ready"	0	Device not ready/manual operation
		1	Device ready/automatic mode
DI 1	"Running"	0	Contactor off
		1	Contactor on
DI 2	"Remaining lifetime"	0	Remaining lifetime RLT > 20 %
		1	Remaining lifetime RLT ≤ 20 %
DI 3	"Free input"	0	No input signal at SF1/2
		1	Input signal at SF1/2

• Outputs

Output signals			Device status
DO 0	"Running"	0	Contactor off
		1	Contactor on
DO 1		0	--
		1	--
DO 2		0	--
		1	--
DO 3		0	--
		1	--

Order No. scheme

Digit of the Order No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th		13th	14th	15th	16th
	□□□	□	□	□	□	–	□	□	□	□	□	–	□	□	□	□
SIRIUS power contactors	**3 R T**															
1st generation		**1**														
Device type (e.g. 0 = 3-pole motor contactor, 3 = 4-pole AC-1 contactor)			□													
Size of the contactor (3 = S2, 4 = S3, 5 = S6, etc.)				□												
Power dependent on size (e.g. 45 = 37 kW)					□											
Connection type (1 = screw, 2 = spring, 3 = spring for aux., controls only)							□									
Operating range / solenoid coil circuit (e.g. A = AC standard / without)								□								
Rated control supply voltage (e.g. P0 = 230 V, 50 Hz)									□	□						
Auxiliary switches (e.g. S3: 0 = without auxiliary switches)											□					
Special version													□	□	□	□
Example	**3 R T**	**1**	**0**	**4**	**5**	**–**	**1**	**A**	**P**	**0**	**0**					

The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quoted in the catalog and in the Industry Mall.

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SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

Technical specifications

Contact endurance of the main contacts

The characteristic curves show the contact endurance of the contactors when switching resistive and inductive AC loads (AC-1/AC-3) depending on the breaking current and rated operational voltage. It is assumed that the operating mechanisms are switched randomly, i.e. not synchronized with the phase angle of the supply system.

The rated operational current I_e complies with utilization category AC-4 (breaking six times the rated operational current) and is intended for a contact endurance of at least 200 000 operating cycles.

If a shorter endurance is sufficient, the rated operational current I_e/AC-4 can be increased.

If the contacts are used for **mixed operation**, i.e. normal switching (breaking the rated operational current according to utilization category AC-3) in combination with intermittent inching (breaking several times the rated operational current according to utilization category AC-4), the contact endurance can be calculated approximately from the following equation:

$$X = \frac{A}{1 + \frac{C}{100}\left(\frac{A}{B} - 1\right)}$$

Characters in the equation:

- *X* Contact endurance for mixed operation in operating cycles
- *A* Contact endurance for normal operation ($I_a = I_e$) in operating cycles
- *B* Contact endurance for inching (I_a = multiple of I_e) in operating cycles
- *C* Inching operations as a percentage of total switching operations

Size S2

Operating cycles at

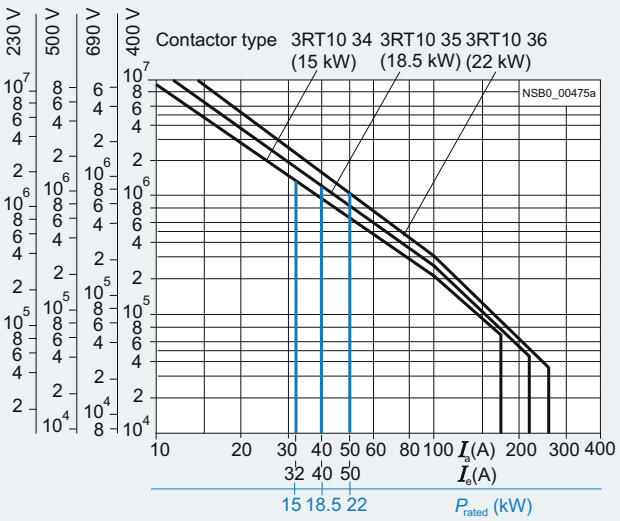


Diagram legend:
P_{rated} = Rated power for squirrel-cage motors at 400 V
I_a = Breaking current
I_e = Rated operational current

Size S3

Operating cycles at

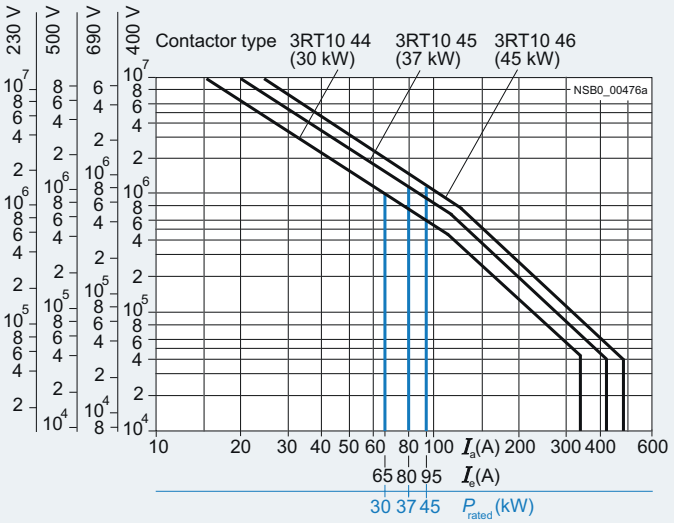


Diagram legend:
P_{rated} = Rated power for squirrel-cage motors at 400 V
I_a = Breaking current
I_e = Rated operational current

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Contact endurance of the main contacts

Sizes S6 to S12

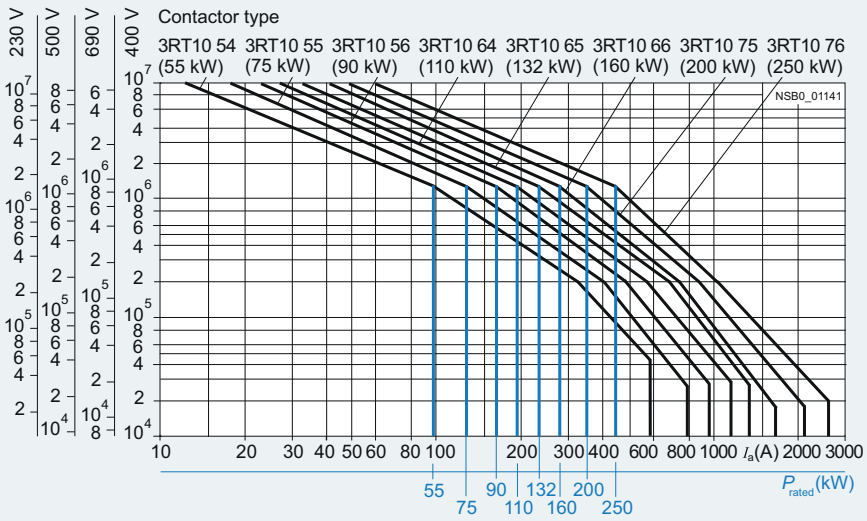


Diagram legend:
P_{rated} = Rated power for squirrel-cage motors at 400 V
I_a = Breaking current
I_e = Rated operational current

3RT12 vacuum contactors · Sizes S10 and S12

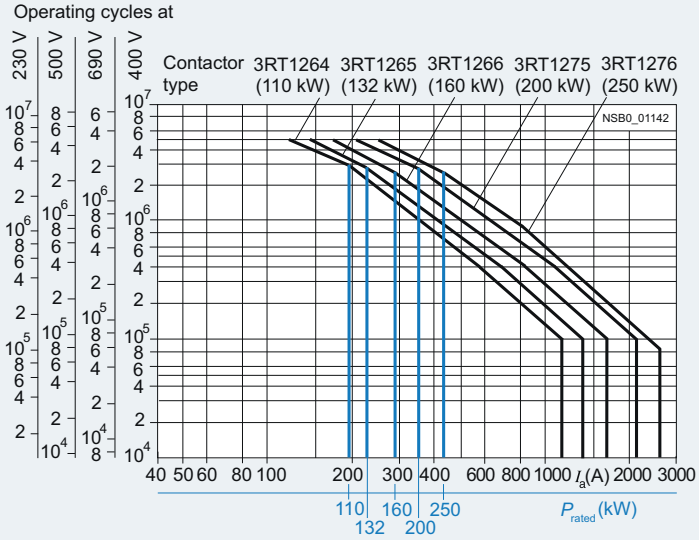
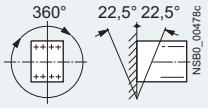


Diagram legend:
P_{rated} = Rated power for squirrel-cage motors at 400 V
I_a = Breaking current
I_e = Rated operational current

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SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

Type			**3RT10 34**	**3RT10 35**	**3RT10 36**	**3RT10 44**	**3RT10 45**	**3RT10 46**
Size			**S2**			**S3**		
Dimensions (W x H x D)		mm	55 x 112 x 110			70 x 146 x 134		
• With mounted auxiliary switch block		mm	55 x 112 x 159			70 x 146 x 183		
General data								
Permissible mounting positions The contactors are designed for operation on a vertical mounting surface.								
Upright mounting position			 Special version required.					
Mechanical endurance								
• Basic units		Operating cycles	10 million					
• Basic units with snap-on auxiliary switch block		Operating cycles	10 million					
• Solid-state compatible auxiliary switch blocks		Operating cycles	5 million					
Electrical endurance			[1]					
Rated insulation voltage U_i (pollution degree 3)		V	690			1 000		
Rated impulse withstand voltage U_{imp}		kV	6			6		
Protective separation between the coil and the main contacts acc. to IEC 60947-1, Appendix N		V	400			690		
Mirror contacts A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with a NO main contact.								
• With removable auxiliary switch block			Yes, acc. to IEC 60947-4-1, Appendix F					
• With non-removable auxiliary switch block			Acc. to Swiss regulations (SUVA) on request					
Permissible ambient temperature								
• During operation		°C	-25 ... +60					
• During storage		°C	-55 ... +80					
Degree of protection acc. to IEC 60947-1, Appendix C			IP20 (terminal compartment IP00), AC coil assembly IP40, DC coil assembly IP30					
Touch protection acc. to EN 50274			Finger-safe					
Shock resistance (AC and DC operation)								
• Rectangular pulse		*g*/ms	10/5 and 5/10			6.8/5 and 4/10		
• Sine pulse		*g*/ms	15/5 and 8/10			10.6/5 and 6.2/10		
Conductor cross-sections			[2]					
Short-circuit protection for contactors without overload relays								
Main circuit Fuse links, gG operational class: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE according to IEC 60947-4-1/EN 60947-4-1								
• Type of coordination "1"		A	125	125	160	250	250	
• Type of coordination "2"		A	63	63	80	125	160	
• Weld-free[3]		A	16	16	50	63	100	
Auxiliary circuit								
• Short-circuit test with fuse links of gG operational class: DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current I_k = 1 kA acc. to IEC 60947-5-1		A	10					
• Test with miniature circuit breaker up to 230 V with C char.: Short-circuit current I_k = 400 A acc. to IEC 60947-5-1		A	10					
Short-circuit protection for contactors with overload relays			See Configuration Manual "SIRIUS Configuration"					
Short-circuit protection for fuseless load feeders			See Chapter 8 "Load Feeders and Motor Starters for Use in the Control Cabinet" → "SIRIUS 3RA1 Load Feeders"					

1) For contact endurance of the main contacts see page 3/66.
2) For conductor cross-sections see page 3/71.
3) Test conditions according to IEC 60947-4-1.

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Contactor		Type	3RT10 34 S2	3RT10 35 S2	3RT10 36 S2	3RT10 44 S3	3RT10 45 S3	3RT10 46 S3
Control								
Coil operating range	AC/DC		0.8 ... 1.1 x U_s					
Power consumption of the solenoid coils (when coil is cold and 1.0 x U_s)								
• AC operation, 50 Hz, standard version								
- Closing		VA	104	145		218	270	
- P.f.			0.78	0.79		0.61	0.68	
- Closed		VA	9.7	12.5		21	22	
- P.f.			0.42	0.36		0.26	0.27	
• AC operation, 50/60 Hz, standard version								
- Closing		VA	127/113	170/155		247/211	298/274	
- P.f.			0.73/0.69	0.76/0.72		0.62/0.57	0.7/0.62	
- Closed		VA	11.3/9.5	15/11.8		25/18	27/20	
- P.f.			0.41/0.42	0.35/0.38		0.27/0.3	0.29/0.31	
• AC operation, 50 Hz, for USA/Canada								
- Closing		VA	108	150		218	270	
- P.f.			0.76	0.77		0.61	0.68	
- Closed		VA	9.6	12.5		21	22	
- P.f.			0.42	0.35		0.26	0.27	
• AC operation, 60 Hz, for USA/Canada								
- Closing		VA	120	166		232	300	
- P.f.			0.7	0.71		0.55	0.52	
- Closed		VA	10.1	12.6		20	21	
- P.f.			0.42	0.37		0.28	0.29	
• DC operation								
- Closing = Closed		W	13.3	13.3		15	15	
Permissible residual current of the electronics (with 0 signal)								
• AC operation		mA	<12 mA x (230 V/U_s)	< 18 mA x (230 V/U_s)		< 25 mA x (230 V/U_s)		
• DC operation		mA	< 38 mA x (24 V/U_s)	< 38 mA x (24 V/U_s)		< 43 mA x (24 V/U_s)		
Operating times for 0.8 ... 1.1 x U_s [1]								
(Total break time = Opening delay + Arcing time)								
• AC operation								
- Closing delay		ms	11 ... 30	10 ... 24		16 ... 57	17 ... 90	
- Opening delay		ms	7 ... 10	7 ... 10		10 ... 19	10 ... 25	
• DC operation								
- Closing delay		ms	50 ... 95	60 ... 100		90 ... 230	90 ... 230	
- Opening delay		ms	20 ... 30	20 ... 25		14 ... 20	14 ... 20	
• Arcing time		ms	10	10		10 ... 15	10 ... 15	
Operating times for 1.0 x U_s [1]								
• AC operation								
- Closing delay		ms	13 ... 22	12 ... 20		18 ... 34	18 ... 30	
- Opening delay		ms	7 ... 10	7 ... 10		11 ... 18	11 ... 23	
• DC operation								
- Closing delay		ms	60 ... 75	70 ... 85		100 ... 120	100 ... 120	
- Opening delay		ms	20 ... 30	20 ... 25		16 ... 20	16 ... 20	

[1] The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (varistor +2 ms to 5 ms, diode assembly: 2 to 6 times).

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SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

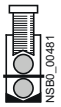
Contactor	Type Size	3RT10 34 S2	3RT10 35 S2	3RT10 36 S2	3RT10 44 S3	3RT10 45 S3	3RT10 46 S3
Main circuit							
AC capacity							
Utilization category AC-1 Switching resistive loads							
• Rated operational currents I_e							
- at 40 °C up to 690 V	A	50	60	60	100	120	120
- at 40 °C up to 1000 V	A	--	--	--	50	60	70
- at 60 °C up to 690 V	A	45	55	55	90	100	100
- at 60 °C up to 1000 V	A	--	--	--	40	50	60
• Rated power for AC loads[1] with p.f.= 0.95 (at 60 °C)							
- At 230 V	kW	18	22	22	34	38	38
- At 400 V	kW	31	38	38	59	66	66
- At 500 V	kW	39	46	46	74	82	82
- At 690 V	kW	54	66	66	102	114	114
- At 1000 V	kW	--	--	--	66	82	98
• Minimum conductor cross-section for loads with I_e							
- At 40 °C	mm^2	16	16	16	35	50	50
- At 60 °C	mm^2	10	16	16	35	35	35
Utilization categories AC-2 and AC-3							
• Rated operational currents I_e							
- Up to 500 V	A	32	40	50	65	80	95
- At 690 V	A	20	24	24	47	58	58
- At 1000 V	A	--	--	--	25	30	30
• Rated power for slipring or squirrel-cage motors at 50 and 60 Hz							
- At 230 V	kW	7.5	11	15	18.5	22	22
- At 400 V	kW	15	18.5	22	30	37	45
- At 500 V	kW	18.5	22	30	37	45	55
- At 690 V	kW	18.5	22	22	45	55	55
- At 1000 V	kW	--	--	--	30	37	37
Thermal current-carrying capacity, 10 s current[2]	A	320	400	400	600	760	760
Power loss per conducting path at I_e/AC-3	W	1.8	2.6	5	4.6	7.7	10.8
Utilization category AC-4 (for $I_a = 6 \times I_e$)							
• Rated operational current I_e							
- Up to 400 V	A	29	35	41	55	66	80
• Rated power for squirrel-cage motors with 50 Hz and 60 Hz							
- At 400 V	kW	15	18.5	22	30	37	45
The following applies to a contact endurance of about 200000 operating cycles:							
• Rated operational currents I_e							
- Up to 400 V	A	15.6	18.5	24	28	34	42
- Up to 690 V	A	15.6	18.5	24	28	34	42
- Up to 1000 V	A	--	--	--	20	23	23
• Rated power for squirrel-cage motors with 50 Hz and 60 Hz							
- At 230 V	kW	4.7	5.4	7.3	8.7	10.4	12
- At 400 V	kW	8.2	9.5	12.6	15.1	17.9	22
- At 500 V	kW	9.8	11.8	15.8	18.4	22.4	27
- At 690 V	kW	13	15.5	21.8	25.4	30.9	38
- At 1000 V	kW	--	--	--	22	30	30
Switching frequency							
Switching frequency z in operating cycles/hour							
Contactors without overload relays							
• No-load switching frequency AC	h^{-1}	5000			5000		
• No-load switching frequency DC	h^{-1}	1500			1000		
• Dependence of the switching frequency z' on the operational current I′ and operational voltage U': $z' = z \cdot (I_e/I') \cdot (400\ V/U')^{1.5} \cdot 1/h$							
- AC-1	h^{-1}	1200	1200	1000	1000	900	900
- AC-2	h^{-1}	750	600	400	400	400	350
- AC-3	h^{-1}	1000	1000	800	1000	1000	850
- AC-4	h^{-1}	250	300	300	300	300	250
Contactors with overload relays							
• Mean value	h^{-1}	15					

[1] Industrial furnaces and electric heaters with resistance heating, etc. (increased power consumption on heating up has been taken into account).

[2] According to IEC 60947-4-1.
Rated values for various start-up conditions see Chapter 7, "Protection Equipment" ➞ "Overload Relays".

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SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

Contactor	Type Size	3RT10 3. S2	3RT10 4. S3
Conductor cross-sections (1 or 2 conductors connectable)			
Main conductors (1 or 2 conductors can be connected)		**Screw terminals**	
Box terminals			
Front clamping point connected			
 NSB0_00479			
• Finely stranded with end sleeve	mm²	0.75 ... 25	2.5 ... 35
• Finely stranded without end sleeve	mm²	0.75 ... 25	4 ... 50
• Stranded	mm²	0.75 ... 35	4 ... 70
• Solid	mm²	0.75 ... 16	2.5 ... 16
• Ribbon cable conductors (Number x Width x Thickness)	mm	6 x 9 x 0.8	6 x 9 x 0.8
• AWG cables, solid or stranded	AWG	18 ... 2	10 ... 2/0
Rear clamping point connected			
 NSB0_00480			
• Finely stranded with end sleeve	mm²	0.75 ... 25	2.5 ... 50
• Finely stranded without end sleeve	mm²	0.75 ... 25	10 ... 50
• Stranded	mm²	0.75 ... 35	10 ... 70
• Solid	mm²	0.75 ... 16	2.5 ... 16
• Ribbon cable conductors (Number x Width x Thickness)	mm	6 x 9 x 0.8	6 x 9 x 0.8
• AWG cables, solid or stranded	AWG	18 ... 2	10 ... 2/0
Both clamping points connected			
 NSB0_00481			
• Finely stranded with end sleeve	mm²	2 x (0.75 ... 16)	2 x (2.5 ... 35)
• Finely stranded without end sleeve	mm²	2 x (0.75 ... 16)	2 x (4 ... 35)
• Stranded	mm²	2 x (0.75 ... 25)	2 x (4 ... 50)
• Solid	mm²	2 x (0.75 ... 16)	2 x (2.5 ... 16)
• Ribbon cable conductors (Number x Width x Thickness)	mm	2 x (6 x 9 x 0.8)	2 x (6 x 9 x 0.8)
• AWG cables, solid or stranded	AWG	2 x (18 ... 2)	2 x (10 ... 1/0)
• Terminal screw		M6 (Pozidriv 2)	M8 (hexagon socket , A/F 4)
- Tightening torque	Nm	3 ... 4.5	4 ... 6
	lb.in	27 ... 40	36 ... 53
Busbar connection (bored copper bars)[1]			
Max. width	mm	--	10
Cable lug connection (without box terminals)[2] (1 or 2 conductors can be connected)			
• Finely stranded with cable lug	mm²	--	10 ... 50[3]
• Stranded with cable lug	mm²	--	10 ... 70[3]
• AWG cables, solid or stranded	AWG	--	7 ... 1/0
Auxiliary conductors			
• Solid	mm²	2 x (0.5 ... 1.5)[4]; 2 x (0.75 ... 2.5)[4] according to IEC 60947; max. 2 x (0.75 ... 4)	
• Finely stranded with end sleeve	mm²	2 x (0.5 ... 1.5)[4]; 2 x (0.75 ... 2.5)[4]	
• AWG cables, solid or stranded	AWG	2 x (20 ... 16)[4]; 2 x (18 ... 14)[4]; 1 x 12	
• Terminal screw		M3	
- Tightening torque	Nm	0.8 ... 1.2	
	lb.in	7 ... 10.3	
Auxiliary conductors[5]		**Spring-type terminals**	
• Operating devices[6]		3.0 x 0.5; 3.5 x 0.5	
• Solid	mm²	2 x (0.25 ... 2.5)	
• Finely stranded with end sleeve	mm²	2 x (0.25 ... 1.5)	
• Finely stranded without end sleeve	mm²	2 x (0.25 ... 2.5)	
• AWG cables, solid or stranded	AWG	2 x (24 ... 14)	

1) If bars larger than 12 mm x 10 mm are connected, a 3RT19 46-4EA1 terminal cover is needed to comply with the phase clearance.

2) When connecting conductors which are larger than 25 mm², the 3RT19 46-4EA1 terminal cover must be used to keep the phase clearance.

3) Only with crimped cable lugs according to DIN 46234, max. 20 mm wide.

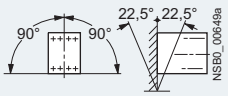
4) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

5) Max. external diameter of the cable insulation: 3.6 mm. An "insulation stop" must be used for conductor cross-sections ≤ 1 mm²; see "Accessories" on page 3/106.

6) Tool for opening the spring-type terminals see Accessories, page 3/106.

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SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

Type			3RT10 54	3RT10 55, 3RT10 56	3RT10 64, 3RT10 65, 3RT10 66	3RT10 75	3RT10 76
Size			S6		S10	S12	
Dimensions (W x H x D)		mm	120 x 172 x 170		145 x 210 x 202	160 x 214 x 225	
• With mounted auxiliary switch block		mm	120 x 172 x 217		145 x 210 x 251	160 x 214 x 271	
General data							
Permissible mounting positions The contactors are designed for operation on a vertical mounting surface.							
Mechanical endurance		Operating cycles	10 million				
Electrical endurance			1)				
Rated insulation voltage U_i (pollution degree 3)		V	1000				
Rated impulse withstand voltage U_{imp}		kV	8				
Protective separation between the coil and the main contacts acc. to IEC 60947-1, Appendix N		V	690				
Mirror contacts A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with a NO main contact.			Yes, acc. to IEC 60947-4-1, Appendix F				
Permissible ambient temperature							
• During operation		°C	-25 ... +60				
• During operation, with interface AS-Interface		°C	-25 ... +55				
• During storage		°C	-55 ... +80				
Degree of protection acc. to IEC 60947-1, Appendix C			IP00/open, coil assembly IP20				
Touch protection acc. to EN 50274			Finger-safe with cover				
Shock resistance							
• Rectangular pulse		*g*/ms	8.5/5 and 4.2/10				
• Sine pulse		*g*/ms	13.4/5 and 6.5/10				
Conductor cross-sections			2)				
Electromagnetic compatibility (EMC)			3)				
Short-circuit protection							
Main circuit Fuse links, gG operational class: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE according to IEC 60947-4-1/EN 60947-4-1							
• Type of coordination "1"		A	355	355	500	630	630
• Type of coordination "2"		A	315	315	400	500	500
• Weld-free[4]		A	80	160	250	250	315
Auxiliary circuit							
• Short-circuit test with fuse links of gG operational class: DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current I_k = 1 kA acc. to IEC 60947-5-1		A	10				
• Test with miniature circuit breaker up to 230 V with C characteristic: Short-circuit current I_k = 400 A acc. to IEC 60947-5-1							
Short-circuit protection for contactors with overload relays			See Configuration Manual "SIRIUS Configuration"				

1) For endurance of the main contacts see page 3/67.
2) For conductor cross-sections see page 3/75.
3) For electromagnetic compatibility (EMC) see page 3/63.
4) Test conditions according to IEC 60947-4-1.

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SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

Contactor	Type Size	3RT10 5. S6	3RT10 6. S10	3RT10 7. S12
Control				
Operating range of the solenoid AC/DC (UC)		0.8 x $U_{s\,min}$ ... 1.1 x $U_{s\,max}$		
Power consumption of the solenoid operation (when coil is cold and rated range $U_{s\,min}$ ... $U_{s\,max}$)				
Conventional operating mechanisms				
• AC operation				
- Closing at $U_{s\,min}$	VA/p.f.	250/0.9	490/0.9	700/0.9
- Closing at $U_{s\,max}$	VA/p.f.	300/0.9	590/0.9	830/0.9
- Closed at $U_{s\,min}$	VA/p.f.	4.8/0.8	5.6/0.9	7.6/0.9
- Closed at $U_{s\,max}$	VA/p.f.	5.8/0.8	6.7/0.9	9.2/0.9
• DC operation				
- Closing at $U_{s\,min}$	W	300	540	770
- Closing at $U_{s\,max}$	W	360	650	920
- Closed at $U_{s\,min}$	W	4.3	6.1	8.5
- Closed at $U_{s\,max}$	W	5.2	7.4	10
Solid-state operating mechanism				
• AC operation				
- Closing at $U_{s\,min}$	VA/p.f.	190/0.8	400/0.8	560/0.8
- Closing at $U_{s\,max}$	VA/p.f.	280/0.8	530/0.8	750/0.8
- Closed at $U_{s\,min}$	VA/p.f.	3.5/0.5	4/0.5	5.4/0.8
- Closed at $U_{s\,max}$	VA/p.f.	4.4/0.4	5/0.4	7/0.8
• DC operation				
- Closing at $U_{s\,min}$	W	250	440	600
- Closing at $U_{s\,max}$	W	320	580	800
- Closed at $U_{s\,min}$	W	2.3	3.2	4
- Closed at $U_{s\,max}$	W	2.8	3.8	5
PLC control input acc. to EN 61131-2		Type 2		
• Rated voltage	V DC	24		
• Operating range	V DC	17 ... 30		
• Power consumption	mA	≤ 30		
Operating times (Total break time = Opening delay + Arcing time)				
Conventional operating mechanisms				
• For 0.8 x $U_{s\,min}$ ... 1.1 x $U_{s\,max}$				
- Closing delay	ms	20 ... 95	30 ... 95	45 ... 100
- Opening delay	ms	40 ... 60	40 ... 80	60 ... 100
• For $U_{s\,min}$ ... $U_{s\,max}$				
- Closing delay	ms	25 ... 50	35 ... 50	50 ... 70
- Opening delay	ms	40 ... 60	50 ... 80	70 ... 100
Solid-state operating mechanism, actuated via A1/A2				
• For 0.8 x $U_{s\,min}$ ... 1.1 x $U_{s\,max}$				
- Closing delay	ms	95 ... 135	105 ... 145	120 ... 150
- Opening delay	ms	80 ... 90	80 ... 100	80 ... 100
• For $U_{s\,min}$ ... $U_{s\,max}$				
- Closing delay	ms	100 ... 120	110 ... 130	125 ... 150
- Opening delay	ms	80 ... 90	80 ... 100	80 ... 100
Solid-state operating mechanism, actuated via PLC input				
• For 0.8 x $U_{s\,min}$ ... 1.1 x $U_{s\,max}$				
- Closing delay	ms	35 ... 75	45 ... 80	60 ... 90
- Opening delay	ms	80 ... 90	80 ... 100	80 ... 100
• For $U_{s\,min}$ ... $U_{s\,max}$				
- Closing delay	ms	40 ... 60	50 ... 65	65 ... 80
- Opening delay	ms	80 ... 90	80 ... 100	80 ... 100
• Arcing time	ms	10 ... 15	10 ... 15	10 ... 15

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SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

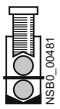
Contactor	Type	3RT10 54 S6	3RT10 55 S6	3RT10 56 S6	3RT10 64 S10	3RT10 65 S10	3RT10 66 S10	3RT10 75 S12	3RT10 76 S12
Main circuit									
AC capacity									
Utilization category AC-1 Switching resistive loads									
• Rated operational currents I_e									
- at 40 °C up to 690 V	A	160	185	215	275	330		430	610
- at 60 °C up to 690 V	A	140	160	185	250	300		400	550
- at 60 °C up to 1000 V	A	80	90	100	100	150		200	200
• Rated power for AC loads[1] with p.f.= 0.95 (at 60 °C)									
- At 230 V	kW	53	60	70	94	113		151	208
- At 400 V	kW	92	105	121	164	197		263	362
- At 500 V	kW	115	131	152	205	246		329	452
- At 690 V	kW	159	181	210	283	340		454	624
- At 1000 V	kW	131	148	165	164	246		329	329
• Minimum conductor cross-section for loads with I_e									
- At 40 °C	mm^2	70	95	95	150	185		2 x 150	2 x 185
- At 60 °C	mm^2	50	70	95	120	185		240	2 x 185
Utilization categories AC-2 and AC-3									
• Rated operational currents I_e									
- Up to 500 V	A	115	150	185	225	265	300	400	500
- At 690 V	A	115	150	170	225	265	280	400	450
- At 1000 V	A	53	65	65	68	95	95	180	180
• Rated power for slipring or squirrel-cage motors at 50 and 60 Hz									
- At 230 V	kW	37	50	61	73	85	97	132	164
- At 400 V	kW	64	84	104	128	151	171	231	291
- At 500 V	kW	81	105	132	160	189	215	291	363
- At 690 V	kW	113	146	167	223	265	280	400	453
- At 1000 V	kW	75	90	90	90	132	132	250	250
Thermal current-carrying capacity, 10 s current[2]	A	1100	1300	1480	1800	2400	2400	3200	4000
Power loss per main current path at I_e/AC-3/500 V	W	7	9	13	17	18	22	35	55
Utilization category AC-4 (for $I_a = 6 \times I_e$)									
• Rated operational current I_e									
- Up to 400 V	A	97	132	160	195	230	280	350	430
• Rated power for squirrel-cage motors with 50 Hz and 60 Hz									
- At 400 V	kW	55	75	90	110	132	160	200	250
The following applies to a contact endurance of about 200000 operating cycles:									
• Rated operational currents I_e									
- Up to 500 V	A	54	68	81	96	117	125	150	175
- Up to 690 V	A	48	57	65	85	105	115	135	150
- Up to 1000 V	A	34	38	42	42	57	57	80	80
• Rated power for squirrel-cage motors with 50 Hz and 60 Hz									
- At 230 V	kW	16	20	25	30	37	40	48	56
- At 400 V	kW	29	38	45	54	66	71	85	98
- At 500 V	kW	37	47	57	67	82	87	105	123
- At 690 V	kW	48	55	65	82	102	112	133	148
- At 1000 V	kW	49	55	60	59	80	80	113	113
Switching frequency									
Switching frequency z in operating cycles/hour									
Contactors without overload relays									
• No-load switching frequency	h^{-1}	2000							
• Dependence of the switching frequency z' on the operational current I' and operational voltage U': $z' = z \cdot (I_e/I') \cdot (400\ V/U')^{1.5} \cdot 1/h$									
- AC-1	h^{-1}	800	800		750	800	750	700	500
- AC-2	h^{-1}	400	300		250	300	250	200	170
- AC-3	h^{-1}	1000	750		500	700	500	500	420
- AC-4	h^{-1}	130	130		130	130	130	130	130
Contactors with overload relays									
• Mean value	h^{-1}	60							

1) Industrial furnaces and electric heaters with resistance heating, etc. (increased power consumption on heating up has been taken into account).

2) According to IEC 60947-4-1.
Rated values for various start-up conditions see Chapter 7, "Protection Equipment" → "Overload Relays".

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SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

Contactor	Type Size	3RT10 5. S6		3RT10 6. S10	3RT10 7. S12
Conductor cross-sections					
Main conductors (1 or 2 conductors can be connected)		Screw terminals			
Box terminals		3RT19 55-4G (55 kW) box terminals	3RT19 56-4G box terminals	3RT19 66-4G box terminals	
Front clamping point connected					
 NSB0_00479					
• Finely stranded with end sleeve	mm²	10 ... 70	10 ... 120	70 ... 240	
• Finely stranded without end sleeve	mm²	16 ... 70	16 ... 120	70 ... 240	
• Stranded	mm²	16 ... 70	16 ... 120	95 ... 300	
• Ribbon cable conductors (Number x Width x Thickness)	mm	Min. 3 x 9 x 0.8, max. 6 x 15.5 x 0.8	Min. 3 x 9 x 0.8, max. 10 x 15.5 x 0.8	3/0 ... 600 kcmil	
• AWG cables, solid or stranded	AWG	6 ... 2/0	6 ... 250 kcmil	Min. 6 x 9 x 0.8, max. 20 x 24 x 0.5	
Rear clamping point connected					
 NSB0_00480					
• Finely stranded with end sleeve	mm²	10 ... 70	10 ... 120	120 ... 185	
• Finely stranded without end sleeve	mm²	16 ... 70	16 ... 120	120 ... 185	
• Stranded	mm²	16 ... 70	16 ... 120	120 ... 240	
• Ribbon cable conductors (Number x Width x Thickness)	mm	Min. 3 x 9 x 0.8, max. 6 x 15.5 x 0.8	Min. 3 x 9 x 0.8, max. 10 x 15.5 x 0.8	250 ... 500 kcmil	
• AWG cables, solid or stranded	AWG	6 ... 2/0	6 ... 250 kcmil	Min. 6 x 9 x 0.8, max. 20 x 24 x 0.5	
Both clamping points connected					
 NSB0_00481					
• Finely stranded with end sleeve	mm²	Max. 1 x 50, 1 x 70	Max. 1 x 95, 1 x 120	Min. 2 x 50, max. 2 x 185	
• Finely stranded without end sleeve	mm²	Max. 1 x 50, 1 x 70	Max. 1 x 95, 1 x 120	Min. 2 x 50, max. 2 x 185	
• Stranded	mm²	Max. 2 x 70	Max. 2 x 120	Min. 2 x 70, max. 2 x 240	
• Ribbon cable conductors (Number x Width x Thickness)	mm	Max. 2 x (6 x 15.5 x 0.8)	Max. 2 x (10 x 15.5 x 0.8)	Min. 2 x 2/0, max. 2 x 500 kcmil	
• AWG cables, solid or stranded	AWG	Max. 2 x 1/0	Max. 2 x 3/0	Max. 2 x (20 x 24 x 0.5)	
• Terminal screw		M10 (hexagon socket, A/F 4)	M10 (hexagon socket, A/F 4)	M12 (hexagon socket, A/F 5)	
- Tightening torque	Nm	10 ... 12	10 ... 12	20 ... 22	
	lb.in	90 ... 110	90 ... 110	180 ... 195	
Busbar connections					
• Connecting bar (max. width)	mm	17		25	
Cable lug connection (without box terminals)					
• Finely stranded with cable lug[1)2)]	mm²	16 ... 95		50 ... 240	
• Stranded with cable lug[1)2)]	mm²	25 ... 120		70 ... 240	
• AWG cables, solid or stranded	AWG	4 ... 250 kcmil		2/0 ... 500 kcmil	
• Terminal screw		M8 x 25 (A/F 13)		M10 x 30 (A/F 17)	
- Tightening torque	Nm	10 ... 14		14 ... 24	
-	lb.in	89 ... 124		124 ... 210	
Auxiliary conductors					
• Solid	mm²	2 x (0.5 ... 1.5)[3)]; 2 x (0.75 ... 2.5)[3)] according to IEC 60947; max. 2 x (0.75 ... 4)			
• Finely stranded with end sleeve	mm²	2 x (0.5 ... 1.5)[3)]; 2 x (0.75 ... 2.5)[3)]			
• AWG cables, solid or stranded	AWG	2 x (18 ... 14)			
• Terminal screw		M3 (PZ 2)			
- Tightening torque	Nm	0.8 ... 1.2			
-	lb.in	7 ... 10.3			
Auxiliary conductors[4)]		Spring-type terminals			
• Operating devices[5)]		3.0 x 0.5; 3.5 x 0.5			
• Solid	mm²	2 x (0.25 ... 2.5)			
• Finely stranded with end sleeve	mm²	2 x (0.25 ... 1.5)			
• Finely stranded without end sleeve	mm²	2 x (0.25 ... 2.5)			
• AWG cables, solid or stranded	AWG	2 x (24 ... 14)			

1) 3RT10 5.: When connecting cable lugs to DIN 46235, use 3RT19 56-4EA1 terminal cover for conductor cross-sections of 95 mm² and more to ensure phase spacing.

2) 3RT10 6. and 3RT10 7.: When connecting cable lugs to DIN 46234, the 3RT19 66-4EA1 terminal cover must be used for conductor cross-sections of 240 mm² and more as well as DIN 46235 for conductor cross-sections of 185 mm² and more to keep the phase clearance.

3) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

4) Max. external diameter of the cable insulation: 3.6 mm. An "insulation stop" must be used for conductor cross-sections ≤ 1 mm²; see "Accessories" on page 3/106.

5) Tool for opening the spring-type terminals see Accessories, page 3/106.

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SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

Contactor	Type Size		3RT10 34 S2	3RT10 35 S2	3RT10 36 S2	3RT10 44 S3	3RT10 45 S3	3RT10 46 S3
CSA and UL rated data								
Rated insulation voltage		V AC	600			600		
Uninterrupted current, at 40 °C, open and enclosed		A	45	55	50	90	105	105
Maximum horsepower ratings (CSA and UL approved values)								
• Rated power for induction motors at 60 Hz								
- At 200 V		hp	10	10	15	20	25	30
- At 230 V		hp	10	15	15	25	30	30
- At 460 V		hp	25	30	40	50	60	75
- At 575 V		hp	30	40	50	60	75	100
Short-circuit protection[1]								
• At 600 V (contactor or overload relay)		kA	5	5	5	10	10	10
• CLASS RK5 fuse		A	125	150	200	250	300	350
• Circuit breakers with overload protection acc. to UL 489		A	125	150	200	250	300	400
• Combination motor controllers type E according to UL 508								
- At 480 V	Type		3RV10 3			3RV10 4		
		A	32	40	50	63	75	100
		kA	65	65	65	65	65	65
- At 600 V	Type		3RV10 4			3RV10 4		
		A	32	40	50	63	75	75
		kA	25	25	25	30	30	30
NEMA/EEMAC ratings								
NEMA/EEMAC size		hp	--		2	--		3
• Uninterrupted current								
- Open		A	--		45	--		90
- Enclosed		A	--		45	--		90
• Rated power for induction motors at 60 Hz								
- At 200 V		hp	--		10	--		25
- At 230 V		hp	--		15	--		30
- At 460 V		hp	--		25	--		50
- At 575 V		hp	--		25	--		50
Overload relays	Type		3RU11 3			3RU11 4		
• Setting range		A	5.5 ... 50			18 ... 100		

[1] For more information about short-circuit values, e.g. for protection against short-circuit currents, see the UL guide (Order No.: A5E02118883 for German) or UL reports (www.siemens.com/sirius/manuals) for the individual devices.

Contactor	Size		**S2 to S12** **Screw terminals and spring-type terminals** Snap-on auxiliary switch block (1- and 4-pole)	**S2 to S12** **Screw terminals and spring-type terminals** Laterally mountable auxiliary switch block
CSA and UL rated data of the auxiliary contacts				
Rated voltage		V AC	600	600
Switching capacity			A 600, Q 600	A 300, Q 300
• Uninterrupted current at 240 V AC		A	10	10

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SIRIUS 3RT10 contactors, 3-pole, 15 ... 250 kW

Contactor	Type Size		3RT10 54 S6	3RT10 55 S6	3RT10 56 S6	3RT10 64 S10	3RT10 65 S10	3RT10 66 S10
cULus and CSA rated data								
Rated insulation voltage		V AC	600			600		
Uninterrupted current, at 40 °C, open and enclosed		A	140	195	195	250	330	330
Maximum horsepower ratings (cULus and CSA approved values)								
• Rated power for induction motors at 60 Hz								
- At 200 V		hp	40	50	60	60	75	100
- At 230 V		hp	50	60	75	75	100	125
- At 460 V		hp	100	125	150	150	200	250
- At 575 V		hp	125	150	200	200	250	300
Short-circuit protection[1]								
• At 600 V		kA	10	10	10	10	18	18
• CLASS RK5/L fuse		A	450	500	500	700	800	800
• Circuit breakers with overload protection acc. to UL 489		A	350	450	500	500	700	800
NEMA/EEMAC ratings								
NEMA/EEMAC size		hp	--	4	--	--	--	5
• Uninterrupted current								
- Open		A	--	150	--	--	--	300
- Enclosed		A	--	135	--	--	--	270
• Rated power for induction motors at 60 Hz								
- At 200 V		hp	--	40	--	--	--	75
- At 230 V		hp	--	50	--	--	--	100
- At 460 V		hp	--	100	--	--	--	200
- At 575 V		hp	--	100	--	--	--	200
Overload relays	Type		3RB20 56			3RB20 66		

Contactor	Type Size		3RT10 75 S12	3RT10 76 S12
cULus and CSA rated data				
Rated insulation voltage		V AC	600	
Uninterrupted current, at 40 °C, open and enclosed		A	400	540
Maximum horsepower ratings (cULus and CSA approved values)				
• Rated power for induction motors at 60 Hz				
- At 200 V		hp	125	150
- At 230 V		hp	150	200
- At 460 V		hp	300	400
- At 575 V		hp	400	500
Short-circuit protection[1]				
• At 600 V		kA	18	30
• CLASS RK5/L fuse		A	1000	1200
• Circuit breakers with overload protection acc. to UL 489		A	900	900
NEMA/EEMAC ratings				
NEMA/EEMAC size		hp	--	6
• Uninterrupted current				
- Open		A	--	600
- Enclosed		A	--	540
• Rated power for induction motors at 60 Hz				
- At 200 V		hp	--	150
- At 230 V		hp	--	200
- At 460 V		hp	--	400
- At 575 V		hp	--	400
Overload relays	Type		3RB20 66	

[1] For more information about short-circuit values, e.g. for protection against short-circuit currents, see the UL guide (Order No.: A5E02118883 for German) or UL reports (www.siemens.com/sirius/manuals) for the individual devices.

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3RT10 contactors, 3-pole, 15 ... 250 kW

Selection and ordering data

AC operation

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B



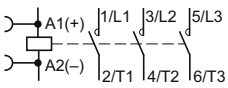
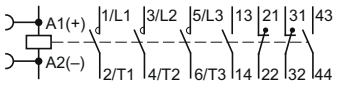
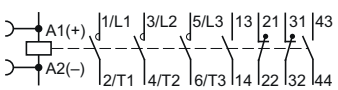
3RT10 3.-1A.00



3RT10 3.-3A.00



3RT10 3.-1A.04

Rated data			Auxiliary contacts			Rated control supply voltage U_s at 50 Hz	DT	**Screw terminals**		DT	**Spring-type terminals** for coil terminals	
AC-2 and AC-3, T_u: Up to 60 °C		AC-1, T_u: 40 °C						Order No.	Price per PU		Order No.	Price per PU
Operational current I_e up to 500 V	Rating of induction motors at 50 Hz and **400 V**	Operational current I_e up to 690 V	Ident. No.	Version NO	Version NC							
A	**kW**	A		NO	NC	V AC						
For screw fixing and snap-on mounting onto TH 35 standard mounting rail												
Size S2												
												
32	**15**	50	--	--	--	24	▶	**3RT10 34-1AB00**		B	**3RT10 34-3AB00**	
						110	▶	**3RT10 34-1AF00**		B	**3RT10 34-3AF00**	
						230	▶	**3RT10 34-1AP00**		▶	**3RT10 34-3AP00**	
40	**18.5**	60	--	--	--	24	▶	**3RT10 35-1AB00**		B	**3RT10 35-3AB00**	
						110	▶	**3RT10 35-1AF00**		B	**3RT10 35-3AF00**	
						230	▶	**3RT10 35-1AP00**		▶	**3RT10 35-3AP00**	
50	**22**	60	--	--	--	24	▶	**3RT10 36-1AB00**		B	**3RT10 36-3AB00**	
						110	▶	**3RT10 36-1AF00**		B	**3RT10 36-3AF00**	
						230	▶	**3RT10 36-1AP00**		▶	**3RT10 36-3AP00**	
With mounted auxiliary switch block (removable)[1)]												
												
32	**15**	50	**22**	2	2	24	▶	**3RT10 34-1AB04**			--	
						110	▶	**3RT10 34-1AF04**			--	
						230	▶	**3RT10 34-1AP04**			--	
40	**18.5**	60	**22**	2	2	24	▶	**3RT10 35-1AB04**			--	
						110	▶	**3RT10 35-1AF04**			--	
						230	▶	**3RT10 35-1AP04**			--	
50	**22**	60	**22**	2	2	24	▶	**3RT10 36-1AB04**			--	
						110	▶	**3RT10 36-1AF04**			--	
						230	▶	**3RT10 36-1AP04**			--	
With permanently mounted auxiliary switch block for safety applications according to SUVA												
												
32	**15**	50	**22**	2	2	230	B	**3RT10 34-1AP04-3MA0**			--	
40	**18.5**	60	**22**	2	2	230	B	**3RT10 35-1AP04-3MA0**			--	
50	**22**	60	**22**	2	2	230	B	**3RT10 36-1AP04-3MA0**			--	

Other voltages according to page 3/85 on request.
For accessories see page 3/98.
For spare parts see page 3/107.

For multi-unit packing and reusable packaging see "Appendix" → "Ordering Notes".

[1)] Order No. for the auxiliary switch block (removable): 3RH19 21-1HA22 (2 NO + 2 NC acc. to EN 50012; Ident. No. 22).

* You can order this quantity or a multiple thereof.
Illustrations are approximate

© Siemens AG 2012

3RT10 contactors, 3-pole, 15 ... 250 kW

AC operation

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B



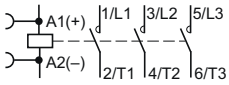
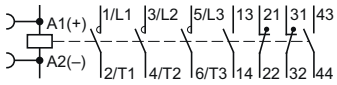
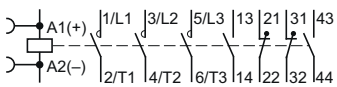
3RT10 4.-1A.00



3RT10 4.-3A.00



3RT10 4.-1A.04

Rated data			Auxiliary contacts			Rated control supply voltage U_s at 50 Hz	DT	**Screw terminals**	DT	**Spring-type terminals** for coil terminals
AC-2 and AC-3, T_u: Up to 60 °C		AC-1, T_u: 40 °C								
Operational current I_e up to 500 V	Rating of induction motors at 50 Hz and **400 V**	Operational current I_e up to 690 V	Ident. No.	Version NO	Version NC			Order No. / Price per PU		Order No. / Price per PU
A	**kW**	A		NO	NC	V AC				
For screw fixing and snap-on mounting onto TH 35 and TH 75 standard mounting rail										
Size S3										
										
65	**30**	100	--	--	--	24	▶	**3RT10 44-1AB00**	B	**3RT10 44-3AB00**
						110	▶	**3RT10 44-1AF00**	B	**3RT10 44-3AF00**
						230	▶	**3RT10 44-1AP00**	▶	**3RT10 44-3AP00**
80	**37**	120	--	--	--	24	▶	**3RT10 45-1AB00**	B	**3RT10 45-3AB00**
						110	▶	**3RT10 45-1AF00**	B	**3RT10 45-3AF00**
						230	▶	**3RT10 45-1AP00**	▶	**3RT10 45-3AP00**
95	**45**	120	--	--	--	24	▶	**3RT10 46-1AB00**	B	**3RT10 46-3AB00**
						110	▶	**3RT10 46-1AF00**	B	**3RT10 46-3AF00**
						230	▶	**3RT10 46-1AP00**	▶	**3RT10 46-3AP00**
With mounted auxiliary switch block (removable)[1)]										
										
65	**30**	100	**22**	2	2	24	▶	**3RT10 44-1AB04**		--
						110	▶	**3RT10 44-1AF04**		--
						230	▶	**3RT10 44-1AP04**		--
80	**37**	120	**22**	2	2	24	B	**3RT10 45-1AB04**		--
						110	▶	**3RT10 45-1AF04**		--
						230	▶	**3RT10 45-1AP04**		--
95	**45**	120	**22**	2	2	24	B	**3RT10 46-1AB04**		--
						110	▶	**3RT10 46-1AF04**		--
						230	▶	**3RT10 46-1AP04**		--
With permanently mounted auxiliary switch block for safety applications according to SUVA										
										
65	**30**	100	**22**	2	2	230	▶	**3RT10 44-1AP04-3MA0**		--
80	**37**	120	**22**	2	2	230	B	**3RT10 45-1AP04-3MA0**		--
95	**45**	120	**22**	2	2	230	▶	**3RT10 46-1AP04-3MA0**		--

Other voltages according to page 3/85 on request.
For accessories see page 3/98.
For spare parts see page 3/108.

[1)] Order No. for the auxiliary switch block (removable): 3RH19 21-1HA22 (2 NO + 2 NC acc. to EN 50012; Ident. No. 22).

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

© Siemens AG 2012

3RT10 contactors, 3-pole, 15 ... 250 kW

DC operation · DC solenoid system

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B



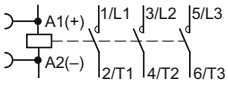
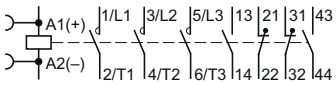
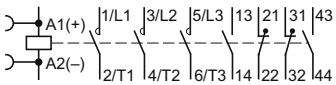
3RT10 3.-1B.40



3RT10 3.-3B.40



3RT10 3.-1B.44

Rated data			Auxiliary contacts			Rated control supply voltage U_s	DT	**Screw terminals**	DT	**Spring-type terminals** for coil terminals
AC-2 and AC-3, T_u: Up to 60 °C		AC-1, T_u: 40 °C								
Operational current I_e up to 500 V	Rating of induction motors at 50 Hz and **400 V**	Operational current I_e up to 690 V	Ident. No.	Version NO	Version NC			Order No. / Price per PU		Order No. / Price per PU
A	**kW**	A				V DC				
For screw fixing and snap-on mounting onto TH 35 standard mounting rail										
Size S2										
										
32	**15**	50	--	--	--	24	▶	**3RT10 34-1BB40**	▶	**3RT10 34-3BB40**
						220	B	**3RT10 34-1BM40**	B	**3RT10 34-3BM40**
40	**18.5**	60	--	--	--	24	▶	**3RT10 35-1BB40**	▶	**3RT10 35-3BB40**
						220	B	**3RT10 35-1BM40**	B	**3RT10 35-3BM40**
50	**22**	60	--	--	--	24	▶	**3RT10 36-1BB40**	▶	**3RT10 36-3BB40**
						220	B	**3RT10 36-1BM40**	B	**3RT10 36-3BM40**
With mounted auxiliary switch block (removable)[1)]										
										
32	**15**	50	**22**	2	2	24	▶	**3RT10 34-1BB44**		--
						220	B	**3RT10 34-1BM44**		--
40	**18.5**	60	**22**	2	2	24	▶	**3RT10 35-1BB44**		--
						220	B	**3RT10 35-1BM44**		--
50	**22**	60	**22**	2	2	24	▶	**3RT10 36-1BB44**		--
						220	B	**3RT10 36-1BM44**		--
With permanently mounted auxiliary switch block for safety applications according to SUVA										
										
32	**15**	50	**22**	2	2	24	B	**3RT10 34-1BB44-3MA0**		--
40	**18.5**	60	**22**	2	2	24	B	**3RT10 35-1BB44-3MA0**		--
50	**22**	60	**22**	2	2	24	B	**3RT10 36-1BB44-3MA0**		--

Other voltages according to page 3/85 on request.
For accessories see page 3/98.
For spare parts see page 3/108.

For multi-unit packing and reusable packaging
see "Appendix" → "Ordering Notes".

1) Order No. for the auxiliary switch block (removable): 3RH19 21-1HA22 (2 NO + 2 NC acc. to EN 50012; Ident. No. 22).

* You can order this quantity or a multiple thereof.
Illustrations are approximate

© Siemens AG 2012

3RT10 contactors, 3-pole, 15 ... 250 kW

DC operation · DC solenoid system

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B



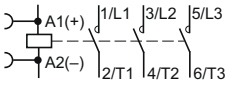
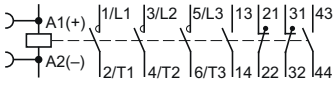
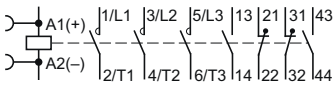
3RT10 4.-1B.40



3RT10 4.-3B.40



3RT10 4.-1B.44

Rated data			Auxiliary contacts			Rated control supply voltage U_s	DT	**Screw terminals**	DT	**Spring-type terminals** for coil terminals
AC-2 and AC-3, T_u: Up to 60 °C		AC-1, T_u: 40 °C								
Operational current I_e up to 500 V	Rating of induction motors at 50 Hz and **400 V**	Operational current I_e up to 690 V	Ident. No.	Version NO	Version NC			Order No. / Price per PU		Order No. / Price per PU
A	**kW**	A				V DC				
For screw fixing and snap-on mounting onto TH 35 and TH 75 standard mounting rail										
Size S3										
										
65	**30**	100	--	--	--	24	▶	**3RT10 44-1BB40**	▶	**3RT10 44-3BB40**
						220	B	**3RT10 44-1BM40**	B	**3RT10 44-3BM40**
80	**37**	120	--	--	--	24	▶	**3RT10 45-1BB40**	▶	**3RT10 45-3BB40**
						220	B	**3RT10 45-1BM40**	B	**3RT10 45-3BM40**
95	**45**	120	--	--	--	24	▶	**3RT10 46-1BB40**	▶	**3RT10 46-3BB40**
						220	B	**3RT10 46-1BM40**	B	**3RT10 46-3BM40**
With mounted auxiliary switch block (removable)[1)]										
										
65	**30**	100	**22**	2	2	24	▶	**3RT10 44-1BB44**		--
						220	B	**3RT10 44-1BM44**		--
80	**37**	120	**22**	2	2	24	▶	**3RT10 45-1BB44**		--
						220	B	**3RT10 45-1BM44**		--
95	**45**	120	**22**	2	2	24	▶	**3RT10 46-1BB44**		--
						220	B	**3RT10 46-1BM44**		--
With permanently mounted auxiliary switch block for safety applications according to SUVA										
										
65	**30**	100	**22**	2	2	24	▶	**3RT10 44-1BB44-3MA0**		--
80	**37**	120	**22**	2	2	24	▶	**3RT10 45-1BB44-3MA0**		--
95	**45**	120	**22**	2	2	24	▶	**3RT10 46-1BB44-3MA0**		--

Other voltages according to page 3/85 on request.
For accessories see page 3/98.
For spare parts see page 3/108.

[1)] Order No. for the auxiliary switch block (removable): 3RH19 21-1HA22 (2 NO + 2 NC acc. to EN 50012; Ident. No. 22).

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

© Siemens AG 2012

3RT10 contactors, 3-pole, 15 ... 250 kW

AC/DC operation (50 Hz to 60 Hz, DC)

- Withdrawable coils with integrated coil switch (varistor)
- Auxiliary and control conductors: Screw or spring-type terminals
- Main conductors: Busbar connections, for 3RT10 54 (55 kW) box terminals[1)]



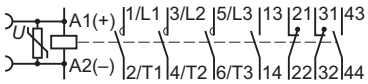
3RT1. 5.



3RT1. 6.



3RT1. 7.

Size	Rated data AC-2 and AC-3, T_u: Up to 60 °C Operational current I_e up to 500 V	Ratings of induction motors at 50 Hz and 230 V	**400 V**	500 V	690 V	AC-1, T_u: 40 °C Operational current I_e up to 690 V	Auxiliary contacts, lateral Version NO	NC	Rated control supply voltage U_s	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	A	kW	**kW**	kW	kW	A	NO	NC	V AC/DC						
Conventional operating mechanisms															
											**Screw terminals**				
S6	115	37	**55**	75	110	160	2	2	110 ... 127	▶	**3RT10 54-1AF36**		1	1 unit	41B
									220 ... 240	▶	**3RT10 54-1AP36**		1	1 unit	41B
	150	45	**75**	90	132	185	2	2	110 ... 127	▶	**3RT10 55-6AF36**		1	1 unit	41B
									220 ... 240	▶	**3RT10 55-6AP36**		1	1 unit	41B
	185	55	**90**	110	160	215	2	2	110 ... 127	▶	**3RT10 56-6AF36**		1	1 unit	41B
									220 ... 240	▶	**3RT10 56-6AP36**		1	1 unit	41B
S10	225	55	**110**	160	200	275	2	2	110 ... 127	▶	**3RT10 64-6AF36**		1	1 unit	41B
									220 ... 240	▶	**3RT10 64-6AP36**		1	1 unit	41B
	265	75	**132**	160	250	330	2	2	110 ... 127	▶	**3RT10 65-6AF36**		1	1 unit	41B
									220 ... 240	▶	**3RT10 65-6AP36**		1	1 unit	41B
	300	90	**160**	200	250	330	2	2	110 ... 127	▶	**3RT10 66-6AF36**		1	1 unit	41B
									220 ... 240	▶	**3RT10 66-6AP36**		1	1 unit	41B
S12	400	132	**200**	250	400	430	2	2	110 ... 127	▶	**3RT10 75-6AF36**		1	1 unit	41B
									220 ... 240	▶	**3RT10 75-6AP36**		1	1 unit	41B
	500	160	**250**	355	400	610	2	2	110 ... 127	▶	**3RT10 76-6AF36**		1	1 unit	41B
									220 ... 240	▶	**3RT10 76-6AP36**		1	1 unit	41B
											Spring-type terminals for coil and auxiliary switch terminals				
S6	115	37	**55**	75	110	160	2	2	110 ... 127	B	**3RT10 54-3AF36**		1	1 unit	41B
									220 ... 240	B	**3RT10 54-3AP36**		1	1 unit	41B
	150	45	**75**	90	132	185	2	2	110 ... 127	B	**3RT10 55-2AF36**		1	1 unit	41B
									220 ... 240	B	**3RT10 55-2AP36**		1	1 unit	41B
	185	55	**90**	110	160	215	2	2	110 ... 127	B	**3RT10 56-2AF36**		1	1 unit	41B
									220 ... 240	B	**3RT10 56-2AP36**		1	1 unit	41B
S10	225	55	**110**	160	200	275	2	2	110 ... 127	B	**3RT10 64-2AF36**		1	1 unit	41B
									220 ... 240	B	**3RT10 64-2AP36**		1	1 unit	41B
	265	75	**132**	160	250	330	2	2	110 ... 127	B	**3RT10 65-2AF36**		1	1 unit	41B
									220 ... 240	B	**3RT10 65-2AP36**		1	1 unit	41B
	300	90	**160**	200	250	330	2	2	110 ... 127	B	**3RT10 66-2AF36**		1	1 unit	41B
									220 ... 240	B	**3RT10 66-2AP36**		1	1 unit	41B
S12	400	132	**200**	250	400	430	2	2	110 ... 127	B	**3RT10 75-2AF36**		1	1 unit	41B
									220 ... 240	B	**3RT10 75-2AP36**		1	1 unit	41B
	500	160	**250**	355	400	610	2	2	110 ... 127	B	**3RT10 76-2AF36**		1	1 unit	41B
									220 ... 240	B	**3RT10 76-2AP36**		1	1 unit	41B

Other voltages according to page 3/85 on request.
For accessories see page 3/98.
For spare parts see page 3/109.

[1)] Alternatively, the 3RT10 54-1 contactor (55 kW) can be supplied with busbar connections instead of box terminals. Without additional price.
In the 8th position of the Order No. the **"1"** must be replaced with **"6"** for screw terminals, e.g. 3RT10 54-**6**A.36; for spring-type terminals the **"3"** must be replaced by **"2"**, e.g. 3RT10 54-**2**A.36.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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3RT10 contactors, 3-pole, 15 ... 250 kW

AC/DC operation (50 Hz to 60 Hz, DC)

- Withdrawable coils with integrated coil switch (varistor)
- Auxiliary and control conductors: Screw or spring-type terminals
- Main conductors: Busbar connections, for 3RT10 54 (55 kW) box terminals[1)]



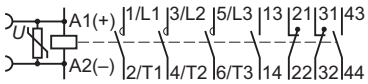
3RT1. 5.



3RT1. 6.



3RT1. 7.

Size	Rated data AC-2 and AC-3, T_u: Up to 60 °C Operational current I_e up to 500 V	Ratings of induction motors at 50 Hz and 230 V	400 V	500 V	690 V	AC-1, T_u: 40 °C Operational current I_e up to 690 V	Auxiliary contacts, lateral Version NO	NC	Rated control supply voltage U_s	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	A	kW	**kW**	kW	kW	A			V AC/DC						
Solid-state operating mechanisms · for 24 V DC PLC output															
											**Screw terminals**				
S6	115	37	**55**	75	110	160	2	2	96 ... 127	A	**3RT10 54-1NF36**		1	1 unit	41B
									200 ... 277	▶	**3RT10 54-1NP36**		1	1 unit	41B
	150	45	**75**	90	132	185	2	2	96 ... 127	A	**3RT10 55-6NF36**		1	1 unit	41B
									200 ... 277	▶	**3RT10 55-6NP36**		1	1 unit	41B
	185	55	**90**	110	160	215	2	2	96 ... 127	A	**3RT10 56-6NF36**		1	1 unit	41B
									200 ... 277	▶	**3RT10 56-6NP36**		1	1 unit	41B
S10	225	55	**110**	160	200	275	2	2	96 ... 127	A	**3RT10 64-6NF36**		1	1 unit	41B
									200 ... 277	A	**3RT10 64-6NP36**		1	1 unit	41B
	265	75	**132**	160	250	330	2	2	96 ... 127	A	**3RT10 65-6NF36**		1	1 unit	41B
									200 ... 277	A	**3RT10 65-6NP36**		1	1 unit	41B
	300	90	**160**	200	250	330	2	2	96 ... 127	B	**3RT10 66-6NF36**		1	1 unit	41B
									200 ... 277	A	**3RT10 66-6NP36**		1	1 unit	41B
S12	400	132	**200**	250	400	430	2	2	96 ... 127	A	**3RT10 75-6NF36**		1	1 unit	41B
									200 ... 277	A	**3RT10 75-6NP36**		1	1 unit	41B
	500	160	**250**	355	400	610	2	2	96 ... 127	A	**3RT10 76-6NF36**		1	1 unit	41B
									200 ... 277	A	**3RT10 76-6NP36**		1	1 unit	41B
											Spring-type terminals for coil and auxiliary switch terminals				
S6	115	37	**55**	75	110	160	2	2	96 ... 127	B	**3RT10 54-3NF36**		1	1 unit	41B
									200 ... 277	B	**3RT10 54-3NP36**		1	1 unit	41B
	150	45	**75**	90	132	185	2	2	96 ... 127	B	**3RT10 55-2NF36**		1	1 unit	41B
									200 ... 277	B	**3RT10 55-2NP36**		1	1 unit	41B
	185	55	**90**	110	160	215	2	2	96 ... 127	B	**3RT10 56-2NF36**		1	1 unit	41B
									200 ... 277	B	**3RT10 56-2NP36**		1	1 unit	41B
S10	225	55	**110**	160	200	275	2	2	96 ... 127	B	**3RT10 64-2NF36**		1	1 unit	41B
									200 ... 277	B	**3RT10 64-2NP36**		1	1 unit	41B
	265	75	**132**	160	250	330	2	2	96 ... 127	B	**3RT10 65-2NF36**		1	1 unit	41B
									200 ... 277	B	**3RT10 65-2NP36**		1	1 unit	41B
	300	90	**160**	200	250	330	2	2	96 ... 127	B	**3RT10 66-2NF36**		1	1 unit	41B
									200 ... 277	B	**3RT10 66-2NP36**		1	1 unit	41B
S12	400	132	**200**	250	400	430	2	2	96 ... 127	B	**3RT10 75-2NF36**		1	1 unit	41B
									200 ... 277	B	**3RT10 75-2NP36**		1	1 unit	41B
	500	160	**250**	355	400	610	2	2	96 ... 127	B	**3RT10 76-2NF36**		1	1 unit	41B
									200 ... 277	B	**3RT10 76-2NP36**		1	1 unit	41B

Other voltages according to page 3/85 on request.
For accessories see page 3/98.
For spare parts see page 3/110.

[1)] Alternatively, the 3RT10 54-1 contactor (55 kW) can be supplied with busbar connections instead of box terminals. Without additional price.
In the 8th position of the Order No. the **"1"** must be replaced with **"6"** for screw terminals, e.g. 3RT10 54-**6**A.36; for spring-type terminals the **"3"** must be replaced by **"2"**, e.g. 3RT10 54-**2**A.36.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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3RT10 contactors, 3-pole, 15 ... 250 kW

AC/DC operation (50 Hz to 60 Hz, DC)

- Withdrawable coils with integrated coil switch (varistor)
- Auxiliary and control conductors: Screw terminals
- Main conductors: Busbar connections, for 3RT10 54 (55 kW) box terminals[1)]
- Indication of remaining lifetime (RLT)



3RT10 56-6P. .



3RT10 56-6Q. .

Size	Rated data AC-2 and AC-3, T_u: Up to 60 °C Operational current I_e up to 500 V A	Ratings of induction motors at 50 Hz and 230 V kW	**400 V kW**	500 V kW	690 V kW	AC-1, T_u: 40 °C Operational current I_e up to 690 V A	Auxiliary contacts, lateral Version NO	NC	Rated control supply voltage U_s V AC/DC	DT	**Screw terminals** Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Solid-state operating mechanisms · with 24 V DC PLC relay output · with RLT															
S6	115	37	**55**	75	110	160	1	1	96 ... 127	B	**3RT10 54-1PF35**		1	1 unit	41B
									200 ... 277	B	**3RT10 54-1PP35**		1	1 unit	41B
	150	45	**75**	90	132	185	1	1	96 ... 127	B	**3RT10 55-6PF35**		1	1 unit	41B
									200 ... 277	B	**3RT10 55-6PP35**		1	1 unit	41B
	185	55	**90**	110	160	215	1	1	96 ... 127	B	**3RT10 56-6PF35**		1	1 unit	41B
									200 ... 277	B	**3RT10 56-6PP35**		1	1 unit	41B
S10	225	55	**110**	160	200	275	1	1	96 ... 127	B	**3RT10 64-6PF35**		1	1 unit	41B
									200 ... 277	B	**3RT10 64-6PP35**		1	1 unit	41B
	265	75	**132**	160	250	330	1	1	96 ... 127	B	**3RT10 65-6PF35**		1	1 unit	41B
									200 ... 277	B	**3RT10 65-6PP35**		1	1 unit	41B
	300	90	**160**	200	250	330	1	1	96 ... 127	B	**3RT10 66-6PF35**		1	1 unit	41B
									200 ... 277	B	**3RT10 66-6PP35**		1	1 unit	41B
S12	400	132	**200**	250	400	430	1	1	96 ... 127	B	**3RT10 75-6PF35**		1	1 unit	41B
									200 ... 277	B	**3RT10 75-6PP35**		1	1 unit	41B
	500	160	**250**	355	400	610	1	1	96 ... 127	B	**3RT10 76-6PF35**		1	1 unit	41B
									200 ... 277	B	**3RT10 76-6PP35**		1	1 unit	41B
Solid-state operating mechanisms · with AS-Interface · with RLT															
S6	115	37	**55**	75	110	160	1	1	96 ... 127	B	**3RT10 54-1QF35**		1	1 unit	41B
									200 ... 277	B	**3RT10 54-1QP35**		1	1 unit	41B
	150	45	**75**	90	132	185	1	1	96 ... 127	B	**3RT10 55-6QF35**		1	1 unit	41B
									200 ... 277	B	**3RT10 55-6QP35**		1	1 unit	41B
	185	55	**90**	110	160	215	1	1	96 ... 127	B	**3RT10 56-6QF35**		1	1 unit	41B
									200 ... 277	B	**3RT10 56-6QP35**		1	1 unit	41B
S10	225	55	**110**	160	200	275	1	1	96 ... 127	B	**3RT10 64-6QF35**		1	1 unit	41B
									200 ... 277	B	**3RT10 64-6QP35**		1	1 unit	41B
	265	75	**132**	160	250	330	1	1	96 ... 127	B	**3RT10 65-6QF35**		1	1 unit	41B
									00 ... 277	B	**3RT10 65-6QP35**		1	1 unit	41B
	300	90	**160**	200	250	330	1	1	96 ... 127	B	**3RT10 66-6QF35**		1	1 unit	41B
									200 ... 277	B	**3RT10 66-6QP35**		1	1 unit	41B
S12	400	132	**200**	250	400	430	1	1	96 ... 127	B	**3RT10 75-6QF35**		1	1 unit	41B
									200 ... 277	B	**3RT10 75-6QP35**		1	1 unit	41B
	500	160	**250**	355	400	610	1	1	96 ... 127	B	**3RT10 76-6QF35**		1	1 unit	41B
									200 ... 277	B	**3RT10 76-6QP35**		1	1 unit	41B

Other voltages according to page 3/85 on request.
For accessories see page 3/98.
For spare parts see page 3/110.

[1)] Alternatively, the 3RT10 54-1 contactor (55 kW) can be supplied with busbar connections instead of box terminals.
Without additional price. In the 8th position of the Order No. the **"1"** must be replaced with **"6"**, e.g. 3RT10 54-**6**. .35.

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Options

Rated control supply voltages, possible on request (the 10th and 11th position of the order number must be changed)

Rated control supply voltage U_s	Contactor type	3RT10 3, 3RT10 4	3RT14 4	3RT13 3, 3RT13 4, 3RT15 3	3RT16 17, 3RT16 27, 3RT16 47
	Size	S2, S3	S3	S2, S3	S00, S0, S3
Sizes S2 and S3					
AC operation					
Solenoid coils for 50 Hz[1]					
24 V AC		B0	B0	B0	B0
42 V AC		D0	D0	--	--
48 V AC		H0	H0	--	--
110 V AC		F0	F0	F0	F0
230 V AC		P0	P0	P0	P0
240 V AC		U0	U0	U0	U0
400 V AC		V0	V0	V0	V0
Solenoid coils for 50 and 60 Hz[1]					
24 V AC		C2	C2	C2	C2
42 V AC		D2	D2	D2	--
48 V AC		H2	H2	H2	--
110 V AC		G2	G2	G2	G2
220 V AC		N2	N2	N2	N2
230 V AC		L2	L2	L2	L2
240 V AC		P2	P2	P2	P2
Solenoid coils (for USA and Canada[2]**)**					
50 Hz	**60 Hz**				
110 V AC	120 V AC	K6	K6	K6	K6
220 V AC	240 V AC	P6	P6	P6	P6
Solenoid coils (for Japan)					
50/60 Hz[3]	**60 Hz**[4]				
100 V AC	110 V AC	G6	G6	G6	G6
200 V AC	220 V AC	N6	N6	N6	N6
400 V AC	440 V AC	R6	R6	R6	R6
DC operation					
12 V DC		--	--	--	--
24 V DC		B4	B4	B4	--
42 V DC		D4	D4	D4	--
48 V DC		W4	W4	--	--
60 V DC		E4	E4	--	--
110 V DC		F4	F4	F4	--
125 V DC		G4	G4	G4	--
220 V DC		M4	M4	M4	--
230 V DC		P4	P4	--	--

Examples

AC operating mechanism	3RT10 34-1A**P0**0	Contactor with screw terminals; with solenoid coil for 50 Hz for rated control supply voltage 230 V AC.
	3RT10 34-1A**G2**0	Contactor with screw terminals; with solenoid coil for 50/60 Hz for rated control supply voltage 110 V AC.
DC operating mechanism	3RT10 34-3B**B4**0	Contactor with spring-type terminals; for rated control supply voltage 24 V DC.
	3RT10 34-3B**G4**0	Contactor with spring-type terminals; for rated control supply voltage 125 V DC.

Rated control supply voltage U_s	Contactor type	3RT1. 5.-.A, 3RT1. 6.-.A, 3RT1. 7.-.A	Rated control supply voltage U_s	Contactor type	3RT1. 5.-.N, 3RT1. 6.-.N, 3RT1. 7.-.N	3RT1. 5.-.P/Q, 3RT1. 6.-.P/Q, 3RT1. 7.-.P/Q
$U_{s\,min}$ ... $U_{s\,max}$[5]	Size	S6, S10, S12	$U_{s\,min}$ ... $U_{s\,max}$[5]	Size	S6, S10, S12	S6, S10, S12
Sizes S6 to S12						
UC operation (AC 50 to 60 Hz and DC)						
Conventional operating mechanisms			**Solid-state operating mechanism**			
23 ... 26 V AC/DC		B3	21 ... 27.3 V AC/DC		B3	--
42 ... 48 V AC/DC		D3	96 ... 127 V AC/DC		F3	F3
110 ... 127 V AC/DC		F3	200 ... 277 V AC/DC		P3	P3
200 ... 220 V AC/DC		M3				
220 ... 240 V AC/DC		P3				
240 ... 277 V AC/DC		U3				
380 ... 420 V AC/DC		V3				
440 ... 480 V AC/DC		R3				
500 ... 550 V AC/DC		S3				
575 ... 600 V AC/DC		T3				

[1] Coil operating range:
at 50 Hz: 0.8 to 1.1 x U_s
at 60 Hz: 0.85 to 1.1 x U_s.

[2] Coil operating range (sizes S2 and S3):
at 50 Hz and 60 Hz: 0.8 to 1.1 × U_s.

[3] Coil operating range (sizes S2 and S3):
at 50 Hz: 0.8 to 1.1 x U_s
at 60 Hz: 0.85 to 1.1 × U_s.

[4] Coil operating range:
at 60 Hz: 0.8 to 1.1 × U_s.

[5] Operating range:
0.8 x $U_{s\,min}$ to 1.1 × $U_{s\,max}$.

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SIRIUS 3RT12 vacuum contactors, 3-pole, 110 ... 250 kW

Overview

UC operation

The contactors can be operated with AC (50 to 60 Hz) as well as with DC.

Two types of solenoid operation are available:
- Conventional operating mechanism, version 3RT12. .-.A
- Solid-state operating mechanism, version 3RT12. .-.N

Withdrawable coils

For simple coil replacement, e.g. if the application is replaced, the solenoid coil can be pulled out upwards after the release mechanism has been actuated and can be replaced by any other coil of the same size.

Vacuum interrupters

In contrast with the 3RT10 contactors – the main contacts operate in air under atmospheric conditions – the contact gaps of the 3RT12 vacuum contactors are contained in hermetically enclosed vacuum interrupters. Neither arcs nor arcing gases are produced. The particular benefit of 3RT12 vacuum contactors, however, is that their electrical endurance is at least twice as long as that of 3RT10 contactors. They are therefore particularly well suited to frequent switching in jogging/mixed operation, e.g. in crane control systems.

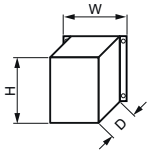
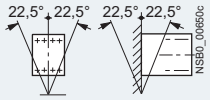
Note:

Vacuum contactors are basically unsuitable for switching DC voltage.

Auxiliary contact complement

The contactors can be fitted with up to 8 lateral auxiliary contacts (identical auxiliary switch blocks from S2 to S12). Of these, no more than 4 are permitted to be NC contacts.

Technical specifications

Type			**3RT12 64**	**3RT12 65**	**3RT12 66**	**3RT12 75**	**3RT12 76**
Size			**S10**			**S12**	
Dimensions (W x H x D)		mm	145 x 210 x 206			160 x 214 x 225	
General data							
Permissible mounting positions The contactors are designed for operation on a vertical mounting surface.							
Mechanical endurance		Operating cycles	10 million				
Electrical endurance			[1]				
Rated insulation voltage U_i (pollution degree 3)		V	1000				
Rated impulse withstand voltage U_{imp}		kV	8				
Protective separation between the coil and the main contacts acc. to IEC 60947-1, Appendix N		V	690				
Mirror contacts A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with a NO main contact.			Yes, acc. to IEC 60947-4-1, Appendix F				
Permissible ambient temperature							
• During operation		°C	-25 ... +60/+55 with AS-Interface				
• During storage		°C	-55 ... +80				
Degree of protection acc. to IEC 60947-1, Appendix C			IP00/open, coil assembly IP20				
Touch protection acc. to EN 50274			Finger-safe with cover				
Shock resistance							
• Rectangular pulse		*g*/ms	8.5/5 and 4.2/10				
• Sine pulse		*g*/ms	13.4/5 and 6.5/10				
Conductor cross-sections			[2]				
Electromagnetic compatibility (EMC)			[3]				
Short-circuit protection							
Main circuit Fuse links, gG operational class: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE according to IEC 60947-4-1/EN 60947-4-1							
• Type of coordination "1"		A	500			800	
• Type of coordination "2"		A	500			800	
• Weld-free[1]		A	400			500	
Auxiliary circuit							
• Short-circuit test with fuse links of gG operational class: DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current I_k = 1 kA acc. to IEC 60947-5-1		A	10				
• Test with miniature circuit breaker up to 230 V with C char.: Short-circuit current I_k = 400 A acc. to IEC 60947-5-1							

[1] For endurance of the main contacts see page 3/67.
[2] For conductor cross-sections see page 3/89.
[3] For electromagnetic compatibility (EMC) see page 3/63.
[4] Test conditions according to IEC 60947-4-1.

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SIRIUS 3RT12 vacuum contactors, 3-pole, 110 ... 250 kW

Contactor	Type Size	3RT12 64 S10	3RT12 65 S10	3RT12 66 S10	3RT12 75 S12	3RT12 76 S12
Control						
Operating range of the solenoid AC/DC (UC)		0.8 x $U_{s\ min}$ ... 1.1 x $U_{s\ max}$				
Power consumption of the solenoid (when coil is cold and rated range $U_{s\ min}$ ... $U_{s\ max}$)						
Conventional operating mechanisms						
• AC operation						
- Closing at $U_{s\ min}$	VA/p.f.	530/0.9			700/0.9	
- Closing at $U_{s\ max}$	VA/p.f.	630/0.9			830/0.9	
- Closed at $U_{s\ min}$	VA/p.f.	6.1/0.9			7.6/0.9	
- Closed at $U_{s\ max}$	VA/p.f.	7.4/0.9			9.2/0.9	
• DC operation						
- Closing at $U_{s\ min}$	W	580			770	
- Closing at $U_{s\ max}$	W	700			920	
- Closed at $U_{s\ min}$	W	6.8			8.5	
- Closed at $U_{s\ max}$	W	8.2			10	
Solid-state operating mechanism						
• AC operation						
- Closing at $U_{s\ min}$	VA/p.f.	420/0.8			560/0.8	
- Closing at $U_{s\ max}$	VA/p.f.	570/0.8			750/0.8	
- Closed at $U_{s\ min}$	VA/p.f.	4.3/0.8			5.4/0.8	
- Closed at $U_{s\ max}$	VA/p.f.	5.6/0.8			7/0.8	
• DC operation						
- Closing at $U_{s\ min}$	W	460			600	
- Closing at $U_{s\ max}$	W	630			800	
- Closed at $U_{s\ min}$	W	3.4			4	
- Closed at $U_{s\ max}$	W	4.2			5	
PLC control input acc. to EN 61131-2		Type 2				
• Rated voltage	V DC	24				
• Operating range	V DC	17 ... 30				
• Power consumption	mA	≤ 30				
Operating times (Total break time = Opening delay + Arcing time)						
Conventional operating mechanisms						
• For 0.8 x $U_{s\ min}$ ... 1.1 x $U_{s\ max}$						
- Closing delay	ms	30 ... 95			45 ... 100	
- Opening delay	ms	40 ... 80			60 ... 100	
• For $U_{s\ min}$ ... $U_{s\ max}$						
- Closing delay	ms	35 ... 50			50 ... 70	
- Opening delay	ms	50 ... 80			70 ... 100	
• Arcing time	ms	10 ... 15			10 ... 15	
Solid-state operating mechanism, actuated via A1/A2						
• For 0.8 x $U_{s\ min}$ ... 1.1 x $U_{s\ max}$						
- Closing delay	ms	105 ... 145			120 ... 150	
- Opening delay	ms	80 ... 100			80 ... 100	
• For $U_{s\ min}$ ... $U_{s\ max}$						
- Closing delay	ms	110 ... 130			125 ... 150	
- Opening delay	ms	80 ... 100			80 ... 100	
• Arcing time	ms	10 ... 15			10 ... 15	
Solid-state operating mechanism, actuated via PLC input						
• For 0.8 x $U_{s\ min}$ ... 1.1 x $U_{s\ max}$						
- Closing delay	ms	45 ... 80			60 ... 90	
- Opening delay	ms	80 ... 100			80 ... 100	
• For $U_{s\ min}$ ... $U_{s\ max}$						
- Closing delay	ms	50 ... 65			65 ... 80	
- Opening delay	ms	80 ... 100			80 ... 100	
• Arcing time	ms	10 ... 15			10 ... 15	

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SIRIUS 3RT12 vacuum contactors, 3-pole, 110 ... 250 kW

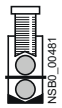
Contactor	Type Size	3RT12 64 S10	3RT12 65 S10	3RT12 66 S10	3RT12 75 S12	3RT12 76 S12
Main circuit						
AC capacity						
Utilization category AC-1 **Switching resistive loads**						
• Rated operational currents I_e						
- At 40 °C up to 1000 V	A	330			610	
- At 60 °C up to 1000 V	A	300			550	
• Rated power for AC loads[1] with p.f.= 0.95 (at 60 °C)						
- At 230 V	kW	113			208	
- At 400 V	kW	197			362	
- At 500 V	kW	246			452	
- At 690 V	kW	340			624	
- At 1000 V	kW	492			905	
• Minimum conductor cross-section for loads with I_e						
- At 40 °C	mm^2	185			2 x 185	
- At 60 °C	mm^2	185			2 x 185	
Utilization categories AC-2 and AC-3						
• Rated operational currents I_e						
- Up to 1000 V	A	225	265	300	400	500
• Rated power for slipring or squirrel-cage motors at 50 and 60 Hz						
- At 230 V	kW	73	85	97	132	164
- At 400 V	kW	128	151	171	231	291
- At 500 V	kW	160	189	215	291	363
- At 690 V	kW	223	265	288	400	507
- At 1000 V	kW	320	378	428	578	728
Thermal load capacity	A	1800	2120	2400	3200	4000
Power loss per conducting path at I_e/AC-3	W	9	12	14	21	32
Utilization category AC-4 (for $I_a = 6 \times I_e$)						
• Rated operational current I_e						
- Up to 690 V	A	195	230	280	350	430
• Rated power for squirrel-cage motors with 50 Hz and 60 Hz						
- At 400 V	kW	110	132	160	200	250
The following applies to a contact endurance of about 200000 operating cycles:						
• Rated operational currents I_e						
- Up to 690 V	A	97	115	140	175	215
- Up to 1000 V	A	68	81	98	123	151
• Rated power for squirrel-cage motors with 50 Hz and 60 Hz						
- At 230 V	kW	30	37	45	56	70
- At 400 V	kW	55	65	79	98	122
- At 500 V	kW	68	81	98	124	153
- At 690 V	kW	94	112	138	172	212
- At 1000 V	kW	95	114	140	183	217
Switching frequency						
Switching frequency *z* in operating cycles/hour						
Contactors without overload relays						
• No-load switching frequency	h^{-1}	2000				
• Dependence of the switching frequency z' on the operational current I' and operational voltage U': $z' = z \cdot (I_e/I') \cdot (400\ V/U')^{1.5} \cdot 1/h$						
- AC-1	h^{-1}	800	750		700	
- AC-2	h^{-1}	300	250		250	
- AC-3	h^{-1}	750	750		750	
- AC-4	h^{-1}	250	250		250	
Contactors with overload relays						
• Mean value	h^{-1}	60				

[1] Industrial furnaces and electric heaters with resistance heating, etc. (increased power consumption on heating up has been taken into account).

[2] According to IEC 60947-4-1.
Rated values for various start-up conditions see Chapter 7, "Protection Equipment" ➞ "Overload Relays".

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SIRIUS 3RT12 vacuum contactors, 3-pole, 110 ... 250 kW

Contactor	Type Size	3RT12 6. S10	3RT12 7. S12
Conductor cross-sections			
Main conductors:		Screw terminals	
Box terminals		3RT19 66-4G box terminals	
Front clamping point connected			
			
• Finely stranded with end sleeve	mm²	70 ...240	
• Finely stranded without end sleeve	mm²	70 ...240	
• Stranded	mm²	95 ...300	
• AWG cables, solid or stranded	AWG	3/0 ...600 kcmil	
• Ribbon cable conductors (Number x Width x Thickness)	mm	Min. 6 x 9 x 0.8; max. 20 x 24 x 0.5	
Rear clamping point connected			
			
• Finely stranded with end sleeve	mm²	120 ...185	
• Finely stranded without end sleeve	mm²	120 ...185	
• Stranded	mm²	120 ...240	
• AWG cables, solid or stranded	AWG	250 ... 500 kcmil	
• Ribbon cable conductors (Number x Width x Thickness)	mm	Min. 6 x 9 x 0.8; max. 20 x 24 x 0.5	
Both clamping points connected			
			
• Finely stranded with end sleeve	mm²	Min. 2 x 50, max. 2 x 185	
• Finely stranded without end sleeve	mm²	Min. 2 x 50, max. 2 x 185	
• Stranded	mm²	Min. 2 x 70, max. 2 x 240	
• AWG cables, solid or stranded	AWG	Min. 2 x 1/0, max. 2 x 500 kcmil	
• Ribbon cable conductors (Number x Width x Thickness)	mm	Max. 2 x (20 x 24 x 0.5)	
• Terminal screws		M12 (hexagon socket, A/F 5)	
- Tightening torque	Nm	20 ... 22 (180 ... 195 lb.in)	
Busbar connections			
• Connecting bars (max. width)	mm	25	
Cable lug connection (without box terminals)			
• Finely stranded with cable lug[1]	mm²	50 ...240	
• Stranded with cable lug[1]	mm²	70 ...240	
• AWG cables, solid or stranded	AWG	2/0 ...500 kcmil	
• Terminal screws		M12 (hexagon socket, A/F 5)	M10 x 30 (hexagon socket, A/F 17)
- Tightening torque	Nm	14 ... 24 (124 ... 210 lb.in)	14 ... 24 (124 ... 240 lb.in)
Auxiliary conductors:			
• Solid	mm²	2 x (0.5 ... 1.5)[2]; 2 x (0.75 ... 2.5)[2] according to IEC 60947; max. 2 x (0.75 ... 4)	
• Finely stranded with end sleeve	mm²	2 x (0.5 ... 1.5)[2]; 2 x (0.75 ... 2.5)[2]	
• AWG cables, solid or stranded	AWG	2 x (18 ... 14)	
• Terminal screws		M3 (PZ 2)	
- Tightening torque	Nm	0.8 ... 1.2 (7 ... 10.3 lb.in)	

[1] When connecting cable lugs to DIN 46234, the 3RT19 66-4EA1 terminal cover must be used for conductor cross-sections of 240 mm² and more as well as DIN 46235 for conductor cross-sections of 185 mm² and more to keep the phase clearance.

[2] If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

Contactor	Type Size	3RT12 64 S10	3RT12 65 S10	3RT12 66 S10	3RT12 75 S12	3RT12 76 S12
cULus and cULus rated data						
Rated insulation voltage	V AC	600			600	
Uninterrupted current, at 40 °C, open and enclosed	A	330			540	
Maximum horsepower ratings (cULus and cULus approved values)						
• Rated power for induction motors at 60 Hz						
- At 200 V	hp	60	75	100	125	150
- At 230 V	hp	75	100	125	150	200
- At 460 V	hp	150	200	250	300	400
- At 575 V	hp	200	250	300	400	500
Short-circuit protection[1]	kA	10	18	18	18	30
• CLASS L fuse	A	700	800	800	1200	1200
• Circuit breakers acc. to UL 489	A	500	700	900	1000	1200
NEMA/EEMAC ratings						
• NEMA/EEMAC size	hp	--	--	5	--	6
• Uninterrupted current						
- Open	A	--	--	300	--	600
- Enclosed	A	--	--	270	--	540
• Rated power for induction motors at 60 Hz						
- At 200 V	hp	--	--	75	--	150
- At 230 V	hp	--	--	100	--	200
- At 460 V	hp	--	--	200	--	400
- At 575 V	hp	--	--	200	--	400
Overload relays	Type	3RB20 66			3RB20 66	

[1] For more information about short-circuit values, e.g. for protection against short-circuit currents, see the UL guide (Order No.: A5E02118883 for German) or UL reports (www.siemens.com/sirius/manuals) for the individual devices.

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SIRIUS 3RT12 vacuum contactors, 3-pole, 110 ... 250 kW

Selection and ordering data

UC operation (50 Hz to 60 Hz, DC)

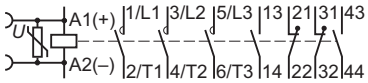
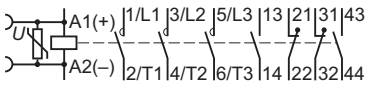
- Withdrawable coils with integrated coil switch (varistor)
- Auxiliary and control conductors: Screw terminals
- Main conductors: Busbar connections



3RT12 6.



3RT12 7.

Size	Rated data AC-2 and AC-3, T_u: Up to 60 °C					AC-1, T_u: 40 °C	Auxiliary contacts, lateral		Rated control supply voltage U_s	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	Operational current I_e up to	Ratings of induction motors at 50 Hz and				Operational current I_e up to									
	1000 V	230 V	**400 V**	500 V	690 V	1000 V									
	A	kW	**kW**	kW	kW	A	NO	NC	V AC/DC						
Conventional operating mechanisms															
															
S10	225	55	**110**	160	200	330	2	2	110 ... 127	A	**3RT12 64-6AF36**		1	1 unit	41B
									220 ... 240	A	**3RT12 64-6AP36**		1	1 unit	41B
	265	75	**132**	160	250	330	2	2	110 ... 127	A	**3RT12 65-6AF36**		1	1 unit	41B
									220 ... 240	A	**3RT12 65-6AP36**		1	1 unit	41B
	300	90	**160**	200	250	330	2	2	110 ... 127	A	**3RT12 66-6AF36**		1	1 unit	41B
									220 ... 240	A	**3RT12 66-6AP36**		1	1 unit	41B
S12	400	132	**200**	250	400	610	2	2	110 ... 127	A	**3RT12 75-6AF36**		1	1 unit	41B
									220 ... 240	A	**3RT12 75-6AP36**		1	1 unit	41B
	500	160	**250**	355	500	610	2	2	110 ... 127	A	**3RT12 76-6AF36**		1	1 unit	41B
									220 ... 240	A	**3RT12 76-6AP36**		1	1 unit	41B
Solid-state operating mechanisms · for 24 V DC PLC output															
															
S10	225	55	**110**	160	200	330	2	2	96 ... 127	B	**3RT12 64-6NF36**		1	1 unit	41B
									200 ... 277	B	**3RT12 64-6NP36**		1	1 unit	41B
	265	75	**132**	160	250	330	2	2	96 ... 127	B	**3RT12 65-6NF36**		1	1 unit	41B
									200 ... 277	B	**3RT12 65-6NP36**		1	1 unit	41B
	300	90	**160**	200	250	330	2	2	96 ... 127	B	**3RT12 66-6NF36**		1	1 unit	41B
									200 ... 277	B	**3RT12 66-6NP36**		1	1 unit	41B
S12	400	132	**200**	250	400	610	2	2	96 ... 127	B	**3RT12 75-6NF36**		1	1 unit	41B
									200 ... 277	B	**3RT12 75-6NP36**		1	1 unit	41B
	500	160	**250**	355	500	610	2	2	96 ... 127	B	**3RT12 76-6NF36**		1	1 unit	41B
									200 ... 277	B	**3RT12 76-6NP36**		1	1 unit	41B

Other voltages according to page 3/85 on request.
For more 3TF68/69 vacuum contactors (335 kW and 450 kW) see page 3/118.
For accessories see page 3/100.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Snap-on auxiliary switch blocks

Various auxiliary switch blocks can be added to the 3RT1 basic units depending on the application:

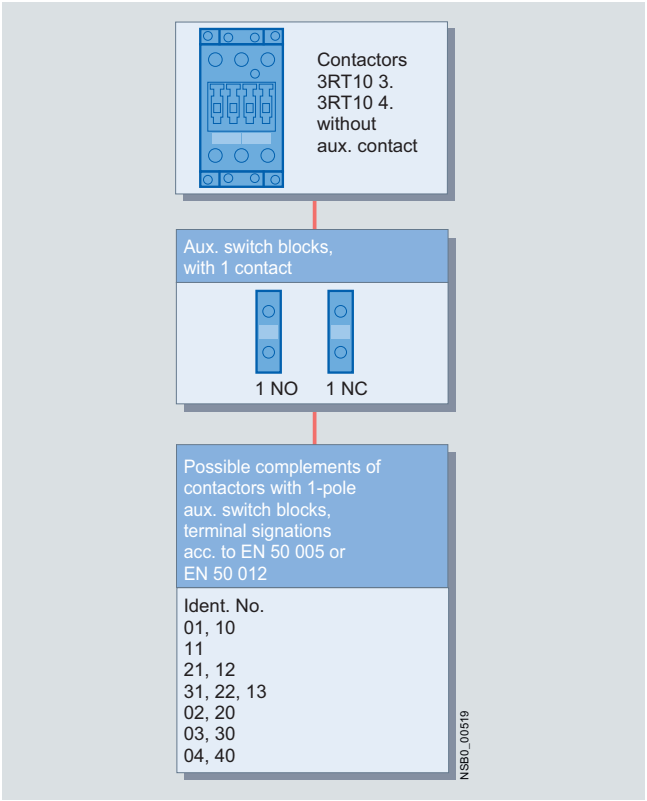
Sizes S2 to S12

Terminal designations according to EN 50005 or EN 50012

One 4-pole or up to four single-pole auxiliary switch blocks (screw or spring-type connections) can be snapped on. When the contactors are switched on, the NC contacts are opened first and then the NO contacts are closed.

Also available are 2-pole auxiliary switch blocks (screw terminals) for cable entry from above or below in the design of a quad block (feeder auxiliary switch).

If the installation space is limited in depth, 2-pole auxiliary switch blocks (screw or spring-type connections) can be laterally mounted (on the left or on the right).

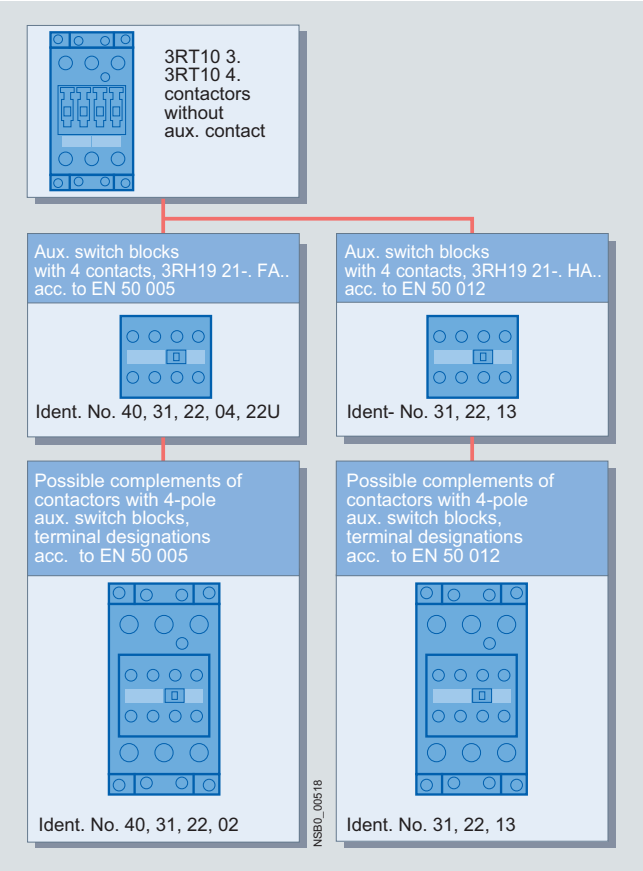


1-pole auxiliary switch blocks for 3RT1 contactors

The terminal designations of the single-pole auxiliary switch locks are comprised of sequence digit (location identifiers) on the basic unit and of function numbers on the auxiliary switch blocks.

The terminal designations of the individual auxiliary switch blocks correspond to EN 50005 or EN 50012, those of the complete contactors with auxiliary switch block 2 NO + 2 NC correspond to EN 50012.

The auxiliary switch blocks attached to the front can be disassembled with the help of a centrally arranged release lever; the laterally mountable auxiliary switch blocks are easy to remove by pressing on the checkered surfaces.



4-pole auxiliary switch blocks for 3RT1 contactors

The laterally mountable auxiliary switch blocks according to EN 50012 can be used only when no 4-pole auxiliary switch blocks are snapped onto the front. If single-pole auxiliary switch blocks are used in addition, the location identifiers on the contactor must be noted.

Two enclosed and two standard contacts are available with the 3RH19 21-.FE22 solid-state compatible auxiliary switch block, which can be attached to the front. The 3RH19 21-2DE11 laterally mountable, solid-state compatible auxiliary switch block contains 2 enclosed contacts (1 NO + 1 NC). The enclosed contacts are suitable in particular for switching small voltages and currents (hard gold-plated contacts) and for operation in dusty atmospheres. The NC auxiliary contacts are mirror contacts.

Size S2

A maximum of 4 auxiliary contacts can be attached; the auxiliary switch blocks used can be of any version. For reasons of symmetry, when two 2-pole laterally mountable auxiliary switch blocks are used, one block must be attached on the right and one on the left.

More auxiliary contacts are permissible with size S2 under certain conditions (request is required).

Sizes S3 to S12

A maximum of 8 auxiliary contacts can be attached; please note the following:

- Of these 8 auxiliary contacts, there must be no more than 4 NC contacts
- Ensure the symmetry of laterally mounted auxiliary switch blocks

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General data

Solid-state time-delay auxiliary switch blocks

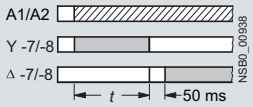
The solid-state, time-delay auxiliary switch block is fitted onto the front side of the contactor.

The timer module, which is available in the "ON-DELAY" and "OFF-DELAY" versions, allows time-delayed functions up to 100 s (3 delay ranges).

It contains a relay with one NO contact and one NC contact; depending on the version, the relay is switched either after an ON-delay or after an OFF-delay.

The timer module with "WYE-DELTA FUNCTION" is equipped with one delayed and one instantaneous NO contact, with a dead time of 50 ms between the two. The delay time of the NO contact can be adjusted between 1.5 s and 30 s.

Wye-delta function



The contactor on which the solid-state time-delay auxiliary switch block is mounted operates without a delay.

Sizes S2 to S12

The timer module is supplied with power through two terminals (A1/A2); the time delay of the auxiliary switch block can be activated either by a parallel link to any contactor coil or by any power source.

The OFF-delay version operates without an auxiliary voltage; the minimum ON period is 200 ms.

A single-pole auxiliary switch block can be snapped onto the front of the contactor in addition to the timer module.

The timer module has no integrated components for overvoltage damping.

Solid-state timing relay blocks with semiconductor output

The timer module in the "ON-DELAY" and "OFF-DELAY with auxiliary voltage" versions allows time-delayed functions up to 100 s (3 delay ranges). Contactors fitted with a timing relay block close or open after a delay according to the set time.

The ON-delay version of the timing relay is connected in series with the contactor coil; terminal A1 of this coil must not be connected.

With the OFF-delay version of the timing relay, the contactor coil is contacted directly through the relay; terminals A1 and A2 of the contactor coil must not be connected.

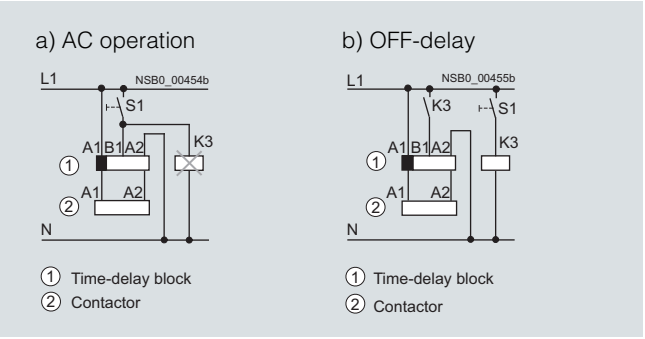
The timing relays are suitable for both AC and DC operation.

Sizes S2 and S3

The timing relay block for size S0 to S3 contactors is plugged into coil terminals A1 and A2 on top of each contactor; the timing relay is connected both electrically and mechanically by means of pins.

A varistor is integrated in the timer module in order to damp opening surges in the contactor coil.

Configuration



The activation of loads parallel to the start input is not permissible with AC operation (see (a) in the circuit diagram).

The 3RT19 26-2D... OFF-delay timing relay blocks have a zero potential start input B1. This means that if there is a parallel load on terminal B1, activation can be simulated with AC voltage. In this case, the additional load (e.g. contactor K3) must be wired (see (b) in the drawing).

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OFF-delay device for size S00 and S0 contactors

AC and DC operation

IEC 60947, EN 60947

For screw fixing and snap-on mounting onto TH 35 standard mounting rail. The OFF-delay devices have screw terminals.

The OFF-delay device prevents a contactor from dropping out unintentionally when there is a short-time voltage dip or voltage failure. It supplies a downstream, DC-operated contactor with the necessary energy during a voltage dip, ensuring that the contactor does not trip. The 3RT19 16 OFF-delay devices are specifically designed for operation with the 3RT contactors and 3RH contactor relays of the SIRIUS series.

The OFF-delay device operates without external voltage on a capacitive basis, and can be energized with either AC or DC (24 V version only for DC operation). Voltage matching, which is only necessary with AC operation, is performed using a rectifier bridge.

A contactor opens after a delay when the capacitors of the solenoid coil, built into the OFF-delay device, are switched in parallel. In the event of voltage failures, the capacitors are discharged via the solenoid coil and thereby delay the opening of the contactor.

If the command devices are upstream of the OFF-delay device in the circuit, the OFF-delay takes effect with every opening operation. If the opening operation is downstream of the OFF-delay device, an OFF-delay only applies in the event of failure of the mains voltage.

Operation

In the case of the versions for rated control supply voltages of 110 V and 230 V, either AC voltage or DC voltage can be applied on the line side, whereas the version for 24 V is designed for DC operation only.

A DC-operated contactor is connected to the output in accordance with the input voltage that is applied.

The mean value of the OFF-delay is approximately 1.5 times the specified minimum time.

Surge suppressors

- Without LED (also for spring-type terminals)
  Sizes S2, S3, S6 to S12

All 3RT1 contactors and 3RH1 contactor relays can be retrofitted with RC elements or varistors for damping opening surges in the coil. Diodes or diode assemblies (comprising noise suppression diodes and Zener diodes for short break times) can be used.

With the size S2 and S3 contactors, varistors, RC elements and diode assemblies can be plugged on directly at the coil terminals, either on the top or underneath.

The plug-in direction of the diodes and diode assemblies is determined by a coding device.

Coupling contactors are supplied either without overvoltage damping or with a varistor or diode connected as standard, according to the version.

Note:

The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 10 times; diode assembly 2 to 6 times, varistor +2 to 5 ms).

Coupling links for mounting on contactors of sizes S2 and S3

DC operation

IEC 60947 and EN 60947

The coupling link is suitable for use in any climate. It is finger-safe according to EN 50274. The terminal designations comply with EN 50005.

System-compatible operation with 24 V DC,
operating range 17 to 30 V.

Low power consumption in conformity with the technical specifications of the solid-state systems. An LED indicates the switching state.

Surge suppression

The 3RH19 24-1GP11 coupling link has an integrated surge suppressor (varistor) for the contactor coil being switched.

Mounting

The 3RH19 24-1GP11 coupling link is mounted directly on the contactor coil.

Sealable covers for sizes S2 to S12

When contactors and contactor relays are used in safety-oriented applications, it must be ensured that it is impossible to operate the contactors manually.

For SIRIUS contactors there are sealable covers available for this purpose as accessories; these prevent accidental manual operation. These are transparent molded-plastic caps with a bracket that enables the contactor to be sealed.

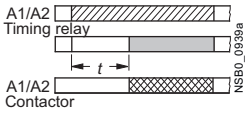
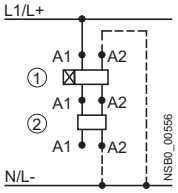
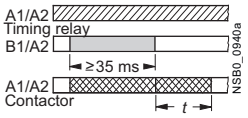
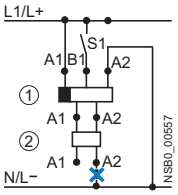
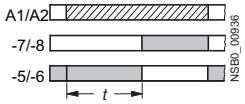
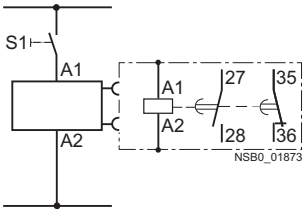
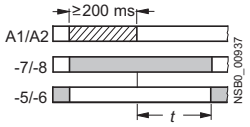
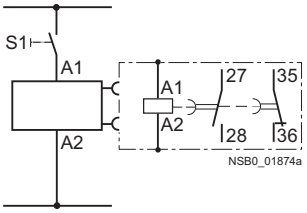
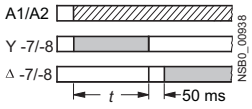
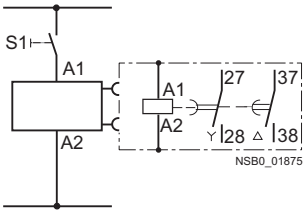
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General data

Technical specifications

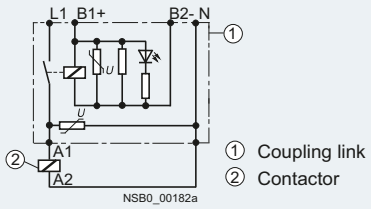
Contactor	Type		3RT19 26-2C	3RT19 26-2D	3RT19 26-2E	3RT19 26-2F	3RT19 26-2G
			Solid-state timing relay blocks with semiconductor output		Solid-state time-delay auxiliary switch blocks		
General data							
Rated insulation voltage U_i Pollution degree 3 Overvoltage category III acc. to EN 60664-1		V AC	250				
Permissible ambient temperature							
• During operation		°C	-25 ... +60				
• During storage		°C	-40 ... +80				
Degree of protection acc. to EN 60947-1, Appendix C • Cover • Terminals			 IP40 IP20				
Shock resistance Half-sine acc. to IEC 60068-2-27		g/ms	15/11				
Vibration resistance according to IEC 60068-2-6		Hz/mm	10 ... 55/0.35				
EMC tests	Basic specification		IEC 61000-6-4				
Conductor connections							
• Solid		mm^2	2 x (0.5 ... 1.5), 2 x (0.75 ... 4)				
• Finely stranded with end sleeve		mm^2	2 x (0.5 ... 2.5)				
• AWG cables, solid or stranded		AWG	2 x (18 ... 14)				
• Terminal screws			M3				
• Tightening torque		Nm lb.in	0.8 ... 1.2 7 ... 10.3				
Permissible mounting positions			Any				
Control							
Operating range of excitation			0.8 ... 1.1 x U_s, 0.95 ... 1.05 times the rated frequency		0.85 ... 1.1 x U_s, 0.95 ... 1.05 times the rated frequency		
Rated power		W	1		2		
• Power consumption at 230 V AC, 50 Hz		VA	1		4		
Overvoltage protection			Varistor integrated in timing relay		--		
Recovery time		ms	50		150		
Minimum ON period		ms	35		200 (with OFF-delay)		
Setting accuracy With reference to upper limit of scale	Typ.	%	±15				
Repeat accuracy	Max.	%	±1				
Load side							
Rated operational currents I_e							
• AC-140, DC-13		A A	0.3 for 3RT19 16 0.3 for 3RT19 26		-- --		
• AC-15, 230 V, 50 Hz		A	--		3		
• DC-13, 24 V		A	--		1		
• DC-13, 110 V		A	--		0.2		
• DC-13, 230 V		A	--		0.1		
Short-time loading capacity	Up to 10 ms	A	10		--		
DIAZED protection gG operational class		A	--		4		
Residual current	Max.	mA	5		--		
Voltage drop With conducting output	Max.	VA	3.5		--		
Mechanical endurance		Operating cycles	100 x 10^6		10 x 10^6		
Switching frequency for load							
• With I_e at 230 V AC		h^{-1}	2500		2500		
• With 3RT20 16 contactor at 230 V AC		h^{-1}	2500		5000		

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Function	Function chart
	▨ Timing relay energized ▩ Contact closed □ Contact open
Solid-state timing relay blocks	**1 NO contact (semiconductor output)**
ON-delay, two-wire design (varistor integrated)	3RT19 26-2C   A2 can be connected to N(L-) using either the contactor or the timing relay. – – – – To be connected optionally ① Timing relay block ② Contactor
OFF-delay with auxiliary voltage (varistor integrated)	3RT19 26-2D   A2 must only be connected to N(L--) from the timing relay. ✕ Do not connect ① Timing relay block ② Contactor
Solid-state time-delay auxiliary switch blocks	**1 NO + 1 NC**
ON-delay	3RT19 26-2E  
OFF-delay without auxiliary voltage	3RT19 26-2F  
Solid-state time-delay auxiliary switch blocks	**2 NO**
Wye-delta function: 1 NO delayed, 1 NO instantaneous, dead time 50 ms (varistor integrated)	3RT19 26-2G  

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General data

Contactor	Type		3RH19 24, 3TX7 090 Coupling links for mounting on contactors acc. to IEC 60947/EN 60947
General data			
Rated insulation voltage U_i (pollution degree 3)		V	300
Protective separation between coil and contacts acc. to IEC 60947-1, Appendix N		V AC	Up to 300
Permissible ambient temperature			
• During operation		°C	-25 ... +60
• During storage		°C	-40 ... +80
Degree of protection acc. to IEC 60947-1, Appendix C			
• Connections			IP20
• Enclosure			IP40
Circuit diagram			
Conductor cross-sections			
• Solid		mm^2	2 x (0.5 ... 2.5)
• Finely stranded with end sleeve		mm^2	2 x (0.5 ... 1.5)
Terminal screws			M3
Control side			
Rated control supply voltage U_s		V DC	24
Operating range		V DC	17 ... 30
Power consumption at U_s		W	0.5
Nominal current input		mA	20
Release voltage		V	≥ 4
Function display			Yellow LED
Protection circuit			Varistor
Load side			
Mechanical endurance	Operating cycles		20×10^6
Electrical endurance at I_e	Operating cycles		1×10^5
Switching frequency	Operating cycles	h^{-1}	5000
Make-time		ms	Approx. 7
Break-time		ms	Approx. 4
Bounce time		ms	Approx. 2
Contact material			AgSnO
Switching voltage	AC/DC	V	24 ... 250
Permissible residual current of the electronics (with 0 signal)		mA	2.5

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Contactor	Type		3RT19 26-3A Mechanical latching blocks
General data			
Rated insulation voltage U_i (pollution degree 3)		V	690
Permissible ambient temperature			
• During operation		°C	-25 ... +60
• During storage		°C	-50 ... +80
Degree of protection acc. to EN 60947-1, Appendix C			IP20
Mechanical endurance			
• With 3RT1. 2	Operating cycles		3×10^6
• With 3RT1. 3	Operating cycles		50000
Conductor cross-sections			
• Solid		mm^2 AWG	2 x (0.5 ... 2.5); 1 x 4 2 x 14; 1 x 12
• Finely stranded with end sleeve		mm^2 AWG	2 x (0.5 ... 2.5); 1 x 2.5 2 x 14; 1 x 12
Tightening torque of the terminal screws		Nm lb.in	0.8 ... 1.1 7 ... 9.5
Control			
Operating range of the solenoid coil At AC 50/60 Hz and DC			0.85 ... 1.1 x U_S
Power consumption of the solenoid coils of the unlocking magnet (for cold coil and 1.0 x U_S) AC and DC operation		W	Approx. 4
Command duration for de-energizing			
• AC operation		ms	18 ... 31
• DC operation		ms	18 ... 26

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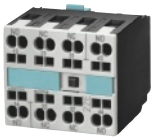
Auxiliary switches

Selection and ordering data

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B



3RH19 21-1HA..,
3RH19 21-1FA..



3RH19 21-2HA..,
3RH19 21-2FA..

For contactors	Auxiliary contacts						DT	Screw terminals		DT	Spring-type terminals	
	Ident. No.	Version						Order No.	Price per PU		Order No.	Price per PU
Type		NO	NC	NO	NC							
Auxiliary switch blocks for snapping onto the front according to EN 50012												
Sizes S2 and S3[1]												
	4-pole auxiliary switch blocks											
3RT1. 3, 3RT1. 4	**31**	3	1	--	--	13 21 33 43 / 14 22 34 44	▶	**3RH19 21-1HA31**		▶	**3RH19 21-2HA31**	
	22	2	2	--	--	13 21 31 43 / 14 22 32 44	▶	**3RH19 21-1HA22**		▶	**3RH19 21-2HA22**	
	13	1	3	--	--	13 21 31 41 / 14 22 32 42	▶	**3RH19 21-1HA13**		▶	**3RH19 21-2HA13**	
Sizes S2 to S12[2]												
	4-pole auxiliary switch blocks											
3RT1. 3 ... 3RT1. 7	**22**	2	2	--	--	53 61 71 83 / 54 62 72 84	B	**3RH19 21-1XA22-0MA0**		D	**3RH19 21-2XA22-0MA0**	
Auxiliary switch blocks for snapping onto the front according to EN 50005												
Sizes S2 and S3[1]												
	4-pole auxiliary switch blocks											
3RT1. 3, 3RT1. 4	**40**	4	--	--	--	13 23 33 43 / 14 24 34 44	▶	**3RH19 21-1FA40**		▶	**3RH19 21-2FA40**	
	31	3	1	--	--	13 23 33 41 / 14 24 34 42	▶	**3RH19 21-1FA31**		▶	**3RH19 21-2FA31**	
	22	2	2	--	--	13 23 31 41 / 14 24 32 42	▶	**3RH19 21-1FA22**		▶	**3RH19 21-2FA22**	
	04	--	4	--	--	11 21 31 41 / 12 22 32 42	▶	**3RH19 21-1FA04**		A	**3RH19 21-2FA04**	
	22 U	--	--	2	2	17 27 35 45 / 18 28 36 46	▶	**3RH19 21-1FC22**		A	**3RH19 21-2FC22**	

For multi-unit packing and reusable packaging see Chapter 16, "Appendix" → "Ordering Notes".

1) Exception: 3RT16.
2) Exception: 3RT12, 3RT16.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Auxiliary switches

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B


3RH19 21-1LA..


3RH19 21-1MA..


3RH19 21-1C..


3RH19 21-2C..

For contactors	Auxiliary contacts					DT	Screw terminals		DT	Spring-type terminals	
	Ident. No.	Version					Order No.	Price per PU		Order No.	Price per PU
Type		NO	NC	NO	NC						
Auxiliary switch blocks for snapping onto the front according to EN 50005											
***Sizes S2 and S3*[1)]**											
	2-pole auxiliary switch blocks with cable entry on one side **• Cable entry from above**										
3RT1. 3, 3RT1. 4	**11**	1	1	--	--		▶	**3RH19 21-1LA11**		**--**	
	20	2	--	--	--		▶	**3RH19 21-1LA20**		**--**	
	02	--	2	--	--		▶	**3RH19 21-1LA02**		**--**	
	• Cable entry from below										
3RT1. 3, 3RT1. 4	**11**	1	1	--	--		▶	**3RH19 21-1MA11**		**--**	
	20	2	--	--	--		▶	**3RH19 21-1MA20**		**--**	
	02	--	2	--	--		▶	**3RH19 21-1MA02**		**--**	
***Sizes S2 to S12*[2)]**											
	1-pole auxiliary switch blocks according to EN 50005 and EN 50012										
3RT1. 3 ... 3RT1. 7	**10**	1	--	--	--		▶	**3RH19 21-1CA10**	▶	**3RH19 21-2CA10**	
	01	--	1	--	--		▶	**3RH19 21-1CA01**	▶	**3RH19 21-2CA01**	
	10	--	--	1	--		▶	**3RH19 21-1CD10**		**--**	
	01	--	--	--	1		▶	**3RH19 21-1CD01**		**--**	

[1)] Exception: 3RT16.
[2)] Exception: 3RT12, 3RT16

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Accessories for 3RT1 Contactors

Auxiliary switches

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B



3RH19 21-1DA11
3RH19 21-1JA11



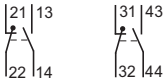
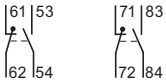
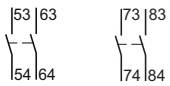
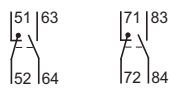
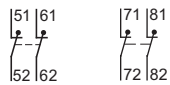
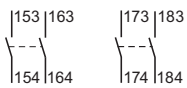
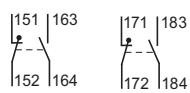
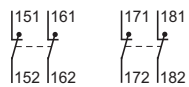
3RH19
21-1EA..
3RH19
21-1KA..



3RH19 21-2DA11
3RH19 21-2JA11



3RH19
21-2EA..
3RH19
21-2KA..

For contactors	Auxiliary contacts			DT	Screw terminals		DT	Spring-type terminals	
	Version				Order No.	Price per PU		Order No.	Price per PU
Type	NO	NC							
Laterally mountable auxiliary switch blocks according to EN 50012									
Sizes S2 and S3			Left / Right						
	First laterally mountable auxiliary switch block (right or left), 2-pole								
3RT1. 3, 3RT1. 4	1	1		►	**3RH19 21-1DA11**		►	**3RH19 21-2DA11**	
Sizes S3 to S12			Left / Right						
	Second laterally mountable auxiliary switch block (right or left), 2-pole								
3RT1. 4 ... 3RT1. 7	1	1		►	**3RH19 21-1JA11**		►	**3RH19 21-2JA11**	
Laterally mountable auxiliary switch blocks according to EN 50005									
Sizes S2 to S12			Left / Right						
	First laterally mountable auxiliary switch block (right or left), 2-pole								
3RT1. 3 ... 3RT1. 7	2	--		►	**3RH19 21-1EA20**		►	**3RH19 21-2EA20**	
	1	1		►	**3RH19 21-1EA11**			**--**	
	--	2		►	**3RH19 21-1EA02**		►	**3RH19 21-2EA02**	
Sizes S3 to S12			Left / Right						
	Second laterally mountable auxiliary switch block (right or left), 2-pole								
3RT1. 4 ... 3RT1. 7	2	--		►	**3RH19 21-1KA20**		D	**3RH19 21-2KA20**	
	1	1		►	**3RH19 21-1KA11**			**--**	
	--	2		►	**3RH19 21-1KA02**		D	**3RH19 21-2KA02**	

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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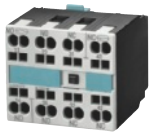
PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B



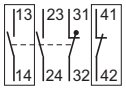
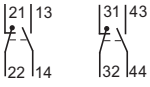
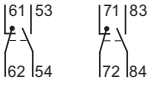
3RH19 21-2DE11,
3RH19 21-2JE11



3RH19 21-1FE22



3RH19 21-2JE22

For contactors	Contacts					DT	Screw terminals		DT	Spring-type terminals	
	Version						Order No.	Price per PU		Order No.	Price per PU
Type	NO	NO[1]	NC[1]	NC							
Solid-state compatible auxiliary switch blocks											
• For operation in dusty atmospheres • For solid-state circuits with rated operational currents I_e/AC-14 and DC-13 of 1 ... 300 mA at 3 ...60 V • Hard gold-plated contacts • Mirror contacts acc. to IEC 60947-4-1, Appendix F											
Auxiliary switch blocks for snapping onto the front according to EN 50005											
Sizes S2 and S3											
3RT1. 3 ... 3RT1. 7	1	1	1	1		▶	**3RH19 21-1FE22**		B	**3RH19 21-2FE22**	
Laterally mountable auxiliary switch blocks according to EN 50012											
Sizes S2 to S12					Left Right						
	First laterally mountable auxiliary switch block (right or left), 2-pole										
3RT1. 3 ... 3RT1. 7	1	--	--	1			--		▶	**3RH19 21-2DE11**	
Sizes S3 to S12					Left Right						
	Second laterally mountable auxiliary switch block (right or left), 2-pole										
3RT1. 4 ... 3RT1. 7	1	--	--	1			--		▶	**3RH19 21-2JE11**	

[1] 1 NO + 1 NC standard auxiliary switches:
See descriptions on page 3/91.

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Solid-state time-delay auxiliary switch blocks and timing relay blocks

Selection and ordering data

For contactors	Auxiliary contacts	Rated control supply voltage U_s [1]	Time setting range t	DT	Screw terminals Order No.	PU (UNIT, SET, M)	PS*	PG
Type		V	s		Price per PU			
Solid-state time-delay auxiliary switch blocks for snapping onto the front, terminal designations according to DIN 46199-5								
Sizes S2 to S12								
	With ON-delay [2]							
3RT10, 3RT13, 3RT14, 3RT15	1 NO + 1 NC	24 AC/DC	0.05 ... 1	D	**3RT19 26-2EJ11**	1	1 unit	41H
			0.5 ... 10	▶	**3RT19 26-2EJ21**	1	1 unit	41H
			5 ... 100	A	**3RT19 26-2EJ31**	1	1 unit	41H
		100 ... 127 AC	0.05 ... 1	C	**3RT19 26-2EC11**	1	1 unit	41H
			0.5 ... 10	▶	**3RT19 26-2EC21**	1	1 unit	41H
			5 ... 100	D	**3RT19 26-2EC31**	1	1 unit	41H
		200 ... 240 AC	0.05 ... 1	D	**3RT19 26-2ED11**	1	1 unit	41H
			0.5 ... 10	▶	**3RT19 26-2ED21**	1	1 unit	41H
			5 ... 100	B	**3RT19 26-2ED31**	1	1 unit	41H
	OFF-delay without auxiliary voltage [2][3]							
3RT10, 3RT13, 3RT14, 3RT15	1 NO + 1 NC	24 AC/DC	0.05 ... 1	▶	**3RT19 26-2FJ11**	1	1 unit	41H
			0.5 ... 10	▶	**3RT19 26-2FJ21**	1	1 unit	41H
			5 ... 100	▶	**3RT19 26-2FJ31**	1	1 unit	41H
		100 ... 127 AC/DC	0.05 ... 1	D	**3RT19 26-2FK11**	1	1 unit	41H
			0.5 ... 10	▶	**3RT19 26-2FK21**	1	1 unit	41H
			5 ... 100	C	**3RT19 26-2FK31**	1	1 unit	41H
		200 ... 240 AC/DC	0.05 ... 1	D	**3RT19 26-2FL11**	1	1 unit	41H
			0.5 ... 10	A	**3RT19 26-2FL21**	1	1 unit	41H
			5 ... 100	A	**3RT19 26-2FL31**	1	1 unit	41H
	Wye-delta function (varistor integrated) [2]							
3RT10, 3RT13, 3RT14, 3RT15	1 NO delayed + 1 NO instantaneous, dead time 50 ms	24 AC/DC	1.5 ... 30	▶	**3RT19 26-2GJ51**	1	1 unit	41H
		100 ... 127 AC	1.5 ... 30	▶	**3RT19 26-2GC51**	1	1 unit	41H
		200 ... 240 AC	1.5 ... 30	▶	**3RT19 26-2GD51**	1	1 unit	41H
Solid-state timing relay blocks with semiconductor output								
Sizes S2 and S3								
	For mounting onto top-lying coil terminals, only for devices with screw terminals **• ON-delay (varistor integrated)**							
3RT10 3, 3RT10 4, 3RT13[4] 3RT15	--	24 ... 66 AC/DC	0.05 ... 1	D	**3RT19 26-2CG11**	1	1 unit	41H
			0.5 ... 10	B	**3RT19 26-2CG21**	1	1 unit	41H
			5 ... 100	D	**3RT19 26-2CG31**	1	1 unit	41H
	--	90 ... 240 AC/DC	0.05 ... 1	▶	**3RT19 26-2CH11**	1	1 unit	41H
			0.5 ... 10	▶	**3RT19 26-2CH21**	1	1 unit	41H
			5 ... 100	▶	**3RT19 26-2CH31**	1	1 unit	41H
	• OFF-delay with auxiliary voltage (varistor integrated)							
3RT10 3, 3RT10 4, 3RT13[4] 3RT15	--	24 ... 66 AC/DC	0.05 ... 1	D	**3RT19 26-2DG11**	1	1 unit	41H
			0.5 ... 10	D	**3RT19 26-2DG21**	1	1 unit	41H
			5 ... 100	D	**3RT19 26-2DG31**	1	1 unit	41H
	--	90 ... 240 AC/DC	0.05 ... 1	C	**3RT19 26-2DH11**	1	1 unit	41H
			0.5 ... 10	D	**3RT19 26-2DH21**	1	1 unit	41H
			5 ... 100	C	**3RT19 26-2DH31**	1	1 unit	41H
OFF-delay devices								
Sizes S2 and S3								
3RT10 3, 3RT10 4		24 DC Only for contactors with DC operation	S2: 90 fixed S3: 70 fixed	▶	**3RT19 16-2BE01**	1	1 unit	41H


3RT19 26-2....


3RT19 26-2C...


3RT19 26-2D...


3RT19 16-2BE01

For technical specifications, operating travel diagrams and circuit diagrams see pages 3/94 and 3/95.

1) The AC voltages are valid for 50 and 60 Hz.

2) Terminals A1 and A2 for the control supply voltage of the solid-state time-delay auxiliary switch must be connected to the associated contactor by means of connecting cables.

3) Setting of output contacts in as-supplied state not defined (bistable relay). Application of the control supply voltage once results in contact changeover to the correct setting.

4) In addition to these, no other auxiliary contacts are permitted.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

For contactors Type	Version	Rated control supply voltage U_s [1] AC operation V AC	DC operation V DC	DT	Order No. [2]	Price per PU	PU (UNIT, SET, M)	PS*	PG
Surge suppressors without LED									
Sizes S2 and S3 (also for spring-type terminals)									
	For fitting onto the coil terminals at top or bottom								
 3RT19 26-1B.00									
3RT1. 3, 3RT1. 4	**Varistor** 	24 ... 48	24 ... 70	▶	**3RT19 26-1BB00**		1	1 unit	41B
		48 ... 127	70 ... 150	▶	**3RT19 26-1BC00**		1	1 unit	41B
		127 ... 240	150 ... 250	▶	**3RT19 26-1BD00**		1	1 unit	41B
		240 ... 400	--	▶	**3RT19 26-1BE00**		1	1 unit	41B
		400 ... 600		B	**3RT19 26-1BF00**		1	1 unit	41B
 3RT19 36-1C.00									
3RT1. 3 [3], 3RT1. 4	**RC elements** 	24 ... 48	24 ... 70	▶	**3RT19 36-1CB00**		1	1 unit	41B
		48 ... 127	70 ... 150	▶	**3RT19 36-1CC00**		1	1 unit	41B
		127 ... 240	150 ... 250	▶	**3RT19 36-1CD00**		1	1 unit	41B
		240 ... 400	--	▶	**3RT19 36-1CE00**		1	1 unit	41B
		400 ... 600	--	B	**3RT19 36-1CF00**		1	1 unit	41B
3RT1. 3, 3RT1. 4	**Diode assembly** for DC operation 								
	• Connectable at the top	--	24	▶	**3RT19 36-1ER00**		1	1 unit	41B
	(e.g. for contactor with overload relay)	--	30 ... 250	▶	**3RT19 36-1ES00**		1	1 unit	41B
	• Connectable at the bottom	--	24	▶	**3RT19 36-1TR00**		1	1 unit	41B
	(e.g. for fuseless load feeders)	--	30 ... 250	B	**3RT19 36-1TS00**		1	1 unit	41B
Sizes S6 to S12									
 3RT19 56-1C.00	**For connecting to withdrawable coil for contactors with** **• conventional operating mechanism 3RT1. ..-.A...** **• solid-state operating mechanism 3RT1. ..-.N...**				**Screw terminals**				
3RT1. 5, 3RT1. 6, 3RT1. 7	**RC elements** 	24 ... 48	24 ... 70	▶	**3RT19 56-1CB00**		1	1 unit	41B
		48 ... 127	70 ... 150	▶	**3RT19 56-1CC00**		1	1 unit	41B
		127 ... 240	150 ... 250	▶	**3RT19 56-1CD00**		1	1 unit	41B
		240 ... 400	--	▶	**3RT19 56-1CE00**		1	1 unit	41B
		400 ... 600		C	**3RT19 56-1CF00**		1	1 unit	41B
					Spring-type terminals				
3RT1. 5, 3RT1. 6, 3RT1. 7	**RC elements** 	24 ... 48	24 ... 70	▶	**3RT19 56-1CB02**		1	1 unit	41B
		48 ... 127	70 ... 150	▶	**3RT19 56-1CC02**		1	1 unit	41B
		127 ... 240	150 ... 250	▶	**3RT19 56-1CD02**		1	1 unit	41B
		240 ... 400	--	▶	**3RT19 56-1CE02**		1	1 unit	41B
		400 ... 600		C	**3RT19 56-1CF02**		1	1 unit	41B

1) Can be used for AC operation for 50/60 Hz. Please inquire about further voltages.
2) For packs of 10 or 5 units "**-Z**" and order code "**X90**" must be added to the Order No.
3) For 3RT1. 3 with AC operation mountable only at the top.

For contactors Type	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Main current path surge suppression modules for 3RT12 vacuum contactors							
Size S10 and S12							
3RT12	For damping overvoltages and protecting motor windings against multiple re-ignition when switching off induction motors.						
	For connection on the contactor feeder side (2-T1/4-T2/6-T3). For separate installation.						
	Rated operational voltage U_e = 690 V AC	C	**3RT19 66-1PV3**		1	1 unit	41B
	Rated operational voltage U_e = 1000 V AC	C	**3RT19 66-1PV4**		1	1 unit	41B

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Miscellaneous accessories

Selection and ordering data

Mechanical latching blocks

Size S2


3RT19 26-3A.31

For mounting on 1 contactor[1]
The contactor remains in the energized state even after a voltage failure

For contactors Type	Rated control supply voltage U_s V	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
3RT1. 3	24 AC/DC	A	**3RT19 26-3AB31**		1	1 unit	41B
	110 AC/DC	B	**3RT19 26-3AF31**		1	1 unit	41B
	230 AC/DC	B	**3RT19 26-3AP31**		1	1 unit	41B

[1] Two front-mounted auxiliary switch blocks can be mounted in addition.

Coupling links for control by PLC

Sizes S2 and S3


3RH19 24-1GP11

For mounting onto the coil terminals of the contactors
With LED for indicating switching state

For contactors Type	Version V	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
3RT1. 3, 3RT1. 4	Operating range 17 ... 30 V DC Power consumption: 0.5 W at 24 V DC Permissible residual current of the electronics (with 0 signal): 2.5 mA Rated operational current I_e: • AC-15/AC-14 at 230 V: 3 A • DC-13 at 230 V: 0.1 A With integrated varistor for damping opening surges.	►	**3RH19 24-1GP11**		1	1 unit	41B

LED modules for displaying contactor operation

Sizes S2 to S12[1] (also for spring-type terminals)


3RT19 26-1QT00 mounted to contactor

For contactors Type	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
3RT1. 3, 3RT1. 4	For snapping into the location hole of an inscription label on the front of a contactor either directly on the contactor or on the front auxiliary switch. The LED module is connected to coil terminals A1 and A2 of the contactor and indicates its energized state. Yellow LED. Rated voltage: 24 ... 240 V AC/DC with reverse polarity protection. (1 pack = 5 units)	B	**3RT19 26-1QT00**		1	5 units	41B

Auxiliary terminals, 3-pole

Size S3


3RT19 46-4F

3RT10 4.	For connection of auxiliary and control cables (0.5 to 2.5 mm^2) to the main conductor connections (for one connection side)	B	**3RT19 46-4F**		1	1 unit	41B

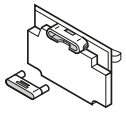
For technical specifications for latching blocks see page 3/97.

For technical specifications and circuit diagram for coupling links see page 3/96.

[1] For sizes S6 to S12 the connecting leads have to be extended.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

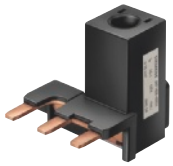
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For contactors		Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Size	Type							
Box terminal blocks								
 3RT19 5.-4G								
S6		**For round and ribbon cables**[1]						
	3RT1. 5 (3RB20 5)	Up to 70 mm² [2]	▶	**3RT19 55-4G**		1	1 unit	41B
		Up to 120 mm²	▶	**3RT19 56-4G**		1	1 unit	41B
		Auxiliary conductor connection for box terminals	B	**3TX7 500-0A**		1	1 unit	41B
S10, S12	3RT1. 6, 3RT1. 7 (3RB20 6, 3RB21 6)	Up to 240 mm² With auxiliary conductor connection	▶	**3RT19 66-4G**		1	1 unit	41B
Covers								
 3RT19 36-4EA2		**Terminal covers for box terminals** (additional touch protection) To be fitted at the box terminals (2 units required per contactor)						
S2	3RT10 3	--	▶	**3RT19 36-4EA2**		1	1 unit	41B
	3RT13 3, 3RT15 3	For 4-pole contactors	B	**3RT19 36-4EA4**		1	1 unit	41B
S3	3RT10 4, 3RT14 4	--	▶	**3RT19 46-4EA2**		1	1 unit	41B
	3RT13 4	For 4-pole contactors	B	**3RT19 46-4EA4**		1	1 unit	41B
S6[3]	3RT1. 5	Length: 25 mm	▶	**3RT19 56-4EA2**		1	1 unit	41B
S10, S12[3]	3RT1. 6, 3RT1. 7	Length: 30 mm	▶	**3RT19 66-4EA2**		1	1 unit	41B
 3RT19 46-4EA1		**Terminal covers for cable lugs and busbar connection**[3] For complying with the phase clearances and as touch protection if box terminal is removed (2 units required per contactor)						
S3	3RT10 4, 3RT14 4	--	▶	**3RT19 46-4EA1**		1	1 unit	41B
S6	3RT1. 5	Length: 100 mm	▶	**3RT19 56-4EA1**		1	1 unit	41B
S10/S12	3RT1. 6, 3RT1. 7	Length: 120 mm	▶	**3RT19 66-4EA1**		1	1 unit	41B
 3TX6 526-3B		Can be screwed on free screw end; covers one busbar connection (1 set = 6 units)						
S6	3RT1. 5	M8	B	**3TX6 526-3B**		1	1 unit	41B
S10, S12	3RT1. 6, 3RT1. 7	M10	B	**3TX6 546-3B**		1	1 unit	41B
		For busbar cover between contactor and 3RB2 overload relay or wiring module for contactor assemblies						
S6	3RT1. 5	Length: 27 mm	▶	**3RT19 56-4EA3**		1	1 unit	41B
S10/S12[4]	3RT1. 6, 3RT1. 7	Length: 42 mm	▶	**3RT19 66-4EA3**		1	1 unit	41B
		For busbar cover of the flat line connectors for reversing and wye-delta assemblies						
S6	3RT1. 5	Length: 38 mm	▶	**3RT19 56-4EA4**		1	1 unit	41B
Sealable covers								
 IC01_00162 3RT19 .6-4MA10								
S2 ... S12	3RT1. 3 ... 3RT1. 7 [5]	1 unit required per contactor	C	**3RT19 26-4MA10**		1	5 units	41B

1) For connectable cross-sections of the contactors see Technical Specifications, pages 3/71 and 3/75).
2) As standard for 3RT10 54-1 contactor (55 kW).
3) Also fits on contactors S6 to S12 with box terminals.
4) The 3RT19 66-4EA3 cover is required in addition for use in contactor assemblies (reversing/wye-delta).
5) Exception: contactors and contactor relays with auxiliary switch block mounted onto the front.

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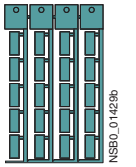
Miscellaneous accessories

	For contactors Size	Type	Max. conductor cross-sections mm²	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Links for paralleling									
 3RT19 36-4BB31		**3-pole, with connection terminal**[1)2)]							
	S2	3RT10 3	95	▶	**3RT19 36-4BB31**		1	1 unit	41B
 3RT19 56-4BA31		**3-pole, with through hole (star jumpers)**[1)2)]							
	S3	3RT10 4, 3RT14 4	185	▶	**3RT19 46-4BB31**		1	1 unit	41B
	S6	3RT1. 5	--	▶	**3RT19 56-4BA31**		1	1 unit	41B
	S10/S12	3RT1. 6, 3RT1. 7	--	▶	**3RT19 66-4BA31**		1	1 unit	41B

[1)] The links for paralleling can be reduced by one pole.

[2)] Size S2: The links for paralleling are insulated.
Size S3: A cover plate is included for touch protection.
(Can only be used when the box terminal is removed.)
Sizes S6 to S12: The 3RT19 56-4EA1 (for S6) or 3RT19 66-4EA1
(for S10 and S12) cover can be used for touch protection.

	Version	DT	Spring-type terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Insulation stop for securely holding back the conductor insulation on conductors up to 1 mm²							
 3RT19 16-4JA02	Insulation stop strip can be inserted in cable entry of spring-type terminals (2 strips per contactor required, can be removed in pairs) For all SIRIUS devices with spring-type terminals, up to 2.5 mm² conductor cross-section.	B	**3RT19 16-4JA02**		1	20 units	41B
Tools for opening spring-type terminal points							
 3RA29 08-1A	For all SIRIUS devices with spring-type terminals, up to 2.5 mm² conductor cross-section. Not suitable for devices with removable terminal Length: approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray/black, partially insulated	A	**3RA29 08-1A**		1	1 unit	41B

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Blank labels							
 3RT19 00-1SB20	Unit labeling plates for "SIRIUS"						
	• 10 mm × 7 mm, pastel turquoise	C	**3RT19 00-1SB10**		100	816 units	41B
	• 20 mm × 7 mm, pastel turquoise	D	**3RT19 00-1SB20**		100	340 units	41B
	Labels for sticking for "SIRIUS"						
	• 19 mm × 6 mm, pastel turquoise	C	**3RT19 00-1SB60**		100	3060 units	41B
	• 19 mm × 6 mm, zinc/yellow	C	**3RT19 00-1SD60**		100	3060 units	41B

Computer labeling system

For individual inscription of unit labeling plates available from:

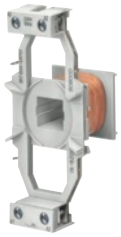
Murrplastik Systemtechnik GmbH
(see Chapter 16, "Appendix" ➞ "External Partners")

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B



3RT19 34-5A.01

For contactors		Rated control supply voltage U_s			DT	Screw terminals		DT	Spring-type terminals	
		50 Hz	50/60 Hz	60 Hz		Order No.	Price per PU		Order No.	Price per PU
Size	Type	V	V	V						
Solenoid coils · AC operation										
S2	3RT10 34	24	--	--	B	**3RT19 34-5AB01**		B	**3RT19 34-5AB02**	
		42	--	--	B	**3RT19 34-5AD01**		B	**3RT19 34-5AD02**	
		48	--	--	B	**3RT19 34-5AH01**		B	**3RT19 34-5AH02**	
		110	--	--	B	**3RT19 34-5AF01**		B	**3RT19 34-5AF02**	
		230	--	--	B	**3RT19 34-5AP01**		B	**3RT19 34-5AP02**	
		400	--	--	C	**3RT19 34-5AV01**		B	**3RT19 34-5AV02**	
		--	24	--	B	**3RT19 34-5AC21**		B	**3RT19 34-5AC22**	
		--	42	--	B	**3RT19 34-5AD21**		B	**3RT19 34-5AD22**	
		--	48	--	B	**3RT19 34-5AH21**		B	**3RT19 34-5AH22**	
		--	110	--	C	**3RT19 34-5AG21**		B	**3RT19 34-5AG22**	
		--	220	--	C	**3RT19 34-5AN21**		B	**3RT19 34-5AN22**	
		--	230	--	C	**3RT19 34-5AL21**		B	**3RT19 34-5AL22**	
		110	--	120	B	**3RT19 34-5AK61**		B	**3RT19 34-5AK62**	
		220	--	240	B	**3RT19 34-5AP61**		B	**3RT19 34-5AP62**	
		--	100	110	B	**3RT19 34-5AG61**		B	**3RT19 34-5AG62**	
		--	200	220	B	**3RT19 34-5AN61**		B	**3RT19 34-5AN62**	
		--	400	440	B	**3RT19 34-5AR61**		B	**3RT19 34-5AR62**	
	3RT10 35, 3RT10 36, 3RT13 3., 3RT15 3.	24	--	--	B	**3RT19 35-5AB01**		B	**3RT19 35-5AB02**	
		42	--	--	B	**3RT19 35-5AD01**		B	**3RT19 35-5AD02**	
		48	--	--	B	**3RT19 35-5AH01**		B	**3RT19 35-5AH02**	
		110	--	--	▶	**3RT19 35-5AF01**		B	**3RT19 35-5AF02**	
		230	--	--	▶	**3RT19 35-5AP01**		B	**3RT19 35-5AP02**	
		400	--	--	C	**3RT19 35-5AV01**		B	**3RT19 35-5AV02**	
		--	24	--	B	**3RT19 35-5AC21**		B	**3RT19 35-5AC22**	
		--	42	--	B	**3RT19 35-5AD21**		B	**3RT19 35-5AD22**	
		--	48	--	B	**3RT19 35-5AH21**		B	**3RT19 35-5AH22**	
		--	110	--	B	**3RT19 35-5AG21**		B	**3RT19 35-5AG22**	
		--	220	--	B	**3RT19 35-5AN21**		B	**3RT19 35-5AN22**	
		--	230	--	B	**3RT19 35-5AL21**		B	**3RT19 35-5AL22**	
		110	--	120	B	**3RT19 35-5AK61**		B	**3RT19 35-5AK62**	
		220	--	240	B	**3RT19 35-5AP61**		B	**3RT19 35-5AP62**	
		--	100	110	B	**3RT19 35-5AG61**		B	**3RT19 35-5AG62**	
		--	200	220	B	**3RT19 35-5AN61**		B	**3RT19 35-5AN62**	
		--	400	440	C	**3RT19 35-5AR61**		B	**3RT19 35-5AR62**	

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Power Contactors for Switching Motors

Spare Parts for 3RT1 Contactors

Solenoid coils

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B


3RT19 44-5A.01


3RT19 45-5A.01


3RT19 45-5A.02


3RT19 44-5B.42

For contactors		Rated control supply voltage U_s				DT	Screw terminals		DT	Spring-type terminals	
		AC			DC		Order No.	Price per PU		Order No.	Price per PU
		50 Hz	50/60 Hz	60 Hz							
Size	Type	V	V	V	V						
Solenoid coils · AC operation											
S3	3RT10 44	24	--	--	--	B	**3RT19 44-5AB01**		B	**3RT19 44-5AB02**	
		42	--	--	--	B	**3RT19 44-5AD01**		B	**3RT19 44-5AD02**	
		48	--	--	--	B	**3RT19 44-5AH01**		B	**3RT19 44-5AH02**	
		110	--	--	--	B	**3RT19 44-5AF01**		B	**3RT19 44-5AF02**	
		230	--	--	--	B	**3RT19 44-5AP01**		B	**3RT19 44-5AP02**	
		400	--	--	--	B	**3RT19 44-5AV01**		B	**3RT19 44-5AV02**	
		--	24	--	--	B	**3RT19 44-5AC21**		B	**3RT19 44-5AC22**	
		--	42	--	--	B	**3RT19 44-5AD21**		B	**3RT19 44-5AD22**	
		--	48	--	--	B	**3RT19 44-5AH21**		B	**3RT19 44-5AH22**	
		--	110	--	--	B	**3RT19 44-5AG21**		B	**3RT19 44-5AG22**	
		--	220	--	--	B	**3RT19 44-5AN21**		B	**3RT19 44-5AN22**	
		--	230	--	--	B	**3RT19 44-5AL21**		B	**3RT19 44-5AL22**	
		110	--	120	--	B	**3RT19 44-5AK61**		B	**3RT19 44-5AK62**	
		220	--	240	--	B	**3RT19 44-5AP61**		B	**3RT19 44-5AP62**	
		--	100	110	--	B	**3RT19 44-5AG61**		B	**3RT19 44-5AG62**	
		--	200	220	--	B	**3RT19 44-5AN61**		B	**3RT19 44-5AN62**	
		--	400	440	--	B	**3RT19 44-5AR61**		B	**3RT19 44-5AR62**	
	3RT10 45, 3RT10 46, 3RT13 4., 3RT14 46, 3RT15 4.	24	--	--	--	B	**3RT19 45-5AB01**		B	**3RT19 45-5AB02**	
		42	--	--	--	B	**3RT19 45-5AD01**		B	**3RT19 45-5AD02**	
		48	--	--	--	B	**3RT19 45-5AH01**		B	**3RT19 45-5AH02**	
		110	--	--	--	B	**3RT19 45-5AF01**		B	**3RT19 45-5AF02**	
		230	--	--	--	▶	**3RT19 45-5AP01**		B	**3RT19 45-5AP02**	
		400	--	--	--	C	**3RT19 45-5AV01**		B	**3RT19 45-5AV02**	
		--	24	--	--	B	**3RT19 45-5AC21**		B	**3RT19 45-5AC22**	
		--	42	--	--	B	**3RT19 45-5AD21**		B	**3RT19 45-5AD22**	
		--	48	--	--	B	**3RT19 45-5AH21**		B	**3RT19 45-5AH22**	
		--	110	--	--	B	**3RT19 45-5AG21**		B	**3RT19 45-5AG22**	
		--	220	--	--	B	**3RT19 45-5AN21**		B	**3RT19 45-5AN22**	
		--	230	--	--	B	**3RT19 45-5AL21**		B	**3RT19 45-5AL22**	
		110	--	120	--	B	**3RT19 45-5AK61**		B	**3RT19 45-5AK62**	
		220	--	240	--	B	**3RT19 45-5AP61**		B	**3RT19 45-5AP62**	
		--	100	110	--	B	**3RT19 45-5AG61**		B	**3RT19 45-5AG62**	
		--	200	220	--	C	**3RT19 45-5AN61**		B	**3RT19 45-5AN62**	
		--	400	440	--	B	**3RT19 45-5AR61**		B	**3RT19 45-5AR62**	
Solenoid coils · DC operation											
S2	3RT10 3., 3RT13 3., 3RT15 3.	--	--	--	24	B	**3RT19 34-5BB41**		B	**3RT19 34-5BB42**	
		--	--	--	42	B	**3RT19 34-5BD41**		C	**3RT19 34-5BD42**	
		--	--	--	48	B	**3RT19 34-5BW41**		B	**3RT19 34-5BW42**	
		--	--	--	60	B	**3RT19 34-5BE41**		B	**3RT19 34-5BE42**	
		--	--	--	110	B	**3RT19 34-5BF41**		B	**3RT19 34-5BF42**	
		--	--	--	125	B	**3RT19 34-5BG41**		C	**3RT19 34-5BG42**	
		--	--	--	220	B	**3RT19 34-5BM41**		B	**3RT19 34-5BM42**	
		--	--	--	230	B	**3RT19 34-5BP41**		B	**3RT19 34-5BP42**	
S3	3RT10 4., 3RT13 4., 3RT14 4., 3RT15 4.	--	--	--	24	B	**3RT19 44-5BB41**		B	**3RT19 44-5BB42**	
		--	--	--	42	C	**3RT19 44-5BD41**		B	**3RT19 44-5BD42**	
		--	--	--	48	B	**3RT19 44-5BW41**		B	**3RT19 44-5BW42**	
		--	--	--	60	B	**3RT19 44-5BE41**		B	**3RT19 44-5BE42**	
		--	--	--	110	B	**3RT19 44-5BF41**		B	**3RT19 44-5BF42**	
		--	--	--	125	B	**3RT19 44-5BG41**		B	**3RT19 44-5BG42**	
		--	--	--	220	B	**3RT19 44-5BM41**		B	**3RT19 44-5BM42**	
		--	--	--	230	B	**3RT19 44-5BP41**		B	**3RT19 44-5BP42**	

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B



3RT19 55-5A...

For contactors		Rated control supply voltage $U_{s\,min}$ ... $U_{s\,max}$	DT	Screw terminals		DT	Spring-type terminals	
				Order No.	Price per PU		Order No.	Price per PU
Size	Type	V AC/DC						
Withdrawable coils								
Conventional operating mechanisms								
S6	3RT10 5, 3RT14 5	23 ... 26	B	**3RT19 55-5AB31**		B	**3RT19 55-5AB32**	
		42 ... 48	B	**3RT19 55-5AD31**		B	**3RT19 55-5AD32**	
		110 ... 127	B	**3RT19 55-5AF31**		B	**3RT19 55-5AF32**	
		200 ... 220	B	**3RT19 55-5AM31**		B	**3RT19 55-5AM32**	
		220 ... 240	B	**3RT19 55-5AP31**		B	**3RT19 55-5AP32**	
		240 ... 277	B	**3RT19 55-5AU31**		B	**3RT19 55-5AU32**	
		380 ... 420	B	**3RT19 55-5AV31**		B	**3RT19 55-5AV32**	
		440 ... 480	B	**3RT19 55-5AR31**		B	**3RT19 55-5AR32**	
		500 ... 550	B	**3RT19 55-5AS31**		B	**3RT19 55-5AS32**	
		575 ... 600	B	**3RT19 55-5AT31**		B	**3RT19 55-5AT32**	
S10	3RT10 6, 3RT14 6	23 ... 26	B	**3RT19 65-5AB31**		B	**3RT19 65-5AB32**	
		42 ... 48	B	**3RT19 65-5AD31**		B	**3RT19 65-5AD32**	
		110 ... 127	B	**3RT19 65-5AF31**		B	**3RT19 65-5AF32**	
		200 ... 220	C	**3RT19 65-5AM31**		B	**3RT19 65-5AM32**	
		220 ... 240	B	**3RT19 65-5AP31**		B	**3RT19 65-5AP32**	
		240 ... 277	B	**3RT19 65-5AU31**		B	**3RT19 65-5AU32**	
		380 ... 420	B	**3RT19 65-5AV31**		B	**3RT19 65-5AV32**	
		440 ... 480	B	**3RT19 65-5AR31**		B	**3RT19 65-5AR32**	
		500 ... 550	C	**3RT19 65-5AS31**		B	**3RT19 65-5AS32**	
		575 ... 600	C	**3RT19 65-5AT31**		B	**3RT19 65-5AT32**	
S10	3RT12 6 vacuum contactors	23 ... 26	B	**3RT19 66-5AB31**			**--**	
		42 ... 48	B	**3RT19 66-5AD31**			**--**	
		110 ... 127	A	**3RT19 66-5AF31**			**--**	
		200 ... 220	C	**3RT19 66-5AM31**			**--**	
		220 ... 240	A	**3RT19 66-5AP31**			**--**	
		240 ... 277	C	**3RT19 66-5AU31**			**--**	
		380 ... 420	B	**3RT19 66-5AV31**			**--**	
		440 ... 480	C	**3RT19 66-5AR31**			**--**	
		500 ... 550	C	**3RT19 66-5AS31**			**--**	
		575 ... 600	C	**3RT19 66-5AT31**			**--**	
S12	3RT10 7, 3RT14 7, 3RT12 7 vacuum contactors	23 ... 26	B	**3RT19 75-5AB31**		B	**3RT19 75-5AB32**	
		42 ... 48	B	**3RT19 75-5AD31**		B	**3RT19 75-5AD32**	
		110 ... 127	B	**3RT19 75-5AF31**		B	**3RT19 75-5AF32**	
		200 ... 220	C	**3RT19 75-5AM31**		B	**3RT19 75-5AM32**	
		220 ... 240	B	**3RT19 75-5AP31**		B	**3RT19 75-5AP32**	
		240 ... 277	B	**3RT19 75-5AU31**		B	**3RT19 75-5AU32**	
		380 ... 420	B	**3RT19 75-5AV31**		B	**3RT19 75-5AV32**	
		440 ... 480	B	**3RT19 75-5AR31**		B	**3RT19 75-5AR32**	
		500 ... 550	C	**3RT19 75-5AS31**		B	**3RT19 75-5AS32**	
		575 ... 600	C	**3RT19 75-5AT31**		B	**3RT19 75-5AT32**	

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Spare Parts for 3RT1 Contactors

Solenoid coils

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B



3RT19 55-5N...

For contactors		Rated control supply voltage U_s	DT	Screw terminals		DT	Spring-type terminals	
				Order No.	Price per PU		Order No.	Price per PU
Size	Type	V AC/DC						
Withdrawable coils								
Solid-state operating mechanism								
For 24 V DC PLC output								
S6	3RT10 5, 3RT14 5	21 ... 27.3	C	**3RT19 55-5NB31**		B	**3RT19 55-5NB32**	
		96 ... 127	B	**3RT19 55-5NF31**		B	**3RT19 55-5NF32**	
		200 ... 277	B	**3RT19 55-5NP31**		B	**3RT19 55-5NP32**	
S10	3RT10 6, 3RT14 6	21 ... 27.3	B	**3RT19 65-5NB31**		B	**3RT19 65-5NB32**	
		96 ... 127	B	**3RT19 65-5NF31**		B	**3RT19 65-5NF32**	
		200 ... 277	B	**3RT19 65-5NP31**		B	**3RT19 65-5NP32**	
	3RT12 6 vacuum contactors	21 ... 27.3	B	**3RT19 66-5NB31**			**--**	
		96 ... 127	C	**3RT19 66-5NF31**			**--**	
		200 ... 277	C	**3RT19 66-5NP31**			**--**	
S12	3RT10 7, 3RT14 7, 3RT12 7 vacuum contactors	21 ... 27.3	B	**3RT19 75-5NB31**		B	**3RT19 75-5NB32**	
		96 ... 127	B	**3RT19 75-5NF31**		B	**3RT19 75-5NF32**	
		200 ... 277	B	**3RT19 75-5NP31**		B	**3RT19 75-5NP32**	
For 24 V DC PLC output/PLC relay output, with remaining lifetime indicator (RLT) (withdrawable coil with laterally mounted solid-state module)								
S6	3RT10 5, 3RT14 5	96 ... 127	B	**3RT19 55-5PF31**			**--**	
		200 ... 277	B	**3RT19 55-5PP31**			**--**	
S10	3RT10 6, 3RT14 6	96 ... 127	B	**3RT19 65-5PF31**			**--**	
		200 ... 277	B	**3RT19 65-5PP31**			**--**	
S12	3RT10 7, 3RT14 7	96 ... 127	B	**3RT19 75-5PF31**			**--**	
		200 ... 277	B	**3RT19 75-5PP31**			**--**	
With AS-Interface interface and remaining lifetime indicator (RLT) (withdrawable coil with laterally mounted solid-state module)								
S6	3RT10 5, 3RT14 5	96 ... 127	B	**3RT19 55-5QF31**			**--**	
		200 ... 277	B	**3RT19 55-5QP31**			**--**	
S10	3RT10 6, 3RT14 6	96 ... 127	B	**3RT19 65-5QF31**			**--**	
		200 ... 277	B	**3RT19 65-5QP31**			**--**	
S12	3RT10 7, 3RT14 7	96 ... 127	B	**3RT19 75-5QF31**			**--**	
		200 ... 277	B	**3RT19 75-5QP31**			**--**	

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

For contactors		Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Size	Type							
Contacts with fixing parts								
For contactors with 3 main contacts								
S2	3RT10 34	Main contacts (3 NO contacts) for utilization category AC-3	▶	**3RT19 34-6A**		1	1 unit	41B
	3RT10 35	(1 set = 3 movable and 6 fixed switching elements with fixing parts)	▶	**3RT19 35-6A**		1	1 unit	41B
	3RT10 36		▶	**3RT19 36-6A**		1	1 unit	41B
S3	3RT10 44		▶	**3RT19 44-6A**		1	1 unit	41B
	3RT10 45		▶	**3RT19 45-6A**		1	1 unit	41B
	3RT10 46		▶	**3RT19 46-6A**		1	1 unit	41B
S6	3RT10 54		▶	**3RT19 54-6A**		1	1 unit	41B
	3RT10 55		▶	**3RT19 55-6A**		1	1 unit	41B
	3RT10 56		▶	**3RT19 56-6A**		1	1 unit	41B
S10	3RT10 64		▶	**3RT19 64-6A**		1	1 unit	41B
	3RT10 65		▶	**3RT19 65-6A**		1	1 unit	41B
	3RT10 66		▶	**3RT19 66-6A**		1	1 unit	41B
S12	3RT10 75		▶	**3RT19 75-6A**		1	1 unit	41B
	3RT10 76		A	**3RT19 76-6A**		1	1 unit	41B
S3	3RT14 46	Main contacts (3 NO contacts) for utilization category AC-1	B	**3RT19 46-6D**		1	1 unit	41B
S6	3RT14 56	(1 set = 3 movable and 6 fixed switching elements with fixing parts)	B	**3RT19 56-6D**		1	1 unit	41B
S10	3RT14 66		B	**3RT19 66-6D**		1	1 unit	41B
S12	3RT14 76		A	**3RT19 76-6D**		1	1 unit	41B
For 3RT12 vacuum contactors								
S10	3RT12 64	3 vacuum interrupters with fixing parts	B	**3RT19 64-6V**		1	1 unit	41B
	3RT12 65		B	**3RT19 65-6V**		1	1 unit	41B
	3RT12 66		B	**3RT19 66-6V**		1	1 unit	41B
S12	3RT12 75		B	**3RT19 75-6V**		1	1 unit	41B
	3RT12 76		B	**3RT19 76-6V**		1	1 unit	41B
For contactors with 4 main contacts								
S2	3RT13 36	Main contacts (4 NO contacts) for utilization category AC-1	C	**3RT19 36-6E**		1	1 unit	41B
S3	3RT13 44	(1 set = 4 movable and 8 fixed switching elements with fixing parts)	C	**3RT19 44-6E**		1	1 unit	41B
	3RT13 46		B	**3RT19 46-6E**		1	1 unit	41B
Arc chutes								
S2	3RT10 3.	Arc chutes, 3-pole	C	**3RT19 36-7A**		1	1 unit	41B
S3	3RT10 4., 3RT14 46		B	**3RT19 46-7A**		1	1 unit	41B
S6	3RT10 54		B	**3RT19 54-7A**		1	1 unit	41B
	3RT10 55		B	**3RT19 55-7A**		1	1 unit	41B
	3RT10 56		B	**3RT19 56-7A**		1	1 unit	41B
S10	3RT10 64		B	**3RT19 64-7A**		1	1 unit	41B
	3RT10 65		B	**3RT19 65-7A**		1	1 unit	41B
	3RT10 66		B	**3RT19 66-7A**		1	1 unit	41B
S12	3RT10 75		B	**3RT19 75-7A**		1	1 unit	41B
	3RT10 76		B	**3RT19 76-7A**		1	1 unit	41B
S6	3RT14 56		B	**3RT19 56-7B**		1	1 unit	41B
S10	3RT14 66		B	**3RT19 66-7B**		1	1 unit	41B
S12	3RT14 76		B	**3RT19 76-7B**		1	1 unit	41B

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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3TF6 vacuum contactors, 3-pole, 335 ... 450 kW

Overview

Standards

IEC 60947-1, EN 60947-1,
IEC 60947-4-1, EN 60947-4-1,
IEC 60947-5-1, EN 60947-5-1 (auxiliary switches)

The 3TF68/69 contactors are climate-proof.

They are finger-safe according to EN 50274. Terminal covers may have to be fitted onto the connecting bars, depending on the configuration with other devices (see Accessories and Spare Parts on page 3/120).

Main contacts

Contact erosion indication with 3TF68/69 vacuum contactors

The contact erosion of the vacuum interrupters can be checked during operation with the help of 3 white double slides on the contactor base. If the distance indicated by one of the double slides is < 0.5 mm while the contactor is in the closed position, then the vacuum interrupter must be replaced. To ensure maximum reliability, it is recommended to replace all 3 vacuum interrupters simultaneously.

Auxiliary contacts

Contact reliability

These auxiliary contacts are particularly suitable for solid-state circuits with currents ≥ 1 mA at a voltage ≥ 17 V.

Electromagnetic compatibility

The 3TF68/69..-.**C** contactors for AC operation are fitted with an electronically controlled solenoid operating mechanism with a high interference immunity (for EMC values see page 3/115). The solenoid coil is connected to varistors for protection against overvoltages.

The 3TF68/69..-.**Q**.. contactors for AC operation are designed for operation in systems with AC control supply voltage which is subject to strong interference. The solenoid systems of these contactors are configured in the DC economy circuit with rectification. The rectifier bridge is connected to varistors for protection against overvoltages.

Protection of the main current paths

An integrated RC varistor connection for the main current paths dampens the switching overvoltage rises to safe values. This prevents multiple restricting. It can therefore be assumed that the motor winding cannot be damaged by switching overvoltages with steep voltage rises.

Note:

During operation in installations in which the emitted interference limits cannot be observed, e.g. when used for output contactors in converters, 3TF68/69..-.**Q** contactors without a main current path circuit are recommended.

Technical specifications

Contactor	Type	3TF68 and 3TF69
Rated data of the auxiliary contacts		Acc. to IEC 60947-5-1
Rated insulation voltage U_i (pollution degree 3)	V	690
Conventional thermal current I_{th} = Rated operational current I_e/AC-12	A	10
AC load		
Rated operational current I_e/AC-15/AC-14		
• For rated operational voltage U_e		
- At 24 V	A	10
- At 110 V	A	10
- At 125 V	A	10
- At 220 V	A	6
- At 230 V	A	5.6
- At 380 V	A	4
- At 400 V	A	3.6
- At 500 V	A	2.5
- At 660 V	A	2.5
- At 690 V	A	2.3
DC load		
Rated operational current I_e/DC-12		
• For rated operational voltage U_e		
- At 24 V	A	10
- At 60 V	A	10
- At 110 V	A	3.2
- At 125 V	A	2.5
- At 220 V	A	0.9
- At 440 V	A	0.33
- At 600 V	A	0.22
Rated operational current I_e/DC-13		
• For rated operational voltage U_e		
- At 24 V	A	10
- At 60 V	A	5
- At 110 V	A	1.14
- At 125 V	A	0.98
- At 220 V	A	0.48
- At 440 V	A	0.13
- At 600 V	A	0.07
CSA and UL rated data of the auxiliary contacts		
Rated voltage, max.	V AC	600
Switching capacity		A 600, P 600

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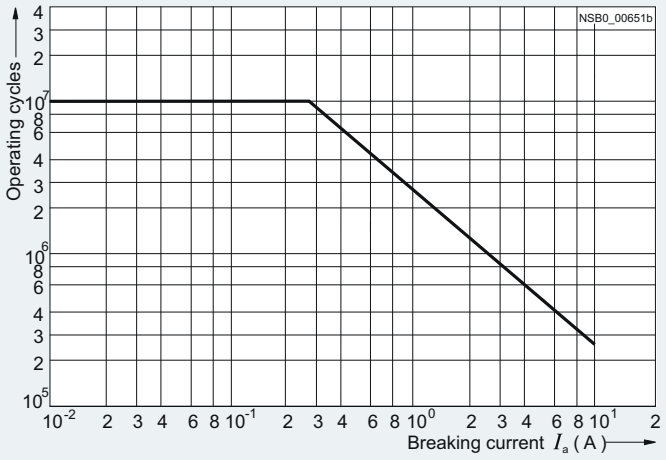
Contactor

3TF68 and 3TF69

Contact endurance of the auxiliary contacts

The contact endurance for utilization category AC-12 or AC-15/AC-14 depends mainly on the breaking current. It is assumed that the operating mechanisms are switched randomly, i.e. not synchronized with the phase angle of the supply system.

The characteristic curves apply to 230 V AC.



3TF68 and 3TF69

Contact erosion indication with vacuum contactors

The contact erosion of the vacuum interrupters can be checked during operation with the help of 3 white double slides on the contactor base.

If the distance indicated by one of the double slides is < 0.5 mm while the contactor is in the closed position, the vacuum interrupter must be replaced. To ensure maximum reliability, it is recommended to replace all 3 vacuum interrupters.

Contact endurance of the main contacts

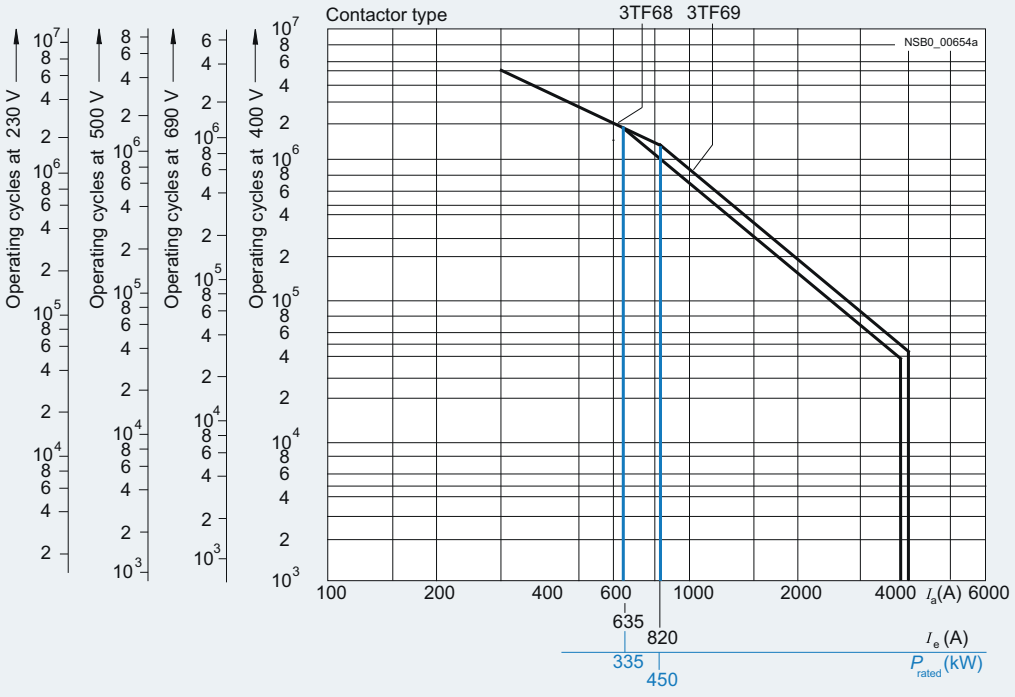
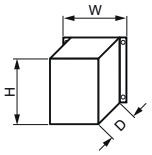


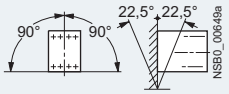
Diagram legend:
P_{rated} = Rated power for squirrel-cage motors at 400 V
I_a = Breaking current
I_e = Rated operational current

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3TF6 vacuum contactors, 3-pole, 335 ... 450 kW

Type			**3TF68**	**3TF69**
Size			**14**	**14**
Dimensions (W x H x D)		mm	230 x 276 x 237	230 x 295 x 237

General data

Permissible mounting position, installation instructions[1) 2)] The contactors are designed for operation on a vertical mounting surface.			
Mechanical endurance		Operating cycles	5 million
Electrical endurance		Operating cycles	[3)]
Rated insulation voltage U_i (pollution degree 3)		kV	1
Rated impulse withstand voltage U_{imp}		kV	8
Protective separation between the coil and the main contacts acc. to IEC 60947-1, Appendix N		kV	1
Mirror contacts A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with a NO main contact. One NC contact each must be connected in series for the right and left auxiliary switch block respectively.			Yes, acc. to IEC 60947-4-1, Appendix F
Permissible ambient temperature			
• During operation		°C	-25 ... +55
• During storage		°C	-55 ... +80
Degree of protection acc. to IEC 60947-1, Appendix C			IP00/open, coil assembly IP40
Touch protection acc. to EN 50274			Finger-safe with cover
Shock resistance			
• Rectangular pulse			
- AC operation		*g*/ms	8.1/5 and 4.7/10
- DC operation		*g*/ms	9/5 and 5.7/10
• Sine pulse			
- AC operation		*g*/ms	12.8/5 and 7.4/10
- DC operation		*g*/ms	14.4/5 and 9.1/10

			3TF69
• Rectangular pulse			
- AC operation		*g*/ms	9.5/5 and 5.7/10
- DC operation		*g*/ms	8.6/5 and 5.1/10
• Sine pulse			
- AC operation		*g*/ms	13.5/5 and 7.8/10
- DC operation		*g*/ms	13.5/5 and 7.8/10

Conductor cross-sections			See "Conductor Cross-Sections"
Electromagnetic compatibility (EMC)			See "Electromagnetic Compatibility (EMC)"

Short-circuit protection

Main circuit Fuse links, gG operational class: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE according to IEC 60947-4-1/EN 60947-4-1			
• Type of coordination "1"		A	1000
• Type of coordination "2"		A	500
• Weld-free[4)]		A	400
Auxiliary circuit			
• Short-circuit test with fuse links of gG operational class: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE with I_k = 1 kA acc. to IEC 60947-5-1		A	10
• Test with miniature circuit breaker up to 230 V with C characteristic: Short-circuit current I_k = 400 A acc. to IEC 60947-5-1		A	10

			3TF69
• Type of coordination "1"		A	1250
• Type of coordination "2"		A	630
• Weld-free[4)]		A	500

1) To easily replace the laterally mounted auxiliary switches it is recommended to maintain a minimum distance of 30 mm between the contactors.

2) If mounted at a 90° angle (conducting paths are horizontally above each other), the switching frequency is reduced by 80% compared with the normal values.

3) See "Endurance of the auxiliary contacts", page 3/113.

4) Test conditions according to IEC 60947-4-1.

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3TF6 vacuum contactors, 3-pole, 335 ... 450 kW

Contactor		Type	3TF68	3TF69
		Size	14	14
Control				
Coil operating range			0.8 x $U_{s\,min}$ ... 1.1 x $U_{s\,max}$	
Power consumption of the solenoid coils (when coil is cold and 1.0 x U_s)				
• AC operation, $U_{s\,max}$	- Closing	VA/p.f.	1850/1	950/0.98
	- Closed	VA/p.f.	49/0.15	30.6/0.31
• AC operation, $U_{s\,min}$	- Closing	VA/p.f.	1200/1	600/0.98
	- Closed	VA/p.f.	13.5/0.47	12.9/0.43
• DC economy circuit[1]	- Closing at 24 V	W	1010	960
	- Closed	W	28	20.6
For contactors of type 3TF68/69..-.**Q**:				
• AC operation, $U_{s\,min}$[2]	- Closing	VA/p.f.	1000/0.99	1150/0.99
	- Closed	VA/p.f.	11/1	11/1
Operating times for 0.8 ... 1.1 x U_s (Total break time = Opening delay + Arcing time)			(Values apply to cold and warm coil)	
• AC operation	- Closing delay	ms	70 ... 120 (22 ... 65)[3]	80 ... 120
	- Opening delay	ms	70 ... 100	70 ... 80
• DC economy circuit	- Closing delay	ms	76 ... 110	86 ... 280
	- Opening delay	ms	50	19 ... 25
• Arcing time		ms	10 ... 15	10
For contactors of type 3TF68/69..-.**Q**:				
• AC operation	- Closing delay	ms	35 ... 90	45 ... 160
	- Opening delay	ms	65 ... 90	30 ... 80
Operating times for 1.0 x U_s (Total break time = Opening delay + Arcing time)				
• AC operation	- Closing delay	ms	80 ... 100 (30 ... 45)[3]	85 ... 100
	- Opening delay	ms	70 ... 100	70
• DC economy circuit	- Closing delay	ms	80 ... 90	90 ... 125
	- Opening delay	ms	50	19 ... 25
Minimum command duration for closing	Standard	ms	120	120
	Reduced make-time	ms	90	--
Minimum interval time between two ON commands		ms	100	300

1) At 24 V DC; for further voltages, deviations of up to ±10 % are possible.
2) Including reversing contactor.
3) Values in brackets apply to contactors with reduced operating times.

Contactor	Type	3TF6. 44-.CF7	3TF6. 44-.CM7	3TF6. 44-.CP7	3TF6. 44-.CQ7	3TF6. 44-.CS7
Electromagnetic compatibility						
Rated control supply voltage U_s	V AC	110 ... 132	200 ... 240	230 ... 277	380 ... 460	500 ... 600
Overvoltage type acc. to IEC 60801		Burst/Surge				
Degree of severity acc. to IEC 60801						
• Burst		3	4	4	4	4
• Surge		4	4	4	4	4
Overvoltage resistance						
• Burst	kV	2	4	4	4	4
• Surge	kV	6	5	5	6	6

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3TF6 vacuum contactors, 3-pole, 335 ... 450 kW

Contactor		Type		3TF68	3TF69
		Size		14	14
Main circuit					
AC capacity					
Utilization category AC-1 Switching resistive loads					
• Rated operational currents I_e	At 40 °C up to 690 V		A	700	910
	At 55 °C up to 690 V		A	630	850
	At 55 °C up to 1000 V		A	450	800
• Rated power for AC loads with p.f. = 0.95 at 55°C	230 V		kW	240	323
	400 V		kW	415	558
	500 V		kW	545	735
	690 V		kW	720	970
	1000 V		kW	780	1385
• Minimum conductor cross-sections for loads with I_e	At 40°C		mm^2	2 x 240	$I_e \geq 800$ A: 2 x 60 x 5 (copper busbars)
	At 55°C		mm^2	2 x 185	$I_e < 800$ A: 2 x 240
Utilization categories AC-2 and AC-3					
• Rated operational currents I_e	Up to 690 V		A	630	820
	1000 V		A	435	580
• Rated power for slipring or squirrel-cage motors at 50 Hz and 60 Hz	At 230 V		kW	200	260
	400 V		kW	347	450
	500 V		kW	434	600
	690 V		kW	600	800
	1000 V		kW	600	800
Utilization category AC-4 (for $I_a = 6 \times I_e$)					
• Rated operational current I_e	Up to 690 V		A	610	690
• Rated power for squirrel-cage motors with 50 Hz and 60 Hz	At 400 V		kW	355	400
The following applies to a contact endurance of about 200000 operating cycles:					
• Rated operational currents I_e	Up to 690 V		A	300	360
	1000 V		A	210	250
• Rated power for squirrel-cage motors with 50 Hz and 60 Hz	At 230 V		kW	97	110
	400 V		kW	168	191
	500 V[1)]		kW	210	250
	690 V[1)]		kW	278	335
	1000 V[1)]		A	290	350
Switching frequency					
Switching frequency z in operating cycles/hour					
• Contactors without overload relays	No-load switching frequency AC		1/h	2000	1000
	No-load switching frequency DC		1/h	1000	1000
		AC-1	1/h	700	700
		AC-2	1/h	200	200
		AC-3	1/h	500	500
		AC-4	1/h	150	150
• Contactors with overload relays (mean value)			1/h	15	15

1) Max. permissible rated operational current I_e/AC-4 = I_e/AC-3 up to 500 V, for reduced contact endurance and reduced switching frequency.

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3TF6 vacuum contactors, 3-pole, 335 ... 450 kW

Contactor	Type	3TF68	3TF69
	Size	14	14
Conductor cross-sections			
Main conductors:		Screw terminals	
• Busbar connections			
- Finely stranded with cable lug	mm^2	50 ... 240	50 ... 240
- Stranded with cable lug	mm^2	70 ... 240	50 ... 240
- Solid or stranded	AWG	2/0 ... 500 MCM	2/0 ... 500 MCM
- Connecting bar (max. width)	mm	50	60 ($U_e \leq 690$ V) 50 ($U_e > 690$ V)
• Terminal screw		M10 x 30	M12 x 40
- Tightening torque	Nm	14 ... 24 (124 ... 210 lb.in)	20 ... 35 (177 ... 310 lb.in)
• With box terminal[1]			
- Connectable copper bars			
- Width	mm	15 ... 25	15 ... 38
- Max. thickness	mm	1 x 26 or 2 x 11	1 x 46 or 2 x 18
- Terminal screw		A/F 6 (hexagon socket)	A/F 8 (hexagon socket)
- Tightening torque	Nm lb.in	25 ... 40 221 ... 354	35 ... 50 266 ... 443
Auxiliary conductors:			
• Solid	mm^2	2 x (0.5 ... 1)[2]/2 x (1 ... 2.5)[2]	
• Finely stranded with end sleeve	mm^2	2 x (0.5 ... 1)[2]/2 x (0.75 ... 2.5)[2]	
• Pin-end connector acc. to DIN 46231	mm^2	2 x (1 ... 1.5)	
• Solid or stranded	AWG	2 x (18 ... 12)	
• Tightening torque	Nm lb.in	0.8 ... 1.4 7 ... 12	

1) See "Accessories and Spare Parts", page 3/120.

2) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

Contactor	Type	3TF68	3TF69
	Size	14	14
CSA and UL rated data			
Rated insulation voltage	V AC	600	600
Uninterrupted current			
• Open and enclosed	A	630	820
Maximum horsepower ratings (CSA and UL approved values)			
• Rated power for induction motors at 60 Hz			
- At 200 V	hp	231	290
- At 230 V	hp	266	350
- At 460 V	hp	530	700
- At 575 V	hp	664	860
NEMA/EEMAC ratings			
SIZE	hp	6	7
• Uninterrupted current			
- Open	A	600	820
- Enclosed	A	540	810
• Rated power for induction motors at 60 Hz			
- At 200 V	hp	150	--
- At 230 V	hp	200	300
- At 460 V	hp	400	600
- At 575 V	hp	400	600
Overload relays	Type	3RB12 .	
• Setting range	A	200 ... 820	

Short-circuit protection with overload relays see Chapter 7, "Protection Equipment" → "Overload Relays".

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3TF6 vacuum contactors, 3-pole, 335 ... 450 kW

Selection and ordering data

Contactors for AC control supply voltage subject to strong interference

- Main conductors: Busbar connections
- Auxiliary and control conductors: Screw terminals
- Electronically controlled solenoid operating mechanism with high EMC[1)]
- With overvoltage protection of the coil (varistor)



3TF68/69

Rated data AC-2 and AC-3 (up to 55 °C)						AC-1	Auxiliary contacts		Rated control supply voltage U_s	DT	**Screw terminals**	PU (UNIT, SET, M)	PS*	PG
Operational current I_e up to 690 V	Ratings of induction motors at 50 Hz and 230 V	**400 V**	500 V	690 V	1000 V	Operational current I_e (at 40 °C)	Version				Order No. / Price per PU			
A	kW	**kW**	kW	kW	kW	A	NO	NC	V					
AC operation 50/60 Hz[1)]														
Size 14														
630	200	**335**	434	600	--	700	4	4	110 ... 132 AC	A	**3TF68 44-0CF7**	1	1 unit	41B
									200 ... 240 AC	►	**3TF68 44-0CM7**	1	1 unit	41B
630	200	**335**	434	600	600	700	4	4	110 ... 132 AC	C	**3TF68 44-8CF7**	1	1 unit	41B
									200 ... 240 AC	A	**3TF68 44-8CM7**	1	1 unit	41B
820	260	**450**	600	800	--	910	4	4	110 ... 132 AC	A	**3TF69 44-0CF7**	1	1 unit	41B
									200 ... 240 AC	►	**3TF69 44-0CM7**	1	1 unit	41B
820	260	**450**	600	800	800	910	4	4	110 ... 132 AC	C	**3TF69 44-8CF7**	1	1 unit	41B
									200 ... 240 AC	C	**3TF69 44-8CM7**	1	1 unit	41B

1) For electromagnetic compatibility (EMC) see page 3/115.
3TF68/69 vacuum contactors are supplied with integrated overvoltage damping for the main current paths. The surge suppression circuit is not required for operation in circuits with DC choppers, frequency converters or speed-variable operating mechanisms, for example.
The circuit could be damaged by the voltage peaks and harmonics and cause phase-to-phase short circuits. For this reason, the contactors can also be supplied without integrated overvoltage damping. Without additional price.
The order number must include **"-Z"** and the order code **"A02"**.

Footnotes for page 3/119:

1) Same as footnote 1) above.

2) On these versions, a magnetic system is used in the DC economy circuit. A varistor can be retrofitted. A 3TC44 17-4A. reversing contactor with preassembled connecting cable (approx. 1 m) is included in the scope of supply of the vacuum contactor.

3) On this version, a magnetic system with rectifier is used in the DC economy circuit. Varistor integrated. A 3TC44 17-4A. reversing contactor with preassembled connecting cable (approx. 1 m) is included in the scope of supply of the vacuum contactor.

For other voltages see page 3/119.
For accessories see page 3/120, for spare parts see page 3/121.

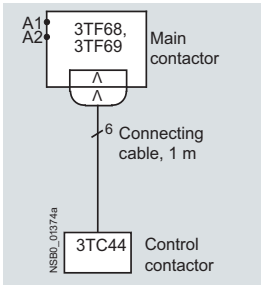
* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3TF6 vacuum contactors, 3-pole, 335 ... 450 kW

Contactors for DC operation and for AC operation which is subject to very strong interference

- Main conductors: Busbar connections
- Auxiliary and control conductors: Screw terminals
- DC solenoid system with 3TC44 reversing contactor for series resistor





3TF6. 33-.Q.7

Rated data AC-2 and AC-3 (up to 55 °C) Operational current I_e up to 690 V	Ratings of induction motors at 50 Hz and 230 V	400 V	500 V	690 V	1000 V	AC-1 Operational current I_e (at 40 °C)	Auxiliary contacts Version NO	NC	Rated control supply voltage U_s	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	kW	**kW**	kW	kW	kW	A			V						
DC operation · DC economy circuit[1)2)]															
Size 14															
630	200	**335**	434	600	--	700	3	3	24 DC	C	**3TF68 33-1DB4**		1	1 unit	41B
					600	700	3	3	24 DC	C	**3TF68 33-8DB4**		1	1 unit	41B
820	260	**450**	600	800	--	910	3	3	24 DC	C	**3TF69 33-1DB4**		1	1 unit	41B
					800	910	3	3	24 DC	C	**3TF69 33-8DB4**		1	1 unit	41B
AC operation 50/60 Hz with DC economy circuit[1)3)] **. For AC operation which is subject to strong interference**															
Size 14															
630	200	**335**	434	600	--	700	3	3	110 ... 120 AC	C	**3TF68 33-1QG7**		1	1 unit	41B
									220 ... 240 AC	A	**3TF68 33-1QL7**		1	1 unit	41B
									380 ... 420 AC	C	**3TF68 33-1QV7**		1	1 unit	41B
					600	700	3	3	220 ... 240 AC	C	**3TF68 33-8QL7**		1	1 unit	41B
820	260	**450**	600	800	--	910	3	3	110 ... 120 AC	C	**3TF69 33-1QG7**		1	1 unit	41B
									220 ... 240 AC	A	**3TF69 33-1QL7**		1	1 unit	41B
									380 ... 420 AC	C	**3TF69 33-1QV7**		1	1 unit	41B
					800	910	3	3	110 ... 120 AC	C	**3TF69 33-8QG7**		1	1 unit	41B
									220 ... 240 AC	C	**3TF69 33-8QL7**		1	1 unit	41B

For footnotes see page 3/118.

For accessories see page 3/120, for spare parts see page 3/121.

Rated control supply voltages (the 10th and 11th position of the order number must be changed)

Rated control supply voltage U_s	Contactor type / Size	3TF68 44-.C.., 3TF69 44-.C.. / 14
AC operation		
Solenoid coils for 50/60 Hz		
110 ... 132 V AC		F7
200 ... 240 V AC		M7
230 ... 277 V AC		P7
380 ... 460 V AC		Q7
500 ... 600 V AC		S7

Rated control supply voltage U_s	Contactor type / Size	3TF68 33-.D.., 3TF69 33-.D.. / 14
DC operation		
Solenoid coils for DC economy circuit		
24 V DC		B4
110 V DC		F4
125 V DC		G4
220 V DC		M4
230 V DC		P4

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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3TF6 vacuum contactors, 3-pole, 335 ... 450 kW

Accessories

Version	Rated control supply voltage U_s V AC	V DC	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Surge suppressors[1] **· Varistors**								
 3TX7 572-3. **Varistors**[2]	--	24 ... 48	C	**3TX7 572-3G**		1	1 unit	41B
For DC economy circuit; for lateral snapping onto auxiliary switches	--	48 ... 127	C	**3TX7 572-3H**		1	1 unit	41B
	--	127 ... 240	C	**3TX7 572-3J**		1	1 unit	41B

[1] The surge suppressor (varistor) is included in the scope of supply of the 3TF68 and 3TF69 contactors with AC operation.

[2] Includes the peak value of the alternating voltage on the DC side.

Version	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
		Order No. Price per PU			
Solid-state compatible auxiliary switch blocks with screw terminals					
For operation in dusty atmospheres and in solid-state circuits with rated operational currents I_e AC-14 and DC-13 of 1 ... 300 mA at 3 ... 60 V					
 5TY7 561-1. For lateral mounting onto the contactors	►	**3TY7 561-1UA00**	1	1 unit	41B
With 1 changeover contact. 2nd auxiliary switch block, left or right (replacement for 3TY6 561-1U, 3TY6 561-1V)					
Mounting on the left: 51, 52, 54 — Mounting on the right: 61, 62, 64					
Coupling links for control by PLC					
For lateral snapping onto the auxiliary switch, with surge suppression.	►	**3TX7 090-0D**	1	1 unit	41H
Operating range: 17 V to 30 V DC. Power consumption: 0.5 W at 24 V DC. Fitted with varistor.[1]					
Terminal covers					
 3TX7 6.6-0A For protection against inadvertent contact with exposed busbar connections	B	**3TX7 686-0A**	1	1 unit	41B
	B	**3TX7 696-0A**	1	1 unit	41B
Can be screwed onto free screw end on middle connecting bar.					
2 units required per contactor. (1 set = 2 units)					
Links for paralleling (star jumpers), 3-pole					
Link for paralleling without connection terminals[2]	C	**3TX7 680-0D**	1	1 unit	41B
Cover plates for links for paralleling					
A cover plate must be used in order to protect against inadvertent contact with exposed busbar connections (EN 50274).	C	**3TX7 680-0E**	1	1 unit	41B
Box terminals for laminated copper bars					
Without auxiliary conductor connection (1 set = 3 units)					
With single covers for protection against inadvertent contact (EN 50274)	D	**3TX7 570-1E**	1	1 unit	41B
With auxiliary conductor connection (1 set = 3 units)					
Conductor cross-sections for auxiliary conductors: • Solid 2 x (0.75 ... 2.5) mm² • Finely stranded with end sleeve 2 x (0.5 ... 2.5) mm² • Solid or stranded 2 x (18 ... 12) AWG • Tightening torque 0.8 ... 1.4 Nm (7 ... 12 lb.in)	D	**3TX7 690-1F**	1	1 unit	41B

[1] For technical specifications for coupling links see "Accessories for 3RT10 Contactors", page 3/96.

[2] The link for paralleling can be reduced by one pole.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Spare parts

Version	Auxiliary contacts			DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
	Version		Connections		Order No. / Price per PU			
	NO	NC	NC					
Auxiliary switch blocks								
For lateral mounting			Left	Right				
1st auxiliary switch block (replacement for 3TY7 561-1A/-1B)	1	1	--	13 21 / 14 22	31 43 / 32 44	▶ **3TY7 561-1AA00**	1	1 unit 41B
1st auxiliary switch block	1	--	1	13 25 / 14 26	35 43 / 36 44	▶ **3TY7 561-1EA00**	1	1 unit 41B
2nd auxiliary switch block (replacement for 3TY7 561-1K/-1L)	1	1	--	53 61 / 54 62	71 83 / 72 84	C **3TY7 561-1KA00**	1	1 unit 41B
For reconnection of the coil with DC economy circuit	--	--	1	B1 25 / B2 26		▶ **3TY7 681-1G**	1	1 unit 41B

3TY7 561-1.A00

Version	For type	DT	Order No. / Price per PU	PU (UNIT, SET, M)	PS*	PG
Solenoid coils						
AC operation[1]						
The solenoid coils are fitted as standard with varistors against overvoltage; the coil is supplied with switch-on electronics.	3TF68		**3TY7 683-0C..**			
	3TF69		**3TY7 693-0C..**			
DC operation[1] **· DC economy circuit**						
The solenoid coils for size 14 are supplied without reversing contactor.	3TF68		**3TY7 683-0D..**			
	3TF69		**3TY7 693-0D..**			
Vacuum interrupters						
Set with 3 vacuum interrupters with components	3TF68	B	**3TY7 680-0B**	1	1 unit	41B
In order to ensure reliable operation of the contactors, only **original replacement interrupters** should be used.	3TF69	C	**3TY7 690-0B**	1	1 unit	41B

3TY7 6.3-0...

[1] Rated control supply voltages for solenoid coils: The 10th and 11th digit of the Order No. must be supplemented according to page 3/119.

Version	Rated control supply voltage U_s	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
	V AC		Order No. / Price per PU			
3TC44 reversing contactors						
Complete with series resistor, 1 m connecting cable and plug-in connector	110 ... 120	D	**3TY7 684-0QG7**	1	1 unit	41B
	220 ... 240	D	**3TY7 684-0QL7**	1	1 unit	41B
For 3TF68 ..-.Q, 3TF69 ..-.Q	380 ... 420	D	**3TY7 684-0QV7**	1	1 unit	41B
Solenoid coils for main contactor, with rectifier bridge						
For 3TF68 ..-.Q	110 ... 120	D	**3TY7 683-0QG7**	1	1 unit	41B
	220 ... 240	D	**3TY7 683-0QL7**	1	1 unit	41B
	380 ... 420	D	**3TY7 683-0QV7**	1	1 unit	41B
For 3TF69 ..-.Q	110 ... 120	D	**3TY7 693-0QG7**	1	1 unit	41B
	220 ... 240	D	**3TY7 693-0QL7**	1	1 unit	41B
	380 ... 420	D	**3TY7 693-0QV7**	1	1 unit	41B

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3TB5 contactors with DC solenoid system, 3-pole, 55 ... 200 kW

Overview

Standards

IEC 60947-1, EN 60947-1,
IEC 60947-4-1, EN 60947-4-1,
IEC 60947-5-1, EN 60947-5-1 (auxiliary switches)

The 3TB5 contactors are suitable for use in any climate.

They are finger-safe according to EN 50274. Terminal covers may have to be fitted onto the connecting bars, depending on the configuration with other devices (see Accessories and Spare Parts on page 3/128).

Technical specifications

Contactor	Type	3TB50	3TB52 ... 3TB56
	Size	6	8 ... 12
Rated data of the auxiliary contacts		according to IEC 60947-5-1	
Rated insulation voltage U_i (pollution degree 3)	V	690	
Conventional thermal current I_{th} = Rated operational current I_e/AC-12	A	10	
AC load			
Rated operational current I_e/AC-15/AC-14			
• For rated operational voltage U_e			
- At 24 V	A	10	
- At 110 V	A	10	
- At 125 V	A	10	
- At 220 V	A	6	
- At 230 V	A	5.6	
- At 380 V	A	4	
- At 400 V	A	3.6	
- At 500 V	A	2.5	
- At 660 V	A	2.5	
- At 690 V	A	--	
DC load			
Rated operational current I_e/DC-12			
• For rated operational voltage U_e			
- At 24 V	A	10	10
- At 60 V	A	10	10
- At 110 V	A	3.2	8
- At 125 V	A	2.5	6
- At 220 V	A	0.9	2
- At 440 V	A	0.33	0.6
- At 600 V	A	0.22	0.4
Rated operational current I_e/DC-13			
• For rated operational voltage U_e			
- At 24 V	A	10 (10)	10 (10)
- At 60 V	A	5 (7)	5 (4)
- At 110 V	A	1.14 (3.2)	2.4 (1.8)
- At 125 V	A	0.98 (2.5)	2.1 (1.6)
- At 220 V	A	0.48 (0.9)	1.1 (0.9)
- At 440 V	A	0.13 (0.33)	0.32 (0.27)
- At 600 V	A	0.075 (0.22)	0.21 (0.18)
CSA and UL rated data of the auxiliary contacts			
Rated voltage, max.	V AC	600	
Switching capacity		A 600, P 600	

[1] Values in brackets apply to auxiliary contacts with delayed NC contact.

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Contactor	3TB5

Contact endurance of the main contacts

The characteristic curves show the contact endurance of the contactors when switching resistive and inductive AC loads (AC-1/AC-3) depending on the breaking current and rated operational voltage. It is assumed that the operating mechanisms are switched randomly, i.e. not synchronized with the phase angle of the supply system.

The rated operational current I_e complies with utilization category AC-4 (breaking six times the rated operational current) and is intended for a contact endurance of approx. 200 000 operating cycles.

If a shorter contact endurance is sufficient, the rated operational current I_e/AC-4 can be increased.

If the contacts are used for mixed operation, i.e. normal switching (breaking the rated operational current according to utilization category AC-3) in combination with intermittent inching (breaking several times the rated operational current according to utilization category AC-4), the contact endurance can be calculated approximately from the following equation:

$$X = \frac{A}{1 + \frac{C}{100}\left(\frac{A}{B} - 1\right)}$$

Characters in the equation:
- X Contact endurance for mixed operation in operating cycles
- A Contact endurance for normal operation ($I_a = I_e$) in operating cycles
- B Contact endurance for inching (I_a = multiple of I_e) in operating cycles
- C Inching operations as a percentage of total switching operations

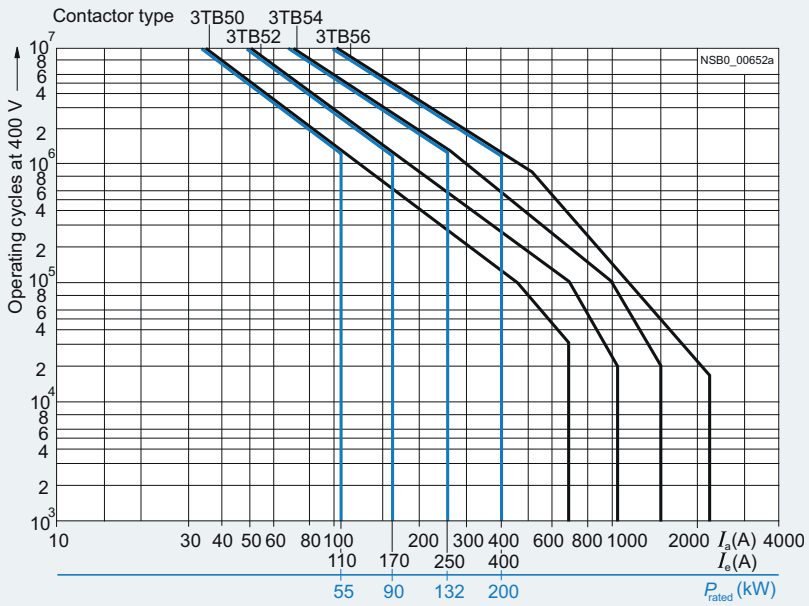
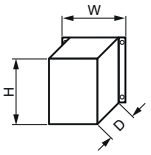
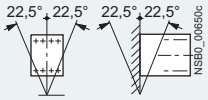


Diagram legend:
P_{rated} = Rated power for squirrel-cage motors at 400 V
I_a = Breaking current
I_e = Rated operational current

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3TB5 contactors with DC solenoid system, 3-pole, 55 ... 200 kW

Type			**3TB50**	**3TB52**	**3TB54**	**3TB56**
Size			**6**	**8**	**10**	**12**
Dimensions (W x H x D)		mm	120 x 150 x 198	135 x 180 x 217	145 x 252 x 264	160 x 252 x 282
General data						
Permissible mounting position **Installation instructions** [1] The contactors are designed for operation on a vertical mounting surface.						
Mechanical endurance		Operating cycles	10 million			
Electrical endurance			[2]			
Rated insulation voltage U_i		V	1000			
Protective separation between the coil and the main contacts acc. to IEC 60947-1, Appendix N		V	690			
Mirror contacts A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with a NO main contact.			Yes, acc. to IEC 60947-4-1, Appendix F			
Permissible ambient temperature						
• During operation		°C	-25 ... +55			
• During storage		°C	-50 ... +80			
Degree of protection acc. to IEC 60947-1, Appendix C			IP00 (open), coil assembly IP40			
Touch protection acc. to EN 50274			Finger-safe with cover			
Shock resistance (rectangular pulse)		g/ms	5/10	5.9/10	5.9/10	5.9/10
Short-circuit protection						
Main circuit Fuse links, gG operational class: LV HRC, type 3NA; DIAZED, type 5SB						
• Type of coordination "1"		A	250	315	400	630
• Type of coordination "2"		A	224	250	315	500
Auxiliary circuit, short-circuit current $I_k \leq 1$ kA						
• Short-circuit test with fuse links of gG operational class: LV HRC, type 3NA; DIAZED, type 5SB with $I_k = 1$ kA acc. to IEC 60947-5-1		A	16			
• Test with miniature circuit breaker up to 230 V with C characteristic: Short-circuit current $I_k = 400$ A acc. to IEC 60947-5-1		A	10			
Control						
Coil operating range			0.8 ... 1.1 x U_s			
Power consumption of the solenoid coils (when coil is cold and 1.0 x U_s)						
• Closing = Closed		W	25	30	60	86
Operating times for 0.8 ... 1.1 x U_s Total break time = Opening delay + Arcing time			(The values apply up to and including 20 % undervoltage, 10 % overvoltage, as well as when the coil is cold and warm)			
• Closing delay		ms	105 ... 360	115 ... 400	105 ... 400	110 ... 400
• Opening delay [3]		ms	18 ... 30	22 ... 35	24 ... 55	40 ... 110
• Arcing time		ms	10 ... 15	10 ... 15	10 ... 15	10 ... 15
Operating times for 1.0 x U_s						
• Closing delay		ms	120 ... 230	130 ... 250	115 ... 250	120 ... 250
• Opening delay [3]		ms	20 ... 26	24 ... 32	35 ... 50	60 ... 95

1) For reversing duty, deviations from the vertical axis are not permitted.

2) See "Endurance of the main contacts", page 3/123.

3) The opening delay times can increase if the contactor coils are damped against voltage peaks.

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3TB5 contactors with DC solenoid system, 3-pole, 55 ... 200 kW

Contactor	Type	3TB50	3TB52	3TB54	3TB56
	Size	6	8	10	12
Main circuit					
AC capacity					
Utilization category AC-1, switching resistive loads					
• Rated operational current I_e					
- At 40 °C up to 690 V	A	170	230	325	425
- At 55 °C up to 690 V	A	160	200	300	400
• Rated power for AC loads[1] with p.f.= 0.95 (at 55 °C)					
- At 230 V	kW	61	76	114	152
- At 400 V	kW	105	132	195	262
- At 500 V	kW	138	173	260	345
- At 690 V	kW	183	228	340	455
• Minimum conductor cross-sections for loads with I_e	mm^2	70	95	185	240
Utilization categories AC-2 and AC-3		[2]			
Utilization category AC-4 (for $I_a = 6 \times I_e$) The following applies to a contact endurance of about 200000 operating cycles:					
• Rated operational current I_e	A	52	72	103	120
• Rated power for squirrel-cage motors with 50 Hz and 60 Hz					
- At 230 V	kW	15.6	21	31	37.5
- At 400 V	kW	27	37	55	65
- At 500 V	kW	35	48	72	85.5
- At 690 V	kW	45	64	92	106
• Max. rated operational current I_e /AC-4					
- At 400 V	A	110	170	250	400
Switching frequency					
Switching frequency *z* in operating cycles/hour					
• Contactors without overload relays					
- AC-1	h^{-1}	1000			
- AC-2	h^{-1}	500			
- AC-3	h^{-1}	500			
- AC-4	h^{-1}	250			
• Contactors with overload relays (mean value)	h^{-1}	15			

1) Industrial furnaces and electric heaters with resistance heating, etc. (increased power consumption on heating up has been taken into account).

2) See "Selection and Ordering Data", page 3/127.

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3TB5 contactors with DC solenoid system, 3-pole, 55 ... 200 kW

Contactor	Type / Size	3TB50 6	3TB52 8	3TB54 10	3TB56 12
Conductor cross-sections					
Main conductors:		Screw terminals			
• Finely stranded with cable lug	mm^2	16 ... 70	35 ... 95	50 ... 240	50 ... 240
• Stranded with cable lug	mm^2	25 ... 70	50 ... 120	70 ... 240	70 ... 240
• Busbars	mm	15 x 3	20 x 3	25 x 5	2 x (25 x 3)
• Terminal screw		M6	M8	M10	M10
Auxiliary conductors:					
• Solid	mm^2	1 ... 2.5			
• Finely stranded with end sleeve	mm^2	0.75 ... 1.5			
• Pin-end connector (DIN 46231)	mm^2	2 x 1 ... 2.5			
Protective conductors:					
• Stranded with cable lug	mm^2	--	25 ... 70	35 ... 70	50 ... 120
CSA and UL rated data					
CSA rated data					
• Uninterrupted current					
- Open	A	150	170	240	300
- Enclosed	A	135	153	215	270
• Rated power for induction motors at 60 Hz (enclosed)					
- 115 V	hp	25	30	40	50
- 230 V	hp	50	60	75	100
- 460 V	hp	100	120	150	200
- 575 V	hp	125	160	200	250
• Overload relays	Type	3RB20 56	3RB20 56	3RB20 66	3RB20 66
- Setting range	A	50 ... 200	50 ... 200	50 ... 250	200 ... 540
• NEMA/EEMAC size					
- Contactors		4	4	4	5
- Starters (= contactors + overload relay, enclosed)		3	4	4	5
UL rated data					
• Uninterrupted current					
- Open	A	150	150	240	390
- In enclosure	A	135	135	215	350
• Rated power for induction motors at 60 Hz					
- 115 V	hp	25	25	30	--
- 230 V	hp	50	50	75	125
- 460 V	hp	100	100	150	250
- 575 V	hp	125	125	200	300[1)]
• Overload relays	Type	3RB20 56	3RB20 56	3RB20 66	3RB20 66
- Setting range	A	50 ... 200	50 ... 200	50 ... 250	200 ... 540
• NEMA/EEMAC size					
- Contactors		4	4	4	5
- Starters (= contactors + overload relay, enclosed)		3	4	4	5
Short-circuit protection devices					
• CLASS RK5 fuses	A	400	400	450	600
• Circuit breakers acc. to UL 489	A	175	175	250	600

1) At 575/600 V AC max. rated motor current 325 A and motor starting current 3250 A.

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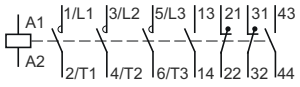
3TB5 contactors with DC solenoid system, 3-pole, 55 ... 200 kW

Selection and ordering data

Main conductors: Busbar connections
Auxiliary and control conductors: Screw terminals



3TB50

Size	Rated data AC-2 and AC-3 (up to 55 °C) Operational current I_e up to 690 V	Ratings of induction motors at 50 Hz and 230 V	400 V	500 V	690 V	AC-1 Operational current I_e (at 40 °C)	Auxiliary contacts Version NO	NC	Rated control supply voltage U_s	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	A	kW	**kW**	kW	kW	A			V DC						
DC operation · DC solenoid system															
															
6	110	37	**55**	75	90	170	2	2	24	A	**3TB50 17-0BB4**		1	1 unit	41B
8	170	55	**90**	110	132	230	2	2	24	A	**3TB52 17-0BB4**		1	1 unit	41B
10	250	75	**132**	160	200	325	2	2	24	C	**3TB54 17-0BB4**		1	1 unit	41B
12	400	115	**200**	255	355	425	2	2	24	C	**3TB56 17-0BB4**		1	1 unit	41B

For accessories see page 3/128.
For spare parts see page 3/129.

Options

Rated control supply voltages
(the 10th and 11th position of the order number must be changed)

Rated control supply voltage U_s	Contactor type	3TB50, 3TB52, 3TB54	3TB56
	Size	6, 8, 10	12
DC operation			
24 V DC		B4	B4
110 V DC		F4	--
220 V DC		M4	M4

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3TB5 contactors with DC solenoid system, 3-pole, 55 ... 200 kW

Accessories

	For contactors Size	Type	Version	Rated control supply voltage U_s V AC	V DC	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Surge suppressors · Varistors											
 3TX7 462-3.	**6**	3TB50	**Varistors**[1] for sticking onto the contactor base or for mounting separately	24 ... 48	24 ... 70	D	**3TX7 462-3G**		1	1 unit	41B
				48 ... 127	70 ... 150	C	**3TX7 462-3H**		1	1 unit	41B
				127 ... 240	150 ... 250	B	**3TX7 462-3J**		1	1 unit	41B
				240 ... 400	--	A	**3TX7 462-3K**		1	1 unit	41B
				400 ... 600	--	C	**3TX7 462-3L**		1	1 unit	41B
 3TX7 522-3.	**8 ... 12**	3TB52 ... 3TB56	**Varistors**[1] for separate screw fixing or snapping onto TH 35 standard mounting rail	--	24 ... 70	B	**3TX7 522-3G**		1	1 unit	41B
				--	70 ... 150	B	**3TX7 522-3H**		1	1 unit	41B
				--	150 ... 250	B	**3TX7 522-3J**		1	1 unit	41B
Surge suppressors · RC elements											
 3TX7 522-3.	**6**	3TB50	**RC elements** For lateral snapping onto auxiliary switch or TH 35 standard mounting rail	24 ... 48	--	B	**3TX7 522-3R**		1	1 unit	41B
				48 ... 127	--	B	**3TX7 522-3S**		1	1 unit	41B
				127 ... 240	--	B	**3TX7 522-3T**		1	1 unit	41B
				240 ... 400	--	B	**3TX7 522-3U**		1	1 unit	41B
				400 ... 600	--	B	**3TX7 522-3V**		1	1 unit	41B
Surge suppressors · Diodes											
 3TX7 462-3.	**6 ... 12**	3TB50 ... 3TB56	**Diode assemblies**[2] (diode and Zener diode) for DC solenoid system, for sticking onto the contactor base or for mounting separately	--	24 ... 250	D	**3TX7 462-3D**		1	1 unit	41B

[1] Includes the peak value of the alternating voltage on the DC side.
[2] Not for DC economy circuit.

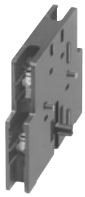
	For contactors Size	Type	Version	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Terminal covers									
 3TX6 526-3B	**6**	3TB50	For protection against inadvertent contact with exposed busbar connections M6	B	**3TX6 506-3B**		1	1 unit	41B
	8	3TB52		B	**3TX6 526-3B**		1	1 unit	41B
	10 and 12	3TB54, 3TB56	Can be screwed on free screw end. Covers one busbar connection (1 set = 6 units). M10	B	**3TX6 546-3B**		1	1 unit	41B

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Spare parts

Auxiliary switch blocks



3TY6 561-1A

For contactors Size	Type	Auxiliary contacts Version NO	NC	NC	Connections	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
For lateral mounting					Left	Right					
6	3TB50	(replacement for 3TY6 501-1A/-1B)									
		1	1	--	13 21 / 14 22	31 43 / 32 44	▶	**3TY6 501-1AA00**		1	1 unit	41B
		1	--	1		35 43 / 36 44	▶	**3TY6 501-1E**		1	1 unit	41B
8 ... 12	3TB52 ... 3TB56	1	1	--	13 21 / 14 22		▶	**3TY6 561-1A**		1	1 unit	41B
		1	1	--		31 43 / 32 44	▶	**3TY6 561-1B**		1	1 unit	41B
		1	--	1		35 43 / 36 44	▶	**3TY6 561-1E**		1	1 unit	41B

Contacts with fixing parts



3TY6 520-0A

In order to ensure reliable operation of the contactors, only **original replacement contacts** should be used.

For contactors Size	Type	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
6	3TB50	(1 set = 3 moving and 6 fixed switching elements)	B	**3TY6 500-0A**		1	1 unit	41B
8	3TB52		B	**3TY6 520-0A**		1	1 unit	41B
10	3TB54		B	**3TY6 540-0A**		1	1 unit	41B
12	3TB56		B	**3TY6 560-0A**		1	1 unit	41B

Arc chutes



3TY6 502-0A

For contactors Size	Type	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
6	3TB50	1 arc chute, 3-pole	▶	**3TY6 502-0A**		1	1 unit	41B
8	3TB52		▶	**3TY6 522-0A**		1	1 unit	41B
10	3TB54		▶	**3TY6 542-0A**		1	1 unit	41B
12	3TB56		▶	**3TY6 562-0A**		1	1 unit	41B

Solenoid coils



3TY6 5.

For contactors Size	Type	Order No.
DC operation[1]		
6	3TB50	**3TY6 503-0B..**
8	3TB52	**3TY6 523-0B..**
10	3TB54	**3TY6 543-0B..**
12	3TB56	**3TY6 563-0B..**

[1] Rated control supply voltages for solenoid coils: The 10th and 11th digit of the Order No. must be supplemented according to page 3/127.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3TF2 contactors, 3-pole, 2.2 ... 4 kW

Overview

Standards

IEC 60947-1, EN 60947-1,
IEC 60947-4-1, EN 60947-4-1,
IEC 60947-5-1, EN 60947-5-1 (auxiliary switches)

The contactors are suitable for use in any climate.

The contactors with screw terminals are finger-safe according to EN 50274.

Connection methods

The contactors are available in versions with screw terminals, 6.3 mm plug-in terminals and solder pin connections for soldering in printed circuit boards.

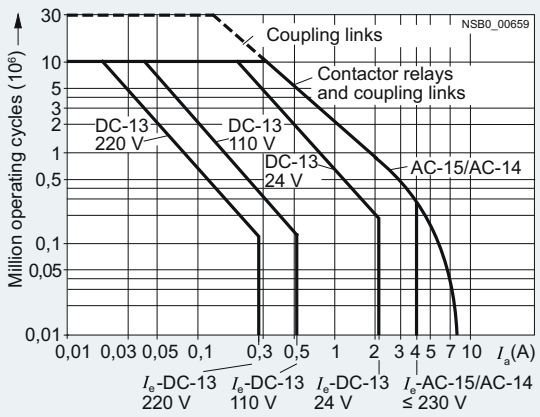
Technical specifications

Contactor	Type	3TF2

Contact endurance of the auxiliary contacts

The contact endurance for utilization category AC-12 or AC-15/AC-14 depends mainly on the breaking current. It is assumed that the operating mechanisms are switched randomly, i.e. not synchronized with the phase angle of the supply system.

Diagram legend:
I_a = Breaking current
I_e = Rated operational current



Contact endurance of the main contacts

The characteristic curves show the contact endurance of the contactors when switching inductive AC loads (AC-3) depending on the breaking current and rated operational voltage. It is assumed that the operating mechanisms are switched randomly, i.e. not synchronized with the phase angle of the supply system.

The rated operational current I_e complies with utilization category AC-4 (breaking six times the rated operational current) and is intended for a contact endurance of approx. 200000 operating cycles. If a shorter endurance is sufficient, the rated operational current I_e/AC-4 can be increased.

If the contacts are used for mixed operation, i.e. normal switching (breaking the rated operational current according to utilization category AC-3) in combination with intermittent inching (breaking several times the rated operational current according to utilization category AC-4), the contact endurance can be calculated approximately from the following equation:

$$X = \frac{A}{1 + \frac{C}{100}\left(\frac{A}{B} - 1\right)}$$

Characters in the equation:
X = Contact endurance for mixed operation in operating cycles
A = Contact endurance for normal operation ($I_a = I_e$) in operating cycles
B = Contact endurance for inching (I_a = multiple of I_e) in operating cycles
C = Inching operations as a percentage of total switching operations

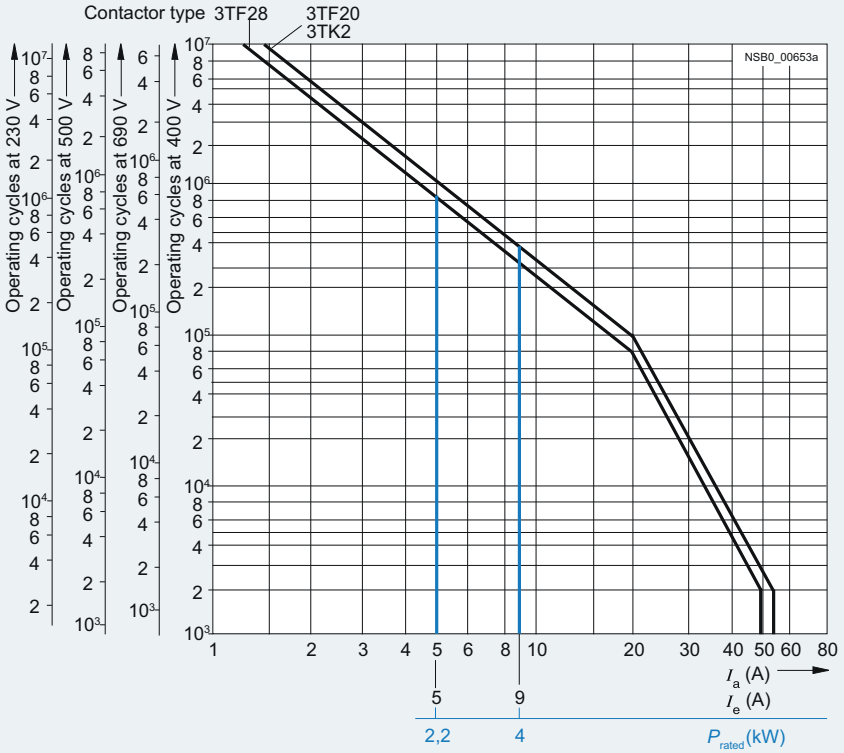
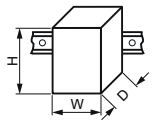


Diagram legend:
P_{rated} = Rated power for squirrel-cage motors at 400 V
I_a = Breaking current
I_e = Rated operational current

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3TF2 contactors, 3-pole, 2.2 ... 4 kW



			3TF20, 3TF28	3TF22, 3TF29
Type				
Size			**00**	**00**
Dimensions (W x H x D)		mm	45 x 48 x 63	--
• With mounted auxiliary switch block		mm	45 x 48 x 91	45 x 48 x 91
• With 3TX4 490 surge suppressor		mm	45 x 48 x 88	45 x 48 x 116
General data				
Permissible mounting positions			Any	
Mechanical endurance				
• AC operation		Operating cycles	10 million	
• DC operation			30 million	
Auxiliary switch blocks			10 million	
Rated insulation voltage U_i (pollution degree 3)				
• Screw terminals		V	690	690[1]
• Flat connectors 6.3 mm x 0.8 mm		V	500	--
• Solder pin connections		V	500	--
Rated impulse withstand voltage U_{imp} (pollution degree 3)				
• Screw terminals		kV	6	6
• Flat connectors 6.3 mm x 0.8 mm		kV	6	--
• Solder pin connections		kV	6	--
Protective separation between coil and main contacts (according to IEC 60947-1, Appendix N)		V	Up to 300	
Mirror contacts				
A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with a NO main contact.			Yes, this applies to both the basic unit as well as to between the basic unit and the mounted auxiliary switch block acc. to IEC 60947-4-1, Appendix F	Yes, acc. to IEC 60947-4-1, Appendix F, and SUVA
Permissible ambient temperature[2]				
• During operation		°C	-25 ... +55	
• During storage		°C	-55 ... +80	
Degree of protection acc. to IEC 60947-1, Appendix C			IP00 open IP20 for screw terminals IP40 coil assembly	
Touch protection acc. to EN 50274			Finger-safe for screw terminals	
Shock resistance				
• Without 3TX44 auxiliary switch block				
- Rectangular pulse	AC operation	*g*/ms	8.3/5 and 5.2/10	--
	DC operation	*g*/ms	11.3/5 and 9.2/10	--
- Sine pulse	AC operation	*g*/ms	13/5 and 8/10	--
	DC operation	*g*/ms	17.4/5 and 12.9/10	--
• With 3TX44 auxiliary switch block				
- Rectangular pulse	AC operation	*g*/ms	5/5 and 3.6/10	5/5 and 3.6/10
	DC operation	*g*/ms	9/5 and 6.9/10	9/5 and 7.3/10
- Sine pulse	AC operation	*g*/ms	7.8/5 and 5.6/10	7.8/5 and 5.6/10
	DC operation	*g*/ms	13.9/5 and 10.1/10	14/5 and 11/10
Conductor cross-sections			3)	
Short-circuit protection for contactors without overload relays				
Main circuit[4]				
• Fuse links, gG operational class: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE according to IEC 60947-4-1				
- Type of coordination "1"		A	25	
- Type of coordination "2"[5]		A	10	
- Weld-free		A	10	
• Miniature circuit breaker with C characteristic		A	10	
Auxiliary circuit				
• Short-circuit test with fuse links of gG operational class: DIAZED, type 5SB; NEOZED, type 5SE with I_k = 1 kA acc. to IEC 60947-5-1		A	6	

1) Auxiliary contacts 500 V

2) Applies to 50/60 Hz coil:
At 50 Hz, 1.1 x U_s, , side-by-side mounting and 100 % ON period the max. ambient temperature is +40 °C.

3) See "Conductor Cross-Sections".

4) According to excerpt from IEC 60947-4-1
Type of coordination "1":
Destruction of the contactor and the overload relay is permissible. The contactor and/or overload relay are to be replaced if necessary.
Type of coordination "2":
The overload relay must not suffer any damage. Contact welding on the contactor is permissible, however, if the contacts can be easily separated.

5) A short-circuit current of $I_q \leq 6$ kA applies to type of coordination "2".

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3TF2 contactors, 3-pole, 2.2 ... 4 kW

Contactor		Type	3TF2
		Size	00
Control			
Coil operating range[1]			0.8 ... 1.1 x U_s
Power consumption of the solenoid coils (when coil is cold and 1.0 x U_s)			
Standard version:			
• AC operation, 50 Hz	Closing	VA	15
	P.f.		0.41
	Closed	VA	6.8
	P.f.		0.42
• AC operation, 60 Hz	Closing	VA	14.4
	P.f.		0.36
	Closed	VA	6.1
	P.f.		0.46
• AC operation, 50/60 Hz[1]	Closing	VA	16.5/13.2
	P.f.		0.43/0.38
	Closed	VA	8.0/5.4
	P.f.		0.48/0.42
For USA and Canada:			
• AC operation, 50 Hz	Closing	VA	14.6
	P.f.		0.38
	Closed	VA	6.5
	P.f.		0.40
• AC operation, 60 Hz	Closing	VA	14.4
	P.f.		0.30
	Closed	VA	6.0
	P.f.		0.44
• DC operation	Closing = Closed	W	3
Permissible residual current of the electronic circuit[2] (with 0 signal)			
	• AC operation	mA	≤ 3 x (230 V/U_s)
	• DC operation	mA	≤ 1 x (230 V/U_s)
Operating times for 0.8 ... 1.1 x U_s[3]			
Total break time = Opening delay + Arcing time			
Values apply with coil in cold state and at operating temperature for operating range			
• AC operation	Closing delay	ms	5 ... 19
	Opening delay	ms	2 ... 22
- Dead interval			To use the 3TF2 AC-operated contactor in reversing an additional dead interval of 50 ms is required along with an NC contact interlock.
• DC operation	Closing delay	ms	16 ... 65
	Opening delay	ms	2 ... 5
• Arcing time		ms	10 ... 15
Operating times for 1.0 x U_s[3]			
• AC operation	Closing delay	ms	5 ... 18
	Opening delay	ms	3 ... 21
- Dead interval			To use the 3TF2 AC-operated contactor in reversing an additional dead interval of 50 ms is required along with an NC contact interlock.
• DC operation	Closing delay	ms	19 ... 31
	Opening delay	ms	3 ... 4
• Arcing time		ms	10 ... 15

1) Applies to 50/60 Hz coil:
At 50 Hz, 1.1 x U_s, side-by-side mounting and 100 % ON period the max. ambient temperature is +40 °C.

2) The 3TX4 490-1J additional load module is recommended for higher residual currents (see "Accessories").

3) The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 10 times; diode assembly 2 to 6 times, varistor +2 to 5 ms).

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3TF2 contactors, 3-pole, 2.2 ... 4 kW

Contactor	Type		3TF28, 3TF29	3TF20 ..-0..., 3TF22 ..-0...	3TF20 ..-3..., 3TF20 ..-6..., 3TF20 ..-7...
	Size		00	00	00
Main circuit					
AC capacity					
Utilization category AC-1 Switching resistive loads					
• Rated operational current I_e (at 40 °C)	Up to 400/380 V	A	18	18	18
	690/660 V	A	18	18	--
• Rated operational current I_e (at 55 °C)	400/380 V	A	16	16	16
	690/660 V	A	16	16	--
• Rated power of AC loads P.f. = 1	At 230/220 V	kW	6.0	6.0	6.0
	400/380 V	kW	10	10	10
	500 V	kW	13	13	13
	690/660 V	kW	17	17	--
• Minimum conductor cross-section for loads with I_e		mm^2	2.5	2.5	2.5
Utilization categories AC-2 and AC-3					
• Rated operational current I_e	Up to 220 V	A	5.1	9.0	9.0
	230 V	A	5.1	9.0	9.0
	380 V	A	5.1	9.0	9.0
	400 V	A	5.1	8.4	8.4
	500 V	A	4.8	6.5	6.5
	660 V	A	4.8	5.2	--
	690 V	A	4.8	5.2	--
• Rated power for motors with slipring or squirrel cage at 50 and 60 Hz and	At 110 V	kW	0.7	1.2	1.2
	115 V	kW	0.7	1.2	1.2
	120 V	kW	0.7	1.3	1.3
	127 V	kW	0.8	1.4	1.4
	200 V	kW	1.2	2.2	2.2
	220 V	kW	1.3	2.4	2.4
	230 V	kW	1.4	2.5	2.5
	240 V	kW	1.5	2.6	2.6
	380 V	kW	2.2	4.0	4.0
	400 V	kW	2.2	4.0	4.0
	415 V	kW	2.5	4.0	4.0
	440 V	kW	2.5	4.0	4.0
	460 V	kW	2.7	4.0	4.0
	500 V	kW	2.9	4.0	4.0
	575 V	kW	3.2	4.0	--
	660 V	kW	3.8	4.0	--
	690 V	kW	4.0	4.0	--
Utilization category AC-4					
(contact endurance approx. 200000 operating cycles at I_a = 6 x I_e)					
• Rated operational current I_e	Up to 400 V	A	1.9	2.6	2.6
	690 V	A	1.4	1.8	--
• Rated power for motors with squirrel cage at 50 and 60 Hz and	At 110 V	kW	0.23	0.32	0.32
	115 V	kW	0.24	0.33	0.33
	120 V	kW	0.26	0.35	0.35
• Max. permissible rated operational current I_e/AC-4 ≙ I_e/AC-3 up to 500 V, for reduced contact endurance and reduced switching frequency	127 V	kW	0.27	0.37	0.37
	200 V	kW	0.42	0.58	0.58
	220 V	kW	0.47	0.64	0.64
	230 V	kW	0.49	0.67	0.67
	240 V	kW	0.51	0.70	0.70
	380 V	kW	0.81	1.10	1.10
	400 V	kW	0.85	1.15	1.15
	415 V	kW	0.93	1.20	1.20
	440 V	kW	1.0	1.27	1.27
	460 V	kW	1.0	1.33	1.33
	500 V	kW	1.1	1.45	1.45
	575 V	kW	1.0	1.30	--
	660 V	kW	0.86	1.10	--
	690 V	kW	0.89	1.15	--

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3TF2 contactors, 3-pole, 2.2 ... 4 kW

Contactor	Type		3TF28, 3TF29	3TF20 ..-0..., 3TF22 ..-0...	3TF20 ..-3..., 3TF20 ..-6..., 3TF20 ..-7...
	Size		00	00	00
Main circuit					
Thermal load capacity	10 s current	A	70		
Power loss per conducting path	At I_e/AC-3	W	0.3		
Switching frequency					
Switching frequency *z* in operating cycles/hour					
• Contactors without overload relays	No-load switching frequency	h^{-1}	10000		
Dependence of the switching frequency *z'* on the operational current *I'* and operational voltage *U'*: $z' = z \times (I_e/I') \times (400\ V/U')^{1.5}$ 1/h	AC-1	h^{-1}	1000		
	AC-2	h^{-1}	500		
	AC-3	h^{-1}	1000		
• Contactors with overload relays (mean value)		h^{-1}	15		
Conductor cross-sections					
Main and auxiliary conductors			**Screw terminals**		
• Solid		mm^2	2 x (0.5 ... 2.5), 1 x 4 2 x (20 ... 14) AWG, 1 x 12 AWG		
• Finely stranded with end sleeve		mm^2	2 x (0.5 ... 1.5), 1 x 2.5		
• Pin-end connector (DIN 46231)		mm^2	1 x 1 ... 2.5		
• Terminal screw			M3		
• Prescribed tightening torque for terminal screws		Nm lb.in	0.8 ... 1.3 7 ... 11		
			Flat connectors		
• When using a plug-in sleeve 6.3 – 1		mm^2	0.5 ... 1		
• Finely stranded with 6.3 – 2.5		mm^2	1 ... 2.5		
			Solder pin connections (only for printed circuit boards)		
• Solder pin cross-section		mm^2	0.8 x 1.2		
• Solder pin cross-section, plug-in base		mm^2	0.32 x 1.0		

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3TF2 contactors, 3-pole, 2.2 ... 4 kW

Contactor	Type		3TF20 ..-0...	3TF20 ..-3..., 3TF20 ..-6..., 3TF20 ..-7...
	Size		00	00
cULus and cULus rated data of the 3TF20 contactors				
Rated insulation voltage U_i		V AC	600	300
Uninterrupted current	Open and enclosed	A	16	16 (10 for solder pin connection)
Maximum horsepower ratings (cULus and cULus approved values)				
• Rated power for induction motors at 60 Hz				
- Single-phase	At 115 V	hp	0.5	--
	200 V	hp	1	1
	230 V	hp	1.5	1
	460/575 V	hp	--	--
- 3-phase	At 115 V	hp	--	--
	200 V	hp	3	3 (1 for 3TF20 ..-6)
	230 V	hp	3	3 (1 for 3TF20 ..-6)
	460/575 V	hp	5	--
Overload relays				
• Type			3UA7	
• Setting range		A	8 ... 10	

Contactor	Type		3TF2
	Size		00
Rated data of the auxiliary contacts according to IEC 60947-1			
Rated insulation voltage U_i (pollution degree 3)		V	690
Conventional thermal current I_{th} = Rated operational current I_e/AC-12		A	10
AC load Rated operational current I_e/AC-15/AC-14			
• For rated operational voltage U_e	24 V	A	4
	110 V	A	4
	125 V	A	4
	220 V	A	4
	230 V	A	4
	380 V	A	3
	400 V	A	3
	500 V	A	2
	660 V	A	1
	690 V	A	1
DC load Rated operational current I_e/DC-12			
• For rated operational voltage U_e	24 V	A	4
	48 V	A	2.2
	110 V	A	1.1
	125 V	A	1.1
	220 V	A	0.5
	440 V	A	--
	600 V	A	--
Rated operational current I_e/DC-13			
• For rated operational voltage U_e	24 V	A	2.1
	48 V	A	1.1
	110 V	A	0.52
	125 V	A	0.52
	220 V	A	0.27
	440 V	A	--
	600 V	A	--
cULus, cULus and CSA rated data of the auxiliary contacts			
Rated voltage, max.		V AC	600
Auxiliary switch blocks, max.		V AC	300
Switching capacity			A 600, Q 300
Uninterrupted current at 240 V AC		A	10

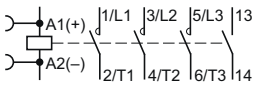
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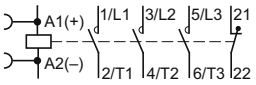
3TF2 contactors, 3-pole, 2.2 ... 4 kW

Selection and ordering data

Size 00
AC-1: operational current I_e = 16 A (at 55 °C)
Screw terminals

Rated data Utilization categories AC-2 and AC-3					Auxiliary contacts			DT	Screw terminals		PU (UNIT, SET, M)	PS*	PG
Operational current I_e	Ratings of induction motors at 50 Hz and				Ident. No.	Version			Order No.	Price per PU			
At 400/ 380 V	230/ 220 V	**400/ 380 V**	500 V	690/ 660 V		NO	NC						
A	kW	**kW**	kW	kW									
Contactors with screw terminals · for screw fixing and snap-on mounting onto TH 35 standard mounting rail													
Ident. No. **10**									Ident. No. **01**				







3TF20 ..-0...,
3TF28 ..-0...

AC operation

5	1.3	**2.2**	2.9	3.8	**10**	1	--	B	**3TF28 10-0AP0**	1	1 unit	41B
					01	--	1	C	**3TF28 01-0AP0**	1	1 unit	41B
9	2.4	**4**	4	4	**10**	1	--	A	**3TF20 10-0AP0**	1	1 unit	41B
					01	--	1	A	**3TF20 01-0AP0**	1	1 unit	41B

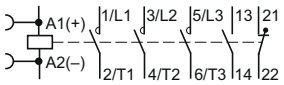
DC operation · DC solenoid system

5	1.3	**2.2**	2.9	3.8	**10**	1	--	C	**3TF28 10-0BB4**	1	1 unit	41B
					01	--	1	C	**3TF28 01-0BB4**	1	1 unit	41B
9	2.4	**4**	4	4	**10**	1	--	A	**3TF20 10-0BB4**	1	1 unit	41B
					01	--	1	A	**3TF20 01-0BB4**	1	1 unit	41B

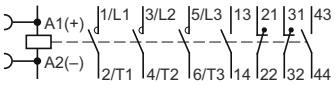
With permanently mounted auxiliary switch blocks

Terminal designations of the auxiliary contacts according to EN 50012

Ident. No. **11**



Ident. No. **22**





3TF22 ..-0...,
3TF29 ..-0...

AC operation

5	1.3	**2.2**	2.9	3.8	**11**	1	1	C	**3TF29 11-0AP0**	1	1 unit	41B
					22	2	2	C	**3TF29 22-0AP0**	1	1 unit	41B
9	2.4	**4**	4	4	**11**	1	1	C	**3TF22 11-0AP0**	1	1 unit	41B
					22	2	2	C	**3TF22 22-0AP0**	1	1 unit	41B

DC operation · DC solenoid system

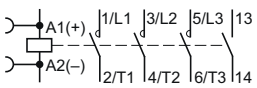
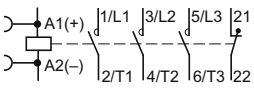
5	1.3	**2.2**	2.9	3.8	**11**	1	1	C	**3TF29 11-0BB4**	1	1 unit	41B
					22	2	2	C	**3TF29 22-0BB4**	1	1 unit	41B
9	2.4	**4**	4	4	**11**	1	1	C	**3TF22 11-0BB4**	1	1 unit	41B
					22	2	2	C	**3TF22 22-0BB4**	1	1 unit	41B

For accessories see pages 3/138, 3/139.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3TF2 contactors, 3-pole, 2.2 ... 4 kW

Rated data Utilization categories AC-2 and AC-3					Auxiliary contacts			DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Operational current I_e	Ratings of induction motors at 50 Hz and				Ident. No.	Version							
At 400/ 380 V	230/ 220 V	**400/ 380 V**	500 V	690/ 660 V		NO	NC						
A	kW	**kW**	kW	kW									
	Ident. No. **10** 								Ident. No. **01** 				
Contactors with 6.3 mm x 0.8 mm flat connectors · for screw fixing and snap-on mounting onto TH 35 standard mounting rail													
 3TF20..-3...	***AC operation***								**Flat connectors**				
	9	2.4	**4**	4	--	**10**	1	--	C	**3TF20 10-3AP0**	1	1 unit	41B
						01	--	1	C	**3TF20 01-3AP0**	1	1 unit	41B
	DC operation · DC solenoid system												
	9	2.4	**4**	4	--	**10**	1	--	C	**3TF20 10-3BB4**	1	1 unit	41B
						01	--	1	C	**3TF20 01-3BB4**	1	1 unit	41B
Contactors with 6.3 mm x 0.8 mm flat connectors · for screw fixing (diagonal)													
 3TF20..-7...	***AC operation***												
	9	2.4	**4**	4	--	**10**	1	--	C	**3TF20 10-7AP0**	1	1 unit	41B
						01	--	1	C	**3TF20 01-7AP0**	1	1 unit	41B
	DC operation · DC solenoid system												
	9	2.4	**4**	4	--	**10**	1	--	C	**3TF20 10-7BB4**	1	1 unit	41B
						01	--	1	C	**3TF20 01-7BB4**	1	1 unit	41B
Contactors with solder pin connections for printed circuit boards · for screw fixing (diagonal)													
 3TF20..-6...	***AC operation***								**Solder pin connections**				
	9	2.4	**4**	4	--	**10**	1	--	C	**3TF20 10-6AP0**	1	1 unit	41B
						01	--	1	C	**3TF20 01-6AP0**	1	1 unit	41B
	DC operation · DC solenoid system												
	9	2.4	**4**	4	--	**10**	1	--	C	**3TF20 10-6BB4**	1	1 unit	41B
						01	--	1	C	**3TF20 01-6BB4**	1	1 unit	41B

For accessories see pages 3/138, 3/139.

Rated control supply voltages (the 10th and 11th position of the order number must be changed)

Rated control supply voltage U_s	Contactor type	3TF20, 3TF28
	Size	00
AC operation		
Solenoid coils for AC 50 and 60 Hz		
50 Hz	**60 Hz**	
24 V AC	29 V AC	B0
110 V AC	132 V AC	F0
230/220 V AC	276 V AC	P0[1)]
AC operation		
Solenoid coils for AC 50/60 Hz		
230 V AC		L2
DC operation		
24 V DC		B4

Rated control supply voltage U_s	Contactor type	3TF22, 3TF29
	Size	00
AC operation		
Solenoid coils for AC 50 and 60 Hz		
50 Hz	**60 Hz**	
230/220 V AC	276 V AC	P0[1)]
DC operation		
24 V DC		B4

[1)] Operating range at 220 V: 0.85 to 1.15 × U_s; lower operating range limit according to IEC 60947.

Please inquire about further voltages.

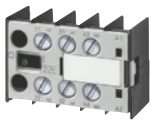
* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3TF2 contactors, 3-pole, 2.2 ... 4 kW

Accessories

Rated operational current I_e/AC-15/AC-14 at 230/220 V A	400/380 V A	500 V A	Auxiliary contacts Ident. No.	Version NO	NC	NO	NC	Connections	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Snap-on auxiliary switch blocks														
For expansion to 2, 4 or 5 auxiliary contacts according to EN 50012 Only for 3TF2. Ident. No. 10 (with auxiliary contact 1 NO)														
4	3	2	**11**	--	1	--	--		▶	**3TX4 401-1A**		1	1 unit	41B
			22	1	2	--	--		▶	**3TX4 412-1A**		1	1 unit	41A
			23	1	3	--	--		▶	**3TX4 413-1A**		1	1 unit	41A
			32	2	2	--	--		▶	**3TX4 422-1A**		1	1 unit	41A
For expansion to 3 or 5 auxiliary contacts according to EN 50005														
4	3	2	**20**	2	--	--	--	53 63 54 64	▶	**3TX4 420-2A**		1	1 unit	41A
			11	1	1	--	--	53 61 54 62	▶	**3TX4 411-2A**		1	1 unit	41A
			02	--	2	--	--	51 61 52 62	▶	**3TX4 402-2A**		1	1 unit	41A
			11; U	--	--	1	1	57 65 58 66	D	**3TX4 411-2G**		1	1 unit	41A
4	3	2	**40**	4	--	--	--	53 63 73 83 54 64 74 84	▶	**3TX4 440-2A**		1	1 unit	41A
			31	3	1	--	--	53 61 73 83 54 62 74 84	▶	**3TX4 431-2A**		1	1 unit	41A
			22	2	2	--	--	53 61 71 83 54 62 72 84	▶	**3TX4 422-2A**		1	1 unit	41A
			22; 2 U	--	--	2	2	57 67 75 85 58 68 76 86	D	**3TX4 422-2G**		1	1 unit	41A



3TX4 4..-.A

For contactors Type	Rated control supply voltage U_s	Time setting range (minimum times)	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
OFF-delay devices								
For DC-operated contactors for bridging short-time power failures up to 0.8 s								
3TF2. ..-0BB4	24 V DC	0.25 s or 0.5 s	A	**3TX4 490-1H**		1	1 unit	41B

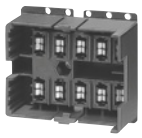


3TX4 490-1H

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3TF2 contactors, 3-pole, 2.2 ... 4 kW

For contactors Type	Rated control supply voltage U_s V AC	V DC	Power consumption of LED at U_s mW	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Surge suppressors for plugging onto contactors with and without auxiliary switch blocks									
 3TX4 490-3A	***Version without LED***								
	RC elements								
3TF2. ..-0..., 3TF2. ..-1...	24 ... 48	24 ... 70	--	B	**3TX4 490-3R**		1	1 unit	41B
	48 ... 127	70 ... 150	--	B	**3TX4 490-3S**		1	1 unit	41B
	127 ... 240	150 ... 250	--	B	**3TX4 490-3T**		1	1 unit	41B
	240 ... 400	--	--	B	**3TX4 490-3U**		1	1 unit	41B
	400 ... 600	--	--	B	**3TX4 490-3V**		1	1 unit	41B
	Varistors								
3TF2. ..-0..., 3TF2. ..-1...	≤ 48	24 ... 70	--	B	**3TX4 490-3G**		1	1 unit	41B
	48 ... 127	70 ... 150	--	B	**3TX4 490-3H**		1	1 unit	41B
	127 ... 240	150 ... 250	--	B	**3TX4 490-3J**		1	1 unit	41B
	240 ... 400	--	--	B	**3TX4 490-3K**		1	10 units	41B
	400 ... 600	--	--	B	**3TX4 490-3L**		1	10 units	41B
	Noise suppression diodes								
3TF2. ..-0..., 3TF2. ..-1...	--	12 ... 250	--	B	**3TX4 490-3A**		1	1 unit	41B
	Diode assemblies (diode and Zener diode) For DC operation and short break times								
3TF2. ..-0..., 3TF2. ..-1...	--	24 ... 250	--	B	**3TX4 490-3B**		1	1 unit	41B
 3TX4 490-4G	***Version with LED***								
	Varistors								
3TF2. ..-0...,	24 ... 48	12 ... 24	10 ... 120	B	**3TX4 490-4G**		1	1 unit	41B
3TF2. ..-1...	48 ... 127	24 ... 70	20 ... 470	B	**3TX4 490-4H**		1	1 unit	41B
	127 ... 240	70 ... 150	50 ... 700	B	**3TX4 490-4J**		1	1 unit	41B
	--	150 ... 250	160 ... 950	B	**3TX4 490-4K**		1	1 unit	41B
	Noise suppression diodes								
3TF2. ..-0...,	--	24 ... 70	20 ... 470	B	**3TX4 490-4A**		1	1 unit	41B
3TF2. ..-1...	--	70 ... 150	50 ... 700	B	**3TX4 490-4B**		1	1 unit	41B
	--	150 ... 250	160 ... 950	B	**3TX4 490-4C**		1	1 unit	41B
Additional load modules for plugging onto contactors with and without auxiliary switch blocks[1]									
	For increasing the permissible residual current and for limiting the residual voltage								
3TF2. ..-0A.., 3TF2. ..-1A..	230/220, 50 Hz 230, 60 Hz 230, 50/60 Hz Operating range 0.8 ... 1.1 × U_s.		--	B	**3TX4 490-1J**		1	1 unit	41B
Plug-in bases with solder pin connections for printed circuit boards, width 45 mm									
 3TX4 491-2A	Rated insulation voltage U_i: 400 V (for pollution degree 3); rated impulse withstand voltage U_{imp}: 6 kV; rated operational current I_e: 6 A; CE and UL rated data: max. 300 V, 6 A								
3TF20 ..-3..., 3TF20 ..-7...	For contactors with 6.3 mm x 0.8 mm flat connectors			A	**3TX4 491-2A**		1	5 units	41A
Release tools									
3TF2. ..-7...	For releasing contactors from 3TX4 491-2A plug-in bases			D	**3TX4 491-2K**		1	1 unit	41B

[1] Dimensions as for 3TX4 490-3 surge suppressor.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RT20 coupling contactors (interface), 3-pole, 3 ... 15 kW

Overview

DC operation

IEC 60947-1, EN 60947-1,
IEC 60947-4-1, EN 60947-4-1,
IEC 60947-5-1, EN 60947-5-1 (auxiliary switches)

The 3RT20 coupling contactors for switching motors are tailored to the special requirements of working with electronic controls.

The 3RT20 1 coupling contactors cannot be extended with auxiliary switch blocks.

Coupling contactors have a low power consumption and an extended solenoid coil operating range.

Depending on the version, the solenoid coils are supplied either without overvoltage damping (3RT20 1.-1HB4. and 3RT20 1.-.MB4.-0KT0) or with a diode, suppressor diode or varistor connected as standard.

Technical specifications

All technical specifications not mentioned in the table below are identical to those of the 3RT20 contactors for switching motors (see pages 3/17 and 3/21).

Contactor	Type		3RT20 1.-.HB4.	3RT20 1.-.JB4.	3RT20 1.-.KB4.	3RT20 2.-.KB4.
	Size		S00	S00	S00	S0
General data						
Mechanical endurance		Operating cycles	30 million			10 million
Protective separation between the coil and the main contacts acc. to IEC 60947-1, Appendix N		V	400			
Control						
Coil operating range			0.7 ... 1.25 x U_s			
Power consumption of the solenoid coil (for cold coil) Closing = Closed	At U_s 17 V	W	1.6			2.3
	24 V	W	2.8			4.5
	30 V	W	4.4			7
Permissible residual current of the electronics (with 0 signal)			< 6 mA x (24 V/U_s)			< 10 mA x (24 V/U_s)
Overvoltage configuration of the solenoid coil			No overvoltage damping 	With diode 	With suppressor diode 	With varistor 
Operating times						
• Closing						
- At 17 V	ON-delay NO	ms	40 ... 130			70 ... 270
	OFF-delay NC	ms	30 ... 80			60 ... 250
- At 24 V	ON-delay NO	ms	35 ... 60			65 ... 90
	OFF-delay NC	ms	25 ... 40			55 ... 80
- At 30 V	ON-delay NO	ms	25 ... 50			52 ... 65
	OFF-delay NC	ms	15 ... 30			43 ... 57
• Closing at 17 ... 30 V	OFF-delay NO	ms	7 ... 20	38 ... 65	7 ... 20	19 ... 21
	ON-delay NC	ms	20 ... 30	55 ... 75	20 ... 30	25 ... 31

Contactor	Type		3RT20 1.-1MB4.-0KT0	3RT20 1.-1VB4.	3RT20 1.-1SB4.
	Size		S00	S00	S00
	Width	mm	45	45	45
General data					
Mechanical endurance		Operating cycles	30 million		
Protective separation between the coil and the main contacts acc. to IEC 60947-1, Appendix N		V	400		
Control					
Coil operating range			0.85 ... 1.85 x U_s		
Power consumption of the solenoid coil (for cold coil) Closing = Closed	At U_s 24 V	W	1.6		
Permissible residual current, upright mounting position			On request		
Overvoltage configuration of the solenoid coil			No overvoltage damping 	With diode 	With suppressor diode 

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SIRIUS 3RT20 coupling contactors (interface), 3-pole, 3 ... 15 kW

Contactor		Type	3RT20 1.-1MB4.-0KT0	3RT20 1.-1VB4.	3RT20 1.-1SB4.
		Size	S00	S00	S00
Control					
Operating times					
• Closing					
- At 20.5 V	ON-delay NO	ms	30 ... 120		
	OFF-delay NC	ms	20 ... 110		
- At 24 V	ON-delay NO	ms	25 ... 90		
	OFF-delay NC	ms	15 ... 80		
- At 44 V	ON-delay NO	ms	15 ... 60		
	OFF-delay NC	ms	10 ... 50		
• Opening	OFF-delay NO	ms	5 ... 20	20 ... 80	5 ... 20
	ON-delay NC	ms	10 ... 30	30 ... 90	10 ... 30

Selection and ordering data

DC operation
Low power consumption
Extended operating range of the solenoid coil

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B



3RT20 1.-1.B4.



3RT20 1.-2.B4.

Rated data AC-2 and AC-3 T_u: Up to 60 °C		Auxiliary contacts		DT	Screw terminals	DT	Spring-type terminals
					Configurator		Configurator
Operational current I_e up to	Rating of induction motors at 50 Hz and	Ident. No.	Version		Order No. Price per PU		Order No. Price per PU
400 V	**400 V**						
A	**kW**		NO NC				
For screw fixing and snap-on mounting onto TH 35 standard mounting rail							
Size S00							
Diode, varistor or RC element, attachable							
(no auxiliary switch blocks can be mounted)							
• 1 NO, Ident. No. **10**							
• 1 NC, Ident. No. **01**							
Rated control supply voltage U_s = 24 V DC, coil operating range **0.7 to 1.25** x U_s Power consumption of the solenoid coils **2.8 W** at 24 V							
7	**3**	**10**	1 --	B	**3RT20 15-1HB41**	B	**3RT20 15-2HB41**
		01	-- 1	B	**3RT20 15-1HB42**	B	**3RT20 15-2HB42**
9	**4**	**10**	1 --	B	**3RT20 16-1HB41**	B	**3RT20 16-2HB41**
		01	-- 1	B	**3RT20 16-1HB42**	B	**3RT20 16-2HB42**
12	**5.5**	**10**	1 --	B	**3RT20 17-1HB41**	B	**3RT20 17-2HB41**
		01	-- 1	▶	**3RT20 17-1HB42**	B	**3RT20 17-2HB42**
Rated control supply voltage U_s = 24 V DC, coil operating range **0.85 to 1.85 x U_s** Power consumption of the solenoid coils **1.6 W** at 24 V							
7	**3**	**10**	1 --	B	**3RT20 15-1MB41-0KT0**	B	**3RT20 15-2MB41-0KT0**
		01	-- 1	B	**3RT20 15-1MB42-0KT0**	B	**3RT20 15-2MB42-0KT0**
9	**4**	**10**	1 --	B	**3RT20 16-1MB41-0KT0**	B	**3RT20 16-2MB41-0KT0**
		01	-- 1	B	**3RT20 16-1MB42-0KT0**	B	**3RT20 16-2MB42-0KT0**
12	**5.5**	**10**	1 --	B	**3RT20 17-1MB41-0KT0**	B	**3RT20 17-2MB41-0KT0**
		01	-- 1	B	**3RT20 17-1MB42-0KT0**	B	**3RT20 17-2MB42-0KT0**

For online configurator see www.siemens.com/sirius/configurators.

For surge suppressors see page 3/56.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RT20 coupling contactors (interface), 3-pole, 3 ... 15 kW

DC operation
Low power consumption
Extended operating range of the solenoid coil
Integrated coil circuit

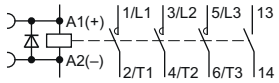
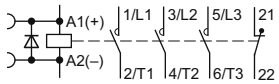
PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B



3RT20 1.-1.B4.



3RT20 1.-2.B4.

Rated data AC-2 and AC-3 T_u: Up to 60 °C		Auxiliary contacts		DT	Screw terminals	DT	Spring-type terminals
					Configurator		Configurator
Operational current I_e up to 400 V	Ratings of induction motors at 50 Hz and **400 V**	Ident. No.	Version		Order No. Price per PU		Order No. Price per PU
A	**kW**		NO NC				
For screw fixing and snap-on mounting onto TH 35 standard mounting rail							
Size S00							
With integrated coil circuit (diode)							
(no auxiliary switch blocks can be mounted)							
• 1 NO, Ident. No. **10** 							
• 1 NC, Ident. No. **01** 							
Rated control supply voltage U_S = 24 V DC, coil operating range **0.7 to 1.25** x U_S Power consumption of the solenoid coils **2.8 W** at 24 V							
7	**3**	**10**	1 --	B	**3RT20 15-1JB41**	B	**3RT20 15-2JB41**
		01	-- 1	B	**3RT20 15-1JB42**	B	**3RT20 15-2JB42**
9	**4**	**10**	1 --	▶	**3RT20 16-1JB41**	B	**3RT20 16-2JB41**
		01	-- 1	▶	**3RT20 16-1JB42**	B	**3RT20 16-2JB42**
12	**5.5**	**10**	1 --	B	**3RT20 17-1JB41**	B	**3RT20 17-2JB41**
		01	-- 1	B	**3RT20 17-1JB42**	B	**3RT20 17-2JB42**
Rated control supply voltage U_S = 24 V DC, coil operating range **0.85 to 1.85 x U_S** Power consumption of the solenoid coils **1.6 W** at 24 V							
7	**3**	**10**	1 --	B	**3RT20 15-1VB41**	B	**3RT20 15-2VB41**
		01	-- 1	B	**3RT20 15-1VB42**	B	**3RT20 15-2VB42**
9	**4**	**10**	1 --	B	**3RT20 16-1VB41**	B	**3RT20 16-2VB41**
		01	-- 1	B	**3RT20 16-1VB42**	B	**3RT20 16-2VB42**
12	**5.5**	**10**	1 --	B	**3RT20 17-1VB41**	B	**3RT20 17-2VB41**
		01	-- 1	B	**3RT20 17-1VB42**	B	**3RT20 17-2VB42**

For online configurator see www.siemens.com/sirius/configurators.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RT20 coupling contactors (interface), 3-pole, 3 ... 15 kW

DC operation
Low power consumption
Extended operating range of the solenoid coil
Integrated coil circuit

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B



3RT20 1.-1.B4.



3RT20 1.-2.B4.

Rated data AC-2 and AC-3 T_u: Up to 60 °C		Auxiliary contacts		DT	Screw terminals	DT	Spring-type terminals
					Configurator		Configurator
Operational current I_e up to	Ratings of induction motors at 50 Hz and	Ident. No.	Version		Order No. Price per PU		Order No. Price per PU
400 V	**400 V**						
A	**kW**		NO NC				
For screw fixing and snap-on mounting onto TH 35 standard mounting rail							
Size S00							
With integrated coil circuit (suppressor diode)							
(no auxiliary switch blocks can be mounted)							
• 1 NO, Ident. No. **10**							
• 1 NC, Ident. No. **01**							
Rated control supply voltage U_s = 24 V DC, coil operating range **0.7 to 1.25** x U_s Power consumption of the solenoid coils **2.8 W** at 24 V							
7	**3**	**10**	1 --	B	**3RT20 15-1KB41**	B	**3RT20 15-2KB41**
		01	-- 1	B	**3RT20 15-1KB42**	▶	**3RT20 15-2KB42**
9	**4**	**10**	1 --	▶	**3RT20 16-1KB41**	B	**3RT20 16-2KB41**
		01	-- 1	B	**3RT20 16-1KB42**	B	**3RT20 16-2KB42**
12	**5.5**	**10**	1 --	B	**3RT20 17-1KB41**	▶	**3RT20 17-2KB41**
		01	-- 1	B	**3RT20 17-1KB42**	▶	**3RT20 17-2KB42**
Rated control supply voltage U_s = 24 V DC, coil operating range **0.85 to 1.85 x U_s** Power consumption of the solenoid coils **1.6 W** at 24 V							
7	**3**	**10**	1 --	B	**3RT20 15-1SB41**	B	**3RT20 15-2SB41**
		01	-- 1	B	**3RT20 15-1SB42**	B	**3RT20 15-2SB42**
9	**4**	**10**	1 --	B	**3RT20 16-1SB41**	B	**3RT20 16-2SB41**
		01	-- 1	B	**3RT20 16-1SB42**	B	**3RT20 16-2SB42**
12	**5.5**	**10**	1 --	B	**3RT20 17-1SB41**	B	**3RT20 17-2SB41**
		01	-- 1	B	**3RT20 17-1SB42**	B	**3RT20 17-2SB42**

For online configurator see www.siemens.com/sirius/configurators.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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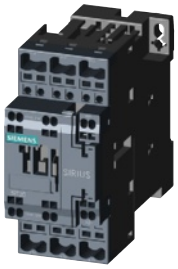
SIRIUS 3RT20 coupling contactors (interface), 3-pole, 3 ... 15 kW

DC operation
Low power consumption
Extended operating range of the solenoid coil
Integrated coil circuit

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

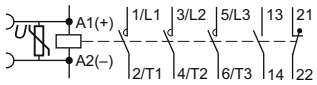


3RT20 2.-1KB40



3RT20 2.-2KB40

Rated data AC-2 and AC-3 T_u: Up to 60 °C		Auxiliary contacts		DT	**Screw terminals**	DT	**Spring-type terminals**
Operational current I_e up to	Ratings of induction motors at 50 Hz and	Ident. No.	Version		**Configurator**		**Configurator**
400 V	**400 V**				Order No. Price per PU		Order No. Price per PU
A	**kW**		NO NC				
For screw fixing and snap-on mounting onto TH 35 standard mounting rail							
Size S0							
With integrated coil circuit (varistor)							
(no auxiliary switch blocks can be mounted)							
1 NO + 1 NC, Ident. No. **11**							



Rated control supply voltage U_s = 24 V DC, coil operating range **0.7 to 1.25 x U_s**
Power consumption of the solenoid coils **4.5 W** at 24 V

12	**5.5**	**11**	1	1	► **3RT20 24-1KB40**	B	**3RT20 24-2KB40**
17	**7.5**	**11**	1	1	► **3RT20 25-1KB40**	B	**3RT20 25-2KB40**
25	**11**	**11**	1	1	► **3RT20 26-1KB40**	B	**3RT20 26-2KB40**
32	**15**	**11**	1	1	► **3RT20 27-1KB40**	B	**3RT20 27-2KB40**

For online configurator see www.siemens.com/sirius/configurators.

For accessories see page 3/53.

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Overview

The 3RA23 contactor assemblies for reversing can be ordered as follows:

Size S00 and S0

- Fully wired and tested, with mechanical and electrical interlock
- For assemblies with AC operation and 50/60 Hz, a dead interval of 50 ms must be provided when used with voltages ≥ 500 V; a dead interval of 30 ms is recommended for use with voltages ≥ 400 V. These dead times do not apply to assemblies with DC operation.
- As individual parts for customer assembly

There is also a range of accessories (auxiliary switch blocks, surge suppressors, etc.) that must be ordered separately.

Overload relays for motor protection see Chapter 7 "Protection Equipment" → "Overload Relays".

The 3RA23 contactor assemblies have screw or spring-type terminals (main and control circuits) and are suitable for screwing or snapping onto TH 35 standard mounting rails.

Complete reversing contactor assemblies

The fully wired reversing contactor assemblies are suitable for use in any climate. They are finger-safe according to EN 61140.

The contactor assemblies size S00 and S0 each consist of 2 contactors with the same power, with one NC contact (S00) or one NO contact and one NC contact (S0) in the basic unit. The contactors are mechanically and electrically interlocked (NC contact interlock).

For motor protection, either 3RU2 or 3RB3 overload relays for direct mounting or stand-alone installation or thermistor motor protection releases must be ordered separately.

Screw terminals

Rated data AC-2 and AC-3 for 50 Hz 400 V AC		Size	Order No.		
Rating	Operational current I_e		Contactor	Assembly kit	**Fully wired and tested contactor assemblies**
kW	A				
3	7	**S00**	3RT20 15-1…2	3RA29 13-2AA1	**3RA23 15-8XB30-1…**
4	9		3RT20 16-1…2		**3RA23 16-8XB30-1…**
5.5	12		3RT20 17-1…2		**3RA23 17-8XB30-1…**
7.5	16		3RT20 18-1…2		**3RA23 18-8XB30-1…**
5.5	12	**S0**	3RT20 24-1…0	3RA29 23-2AA1	**3RA23 24-8XB30-1…**
7.5	16		3RT20 25-1…0		**3RA23 25-8XB30-1…**
11	25		3RT20 26-1…0		**3RA23 26-8XB30-1…**
15	32		3RT20 27-1…0		**3RA23 27-8XB30-1…**
18.5	38		3RT20 28-1…0		**3RA23 28-8XB30-1…**

Spring-type terminals

Rated data AC-2 and AC-3 for 50 Hz 400 V AC		Size	Order No.		
Rating	Operational current I_e		Contactor	Assembly kit	**Fully wired and tested contactor assemblies**
kW	A				
3	7	**S00**	3RT20 15-2…2	3RA29 13-2AA2[1)]	**3RA23 15-8XB30-2…**
4	9		3RT20 16-2…2		**3RA23 16-8XB30-2…**
5.5	12		3RT20 17-2…2		**3RA23 17-8XB30-2…**
7.5	16		3RT20 18-2…2		**3RA23 18-8XB30-2…**
5.5	12	**S0**	3RT20 24-2…0	3RA29 23-2AA2[2)]	**3RA23 24-8XB30-2…**
7.5	16		3RT20 25-2…0		**3RA23 25-8XB30-2…**
11	25		3RT20 26-2…0		**3RA23 26-8XB30-2…**
15	32		3RT20 27-2…0		**3RA23 27-8XB30-2…**
18.5	38		3RT20 28-2…0		**3RA23 28-8XB30-2…**

1) The assembly kit contains: mechanical interlock; connecting clips for 2 contactors; wiring modules on the top and bottom (main, control and auxiliary circuits).

2) The assembly kit contains: mechanical interlock; connecting clips for 2 contactors; wiring modules on the top and bottom (main circuits).

Reversing contactor assemblies with communication interface

The reversing contactor assemblies with communication interface are essential for mounting the function modules for connection to the control system via the communication system.

For further information on IO-Link and AS-Interface see Chapter 2, "Industrial Communication".

Components for customer assembly

Assembly kits for all sizes are available for customer assembly of reversing contactor assemblies.

Contactors, overload relays and – for momentary-contact operation – auxiliary switch blocks for latching (required only for S00; with S0 the NO contacts integrated in the basic device can be used) must be ordered separately.

Operating times

The operating times of the 3RT20 individual contactors are rated in such a way that no overlapping of the contact making and the arcing time between two contactors can occur on reversing, providing they are interlocked by way of their auxiliary switches (NC contact interlock) and the mechanical interlock. For assemblies with AC operation and 50/60 Hz, a dead interval of 50 ms must be provided when used with voltages ≥ 500 V; a dead interval of 30 ms is recommended for use with voltages ≥ 400 V. These dead times do not apply to assemblies with DC operation.

The operating times of the individual contactors are not affected by the mechanical interlock.

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SIRIUS 3RA23 reversing contactor assemblies

Order No. scheme

Digit of the Order No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th		13th	14th	15th	16th
	□□□	□	□	□	□	–	□	□	□	□	□	–	□	□	□	□
SIRIUS contactor assemblies	**3 R A**															
2nd generation		**2**														
Device type (e.g. 3 = reversing contactor assembly)			**3**													
Contactor size (1 = S00, 2 = S0)				□												
Power dependent on size (e.g. 27 = 15 kW)					□											
Type of overload relay (8X = without)							□	□								
Assembly (B = ready-assembled, E = ready-assembled with communication)									□							
Interlock (3 = mechanical and electrical)										□						
Free auxiliary switches (e.g. S00: 0 = none, S0: 0 = 2 NO total)											□					
Connection type (1 = screw, 2 = spring)													□			
Operating range / solenoid coil circuit (e.g. A = AC standard / without)														□		
Rated control supply voltage (e.g. L2 = 230 V, 50/60 Hz)															□	□
Example	**3 R A**	**2**	**3**	**2**	**7**	**–**	**8**	**X**	**B**	**3**	**0**	**–**	**1**	**A**	**L**	**2**

Note:

The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quoted in the catalog in the Selection and ordering data.

Benefits

Using wiring kits for reversing starters has the following advantages:

- Notable reduction of wiring in the control circuit
- Integrated mechanical interlocking
- Prevention of wiring errors in the main circuit

Connecting combs for screw terminals also result in:

- Prevention of wiring errors in the control circuit
- Reduction of testing costs
- Ready-jumpered actuation of the auxiliary switches and the frame (A2)
- Integrated electrical interlocking

Accessories

Selecting the auxiliary switches

The following points should be noted:

Size S00

- For maintained-contact operation:
  Use contactors with an NC contact in the basic unit for the electrical interlock.
- For momentary-contact operation:
  Use contactors with an NC contact in the basic unit for the electrical interlock; in addition, an auxiliary switch block with at least one NO contact for latching is required per contactor.

Size S0

- For maintained-contact operation:
  The contactors have two integrated auxiliary contacts (1 NO + 1 NC); the NC contact can be used for electrical interlocking.
- For momentary-contact operation:
  Electrical interlock as for maintained-contact operation; the NO contact in the basic device can be used for the latching.

Surge suppression

Sizes S00 and S0

All contactor assemblies can be fitted with RC elements or varistors for damping opening surges in the coil.

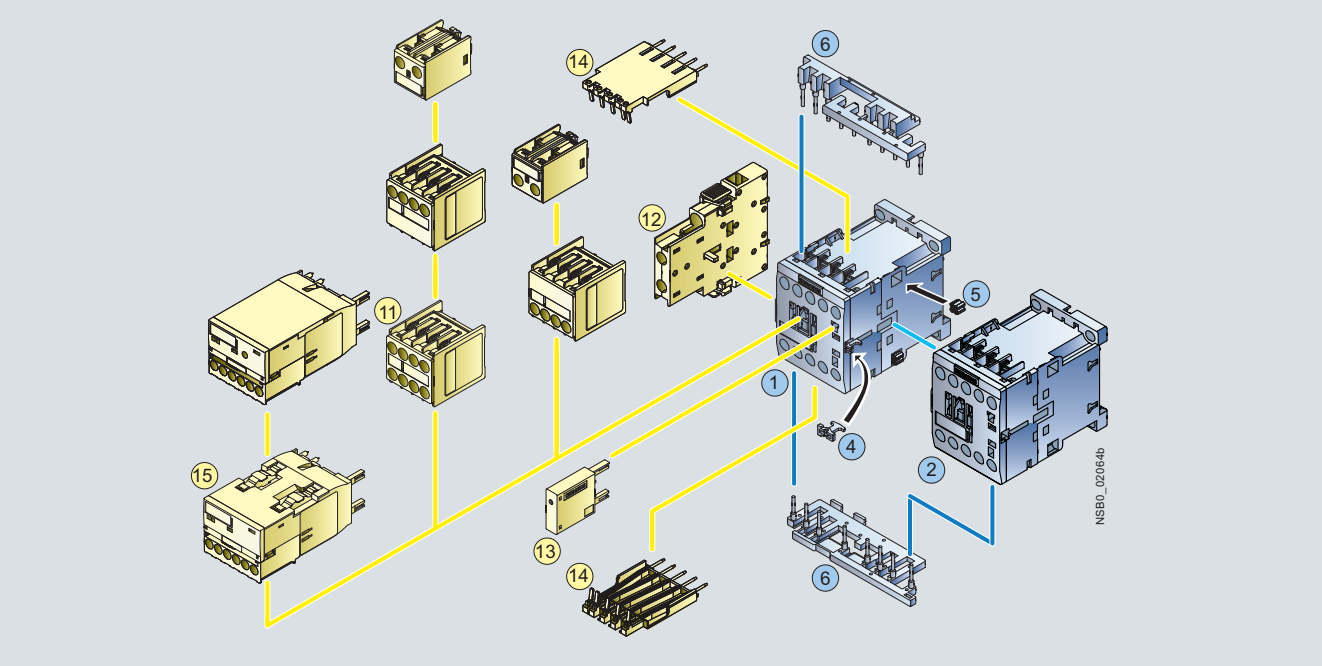
As with the individual contactors, the surge suppressors can either be plugged onto the top of the contactors (S00) or be plugged into the front of the contactors (S0).

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Selection and ordering data

Fully wired and tested contactor assemblies · Size S00 · up to 7.5 kW

The figure shows the version with screw terminals



Mountable accessories (optional)

To be ordered separately	Order No.	Page
(11) Auxiliary switch block, front[1]	3RH29 11-1....	3/50
(12) Auxiliary switch block, lateral	3RH29 21-1DA..	3/52
(13) Surge suppressors	3RT29 16-1....	3/56
(14) Solder pin adapters	3RT19 16-4KA1	3/59
(15) Function module for connection to the control system	3RT27 1.-1BA00	3/152

Complete contactor assemblies

Individual parts		Order No. Q11	Order No. Q12	Page
(1)(2)	Contactor, 3 kW	3RT20 15	3RT20 15	3/26, 3/31
(1)(2)	Contactor, 4 kW	3RT20 16	3RT20 16	3/26, 3/31
(1)(2)	Contactor, 5.5 kW	3RT20 17	3RT20 17	3/26, 3/31
(1)(2)	Contactor, 7.5 kW	3RT20 18	3RT20 18	3/26, 3/31
(4)(5)(6)	Assembly kit comprising:	3RA29 13-2AA1		3/151
	(4) Mechanical interlocks			
	(5) 2 connecting clips for 2 contactors			
	(6) Wiring modules on the top and bottom for connecting the main current paths, electrical interlock included[2], interruptible (NC contact interlock)			

[1] Auxiliary switch block according to EN 50005 must be used.

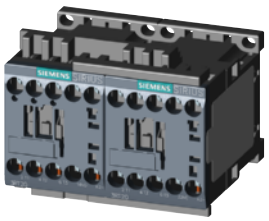
[2] 3RT20 1. contactors with one NC contact in the basic unit are required for the electrical interlock. An additional NO contact is required for momentary-contact operation. For circuit diagrams see operating instructions.

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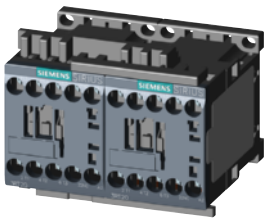
SIRIUS 3RA23 reversing contactor assemblies

Fully wired and tested contactor assemblies[2] · Size S00 · up to 7.5 kW

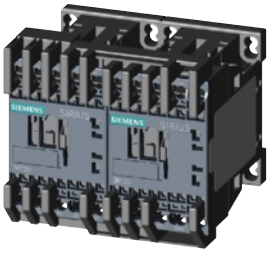
PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B



3RA23 1. -8XE30-1BB4



3RA23 1. -8XB30-1A. 0



3RA23 1. -8XB30-2A. 0

Rated data AC-2 and AC-3					Rated control supply voltage	DT	Screw terminals	DT	Spring-type terminals
Operational current I_e up to	Rating of induction motors at 50 Hz and				U_s[1]		Order No. Price per PU		Order No. Price per PU
400 V	230 V	**400 V**	500 V	690 V					
A	kW	**kW**	kW	kW	V				
AC operation, 50/60 Hz									
7	2.2	**3**	3.5	4	24 AC	B	**3RA23 15-8XB30-1AB0**	B	**3RA23 15-8XB30-2AB0**
					110 AC	B	**3RA23 15-8XB30-1AF0**	B	**3RA23 15-8XB30-2AF0**
					230 AC	A	**3RA23 15-8XB30-1AP0**	A	**3RA23 15-8XB30-2AP0**
9	3	**4**	4.5	5.5	24 AC	B	**3RA23 16-8XB30-1AB0**	B	**3RA23 16-8XB30-2AB0**
					110 AC	B	**3RA23 16-8XB30-1AF0**	B	**3RA23 16-8XB30-2AF0**
					230 AC	A	**3RA23 16-8XB30-1AP0**	A	**3RA23 16-8XB30-2AP0**
12	3	**5.5**	5.5	5.5	24 AC	B	**3RA23 17-8XB30-1AB0**	B	**3RA23 17-8XB30-2AB0**
					110 AC	B	**3RA23 17-8XB30-1AF0**	B	**3RA23 17-8XB30-2AF0**
					230 AC	A	**3RA23 17-8XB30-1AP0**	A	**3RA23 17-8XB30-2AP0**
16	4	**7.5**	7.5	7.5	24 AC	B	**3RA23 18-8XB30-1AB0**	B	**3RA23 18-8XB30-2AB0**
					110 AC	B	**3RA23 18-8XB30-1AF0**	B	**3RA23 18-8XB30-2AF0**
					230 AC	A	**3RA23 18-8XB30-1AP0**	A	**3RA23 18-8XB30-2AP0**
DC operation									
7	2.2	**3**	3.5	4	24 DC	A	**3RA23 15-8XB30-1BB4**	A	**3RA23 15-8XB30-2BB4**
9	3	**4**	4.5	5.5	24 DC	A	**3RA23 16-8XB30-1BB4**	A	**3RA23 16-8XB30-2BB4**
12	3	**5.5**	5.5	5.5	24 DC	A	**3RA23 17-8XB30-1BB4**	A	**3RA23 17-8XB30-2BB4**
16	4	**7.5**	7.5	7.5	24 DC	A	**3RA23 18-8XB30-1BB4**	A	**3RA23 18-8XB30-2BB4**
With communication interface									
7	2.2	**3**	3.5	4	24 DC	A	**3RA23 15-8XE30-1BB4**	B	**3RA23 15-8XE30-2BB4**
9	3	**4**	4.5	5.5	24 DC	A	**3RA23 16-8XE30-1BB4**	B	**3RA23 16-8XE30-2BB4**
12	3	**5.5**	5.5	5.5	24 DC	A	**3RA23 17-8XE30-1BB4**	A	**3RA23 17-8XE30-2BB4**
16	4	**7.5**	7.5	7.5	24 DC	A	**3RA23 18-8XE30-1BB4**	A	**3RA23 18-8XE30-2BB4**

[1] Coil operating range
at 50 Hz: 0.8 ... 1.1 x U_s;
at 60 Hz: 0.85 ... 1.1 x U_s.

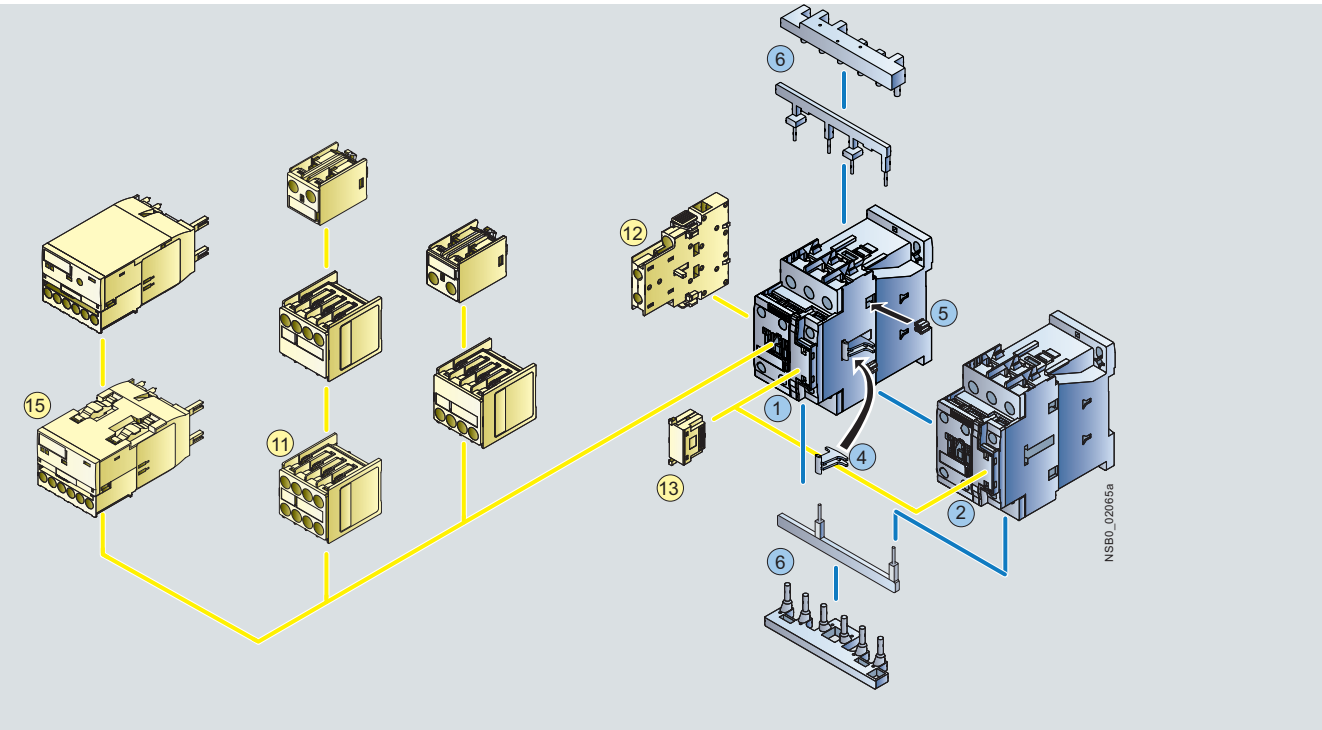
[2] The contactors integrated in the contactor assemblies have no unassigned auxiliary contacts. When used with a communication interface and function module, the auxiliary contacts are unassigned.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Fully wired and tested contactor assemblies · Size S0 · up to 18.5 kW

The figure shows the version with screw terminals



Mountable accessories (optional)

To be ordered separately	Order No.	Page
11 Auxiliary switch block, front	3RH29 21-1....	3/50
12 Auxiliary switch block, lateral	3RH29 21-1DA..	3/52
13 Surge suppressors	3RT29 26-1....	3/56
15 Function module for connection to the control system	3RT27 1.-1BA00	3/152

Complete contactor assemblies

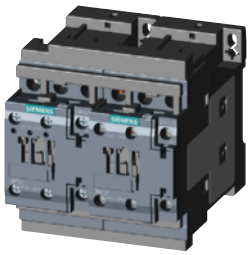
Individual parts		Order No. Q11	Order No. Q12	Page
1 2	Contactor, 5.5 kW	3RT20 24	3RT20 24	3/28, 3/33
1 2	Contactor, 7.5 kW	3RT20 25	3RT20 25	3/28, 3/33
1 2	Contactor, 11 kW	3RT20 26	3RT20 26	3/28, 3/33
1 2	Contactor, 15 kW	3RT20 27	3RT20 27	3/28, 3/33
1 2	Contactor, 18.5 kW	3RT20 28	3RT20 28	3/28, 3/33
4 5 6	Assembly kit comprising:	3RA29 23-2AA1		3/151
	4 Mechanical interlocks			
	5 2 connecting clips for 2 contactors			
	6 Wiring modules on the top and bottom for connecting the main current paths, electrical interlock included (NC contact interlock)			

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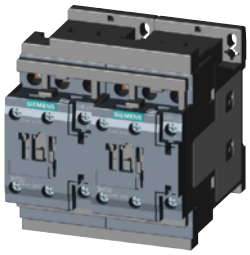
SIRIUS 3RA23 reversing contactor assemblies

Fully wired and tested contactor assemblies · Size S0 · up to 18.5 kW

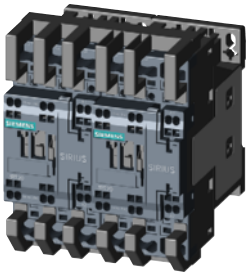
PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B



3RA23 24-8XE30-1BB4



3RA23 2.-8XB30-1A.2



3RA23 2.-8XB30-2A.2

Rated data AC-2 and AC-3					Rated control supply voltage U_s [1]	DT	Screw terminals	DT	Spring-type terminals
Operational current I_e up to	Rating of induction motors at 50 Hz and						Order No. Price per PU		Order No. Price per PU
400 V	230 V	**400 V**	500 V	690 V					
A	kW	**kW**	kW	kW	V				
AC operation, 50/60 Hz									
12	3	**5.5**	7.5	7.5	24 AC	B	**3RA23 24-8XB30-1AC2**	B	**3RA23 24-8XB30-2AC2**
					110 AC	B	**3RA23 24-8XB30-1AG2**	B	**3RA23 24-8XB30-2AG2**
					230 AC	B	**3RA23 24-8XB30-1AL2**	B	**3RA23 24-8XB30-2AL2**
17	4	**7.5**	10	11	24 AC	B	**3RA23 25-8XB30-1AC2**	B	**3RA23 25-8XB30-2AC2**
					110 AC	B	**3RA23 25-8XB30-1AG2**	B	**3RA23 25-8XB30-2AG2**
					230 AC	B	**3RA23 25-8XB30-1AL2**	B	**3RA23 25-8XB30-2AL2**
25	5.5	**11**	11	11	24 AC	B	**3RA23 26-8XB30-1AC2**	B	**3RA23 26-8XB30-2AC2**
					110 AC	B	**3RA23 26-8XB30-1AG2**	B	**3RA23 26-8XB30-2AG2**
					230 AC	B	**3RA23 26-8XB30-1AL2**	B	**3RA23 26-8XB30-2AL2**
32	7.5	**15**	18.5	18.5	24 AC	B	**3RA23 27-8XB30-1AC2**	B	**3RA23 27-8XB30-2AC2**
					110 AC	B	**3RA23 27-8XB30-1AG2**	B	**3RA23 27-8XB30-2AG2**
					230 AC	B	**3RA23 27-8XB30-1AL2**	B	**3RA23 27-8XB30-2AL2**
38	7.5	**18.5**	18.5	18.5	24 AC	B	**3RA23 28-8XB30-1AC2**	B	**3RA23 28-8XB30-2AC2**
					110 AC	B	**3RA23 28-8XB30-1AG2**	B	**3RA23 28-8XB30-2AG2**
					230 AC	B	**3RA23 28-8XB30-1AL2**	B	**3RA23 28-8XB30-2AL2**
DC operation									
12	3	**5.5**	7.5	7.5	24 DC	A	**3RA23 24-8XB30-1BB4**	A	**3RA23 24-8XB30-2BB4**
17	4	**7.5**	10	11	24 DC	A	**3RA23 25-8XB30-1BB4**	A	**3RA23 25-8XB30-2BB4**
25	5.5	**11**	11	11	24 DC	A	**3RA23 26-8XB30-1BB4**	A	**3RA23 26-8XB30-2BB4**
32	7.5	**15**	18.5	18.5	24 DC	A	**3RA23 27-8XB30-1BB4**	A	**3RA23 27-8XB30-2BB4**
38	7.5	**18.5**	18.5	18.5	24 DC	A	**3RA23 28-8XB30-1BB4**	A	**3RA23 28-8XB30-2BB4**
With communication interface									
12	3	**5.5**	7.5	7.5	24 DC	A	**3RA23 24-8XE30-1BB4**	A	**3RA23 24-8XE30-2BB4**
17	4	**7.5**	10	11	24 DC	A	**3RA23 25-8XE30-1BB4**	A	**3RA23 25-8XE30-2BB4**
25	5.5	**11**	11	11	24 DC	A	**3RA23 26-8XE30-1BB4**	A	**3RA23 26-8XE30-2BB4**
32	7.5	**15**	18.5	18.5	24 DC	A	**3RA23 27-8XE30-1BB4**	A	**3RA23 27-8XE30-2BB4**
38	7.5	**18.5**	18.5	18.5	24 DC	A	**3RA23 28-8XE30-1BB4**	A	**3RA23 28-8XE30-2BB4**

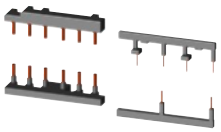
[1] Coil operating range
at 50 Hz: 0.8 ... 1.1 × U_s; at 60 Hz: 0.85 ... 1.1 × U_s.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

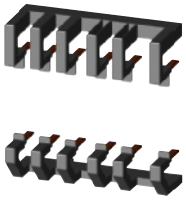
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Components for customer assembly

PU (UNIT, SET, M) = 1
PS* = 1 unit (unless otherwise specified)
PG = 41B



3RA29 23-2AA1



3RA29 23-2AA2

For contactors Type	Size	Version		DT	Screw terminals Order No.	Price per PU	DT	Spring-type terminals Order No.	Price per PU
Assembly kits for making 3-pole contactor assemblies									
3RT20 1	**S00-S00**	The assembly kit contains: Mechanical interlock; 2 connecting clips for 2 contactors, wiring modules on the top and bottom							
		• For main, auxiliary and control circuits		▶	**3RA29 13-2AA1**		▶	**3RA29 13-2AA2**	
3RT20 2	**S0-S0**	The assembly kit contains: Mechanical interlock; 2 connecting clips for 2 contactors, wiring modules on the top and bottom							
		• For main, auxiliary and control circuits		▶	**3RA29 23-2AA1**			**--**	
		• Only for main circuit[1]			**--**		▶	**3RA29 23-2AA2**	
3RT20 2	**S0-S0**	The assembly kit contains: Mechanical interlock; 2 connecting clips for 2 contactors, wiring modules on the top and bottom, 3-phase feeder terminals							
		• For main, auxiliary and control circuits		B	**3RA29 24-2BB1**			**--**	
Wiring modules (single)									
3RT20 1	**S00-S00**	Top (in-phase)	PS = 5 units	B	**3RA29 13-3DA1**		B	**3RA29 13-3DA2**	
		Bottom (with phase reversal)	PS = 5 units	B	**3RA29 13-3EA1**		B	**3RA29 13-3EA2**	
3RT20 2	**S0-S0**	Top (in-phase)	PS = 5 units	B	**3RA29 23-3DA1**		B	**3RA29 23-3DA2**	
		Bottom (with phase reversal)	PS = 5 units	B	**3RA29 23-3EA1**		B	**3RA29 23-3EA2**	
Mechanical connectors									
		For lateral interlock, without contactor clearance							
3RT20 1, 3RT23 1	**S00-S00**	For 3- and 4-pole contactors	PS = 10 units	B	**3RA29 12-2H**		B	**3RA29 12-2H**	
3RT20 2, 3RT23 2	**S0-S0**	For 3- and 4-pole contactors	PS = 10 units	B	**3RA29 22-2H**		B	**3RA29 22-2H**	

[1] Version in size S0 with spring-type terminals:
Only the wiring modules for the main circuit are included.
No connectors are included for the auxiliary and control circuit.

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SIRIUS 3RA23 reversing contactor assemblies

Components for customer assembly

PU (UNIT, SET, M) = 1
PS* = 1 unit (unless otherwise specified)
PG = 41B



3RA27 11-1BA00



3RA27 11-2BA00

For contactors Type	Size	Version		DT	Screw terminals Order No.	Price per PU	DT	Spring-type terminals Order No.	Price per PU
Function modules for connection to the control system									
3RT20 1, 3RT20 2	**S00, S0**	**IO-Link connection**, comprising one basic and one coupling module and an additional module connector for assembling an IO-Link group		A	**3RA27 11-1BA00**		A	**3RA27 11-2BA00**	
3RT20 1, 3RT20 2	**S00, S0**	**AS-Interface connection**, comprising one basic and one coupling module		A	**3RA27 12-1BA00**		A	**3RA27 12-2BA00**	
Accessories for 3RA27 function modules									
3RT20 1, 3RT20 2	**S00, S0**	**Module connector set**, comprising: • 2 module connectors, 14-pole, short + 2 interface covers		A	**3RA27 11-0EE01**		A	**3RA27 11-0EE01**	
		Module connectors							
3RT20 1, 3RT20 2	**S00, S0**	14-pole, 8 cm • For size jump S00-S0 + 1 space		A	**3RA27 11-0EE02**		A	**3RA27 11-0EE02**	
3RT20 1, 3RT20 2	**S00, S0**	14-pole, 21 cm • For various space combinations		A	**3RA27 11-0EE03**		A	**3RA27 11-0EE03**	
3RT20 1, 3RT20 2	**S00, S0**	10-pole, 8 cm • For separate auxiliary voltage supply within an IO-Link group		A	**3RA27 11-0EE04**		A	**3RA27 11-0EE04**	
3RT20 1, 3RT20 2	**S00, S0**	**Sealable covers**	PS = 5 units	A	**3RA29 10-0**		A	**3RA29 10-0**	

Operator panels for IO-Link see page 3/187.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

The 3RA13 reversing contactor assemblies can be ordered as follows:

Sizes S2 and S3

- Fully wired and tested, with mechanical and electrical interlock
- For assemblies with AC operation and 50/60 Hz, a dead interval of 50 ms must be provided when used with voltages ≥ 500 V; a dead interval of 30 ms is recommended for use with voltages ≥ 400 V. These dead times do not apply to assemblies with DC operation.

Sizes S2 to S12

- As individual parts for customer assembly

There is also a range of accessories (auxiliary switch blocks, surge suppressors, etc.) that must be ordered separately.

Overload relays for motor protection see Chapter 7 "Protection Equipment" ➞ "Overload Relays".

The 3RA13 contactor assemblies have screw terminals and are suitable for screw fixing and snap-on mounting onto TH 35 standard mounting rails.

Complete units

The fully wired reversing contactor assemblies are suitable for use in any climate. They are finger-safe according to EN 50274.

The contactor assemblies consist of 2 contactors with the same power, with one NC contact in the basic unit. The contactors are mechanically and electrically interlocked (NC contact interlock).

For motor protection, either 3RU11 or 3RB2. overload relays for direct mounting or stand-alone installation or thermistor motor protection releases must be ordered separately.

Components for customer assembly

Assembly kits for all sizes are available for customer assembly of reversing contactor assemblies.

Contactors, overload relays, the mechanical interlock (as of size S2) and – for momentary-contact operation – auxiliary switch blocks for latching must be ordered separately.

Rated data AC-2 and AC-3 for 50 Hz 400 V AC		Size	Order No.					
Rating	Operational current I_e		Contactor	Mechanical interlock[1]	Mechanical interlock[2]	Mechanical interlock[3]	Assembly kit	**Fully wired and tested contactor assemblies**
kW	A							
15	32	**S2**	3RT10 34	3RA19 24-1A	3RA19 24-2B	--	3RA19 33-2A[4]	**3RA13 34-8XB30-1…**
18.5	40		3RT10 35					**3RA13 35-8XB30-1…**
22	50		3RT10 36					**3RA13 36-8XB30-1…**
30	65	**S3**	3RT10 44	3RA19 24-1A	3RA19 24-2B	--	3RA19 43-2A[4]	**3RA13 44-8XB30-1…**
37	80		3RT10 45					**3RA13 45-8XB30-1…**
45	95		3RT10 46					**3RA13 46-8XB30-1…**
55	115	**S6**	3RT10 54	--	--	3RA19 54-2A	3RA19 53-2M[5]	**--**
75	150		3RT10 55					
90	185		3RT10 56					
110	225	**S10**	3RT10 64	--	--	3RA19 54-2A	3RA19 63-2A[5]	**--**
132	265		3RT10 65					
160	300		3RT10 66					
200	400	**S12**	3RT10 75	--	--	3RA19 54-2A	3RA19 73-2A[5]	**--**
250	500		3RT10 76					

1) Can be mounted onto the front.

2) Laterally mountable with one auxiliary contact.

3) Laterally mountable without auxiliary contact.

4) Assembly kit contains: 2 connecting clips for contactors; wiring modules on the top and bottom.

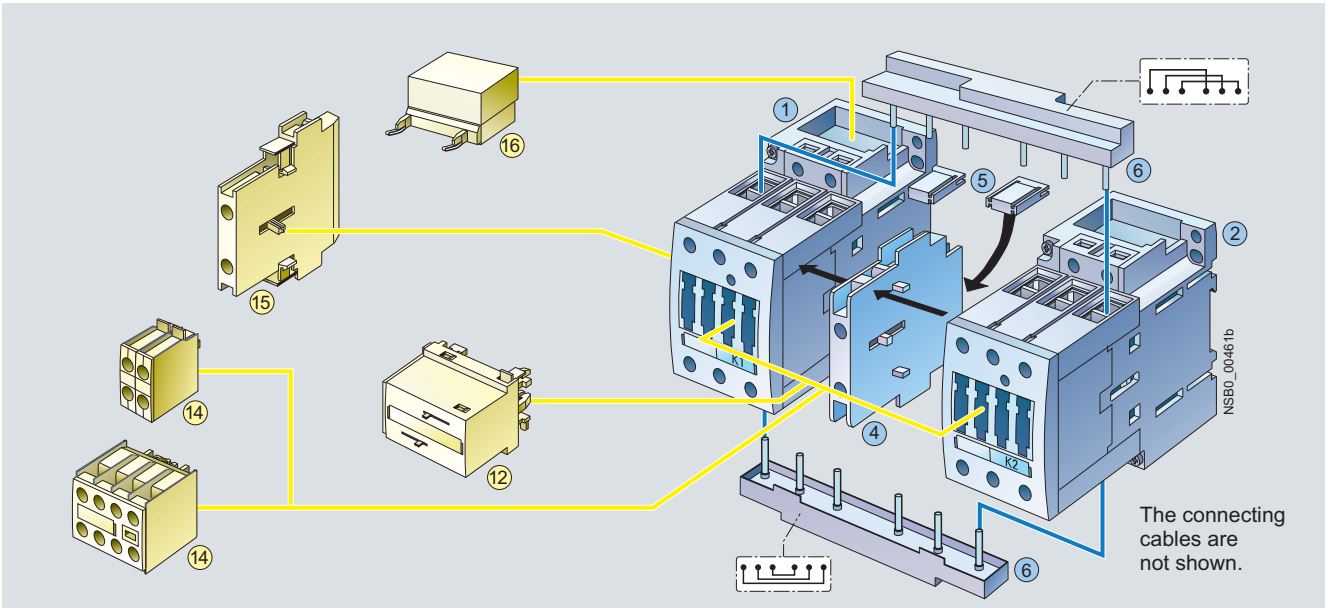
5) Assembly kit contains: wiring module on the top and bottom.

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SIRIUS 3RA13 reversing contactor assemblies

Selection and ordering data

Fully wired and tested contactor assemblies · Size S2 · up to 22 kW



Mountable accessories (optional)

	To be ordered separately	Order No.	Page
12	Mechanical interlock, front	3RA19 24-1A	3/156
14	Auxiliary switch block, front	3RH19 21-1CA..	3/98
15	Auxiliary switch block, lateral	3RH19 21-1EA..	3/100
16	Surge suppressors	3RT19 26-1.... 3RT19 36-1....	3/103

Complete contactor assemblies

	Individual parts	Order No. Q1	Q2	Page
1 2	Contactor, 15 kW	3RT10 34	3RT10 34	3/78
1 2	Contactor, 18.5 kW	3RT10 35	3RT10 35	3/78
1 2	Contactor, 22 kW	3RT10 36	3RT10 36	3/78
4	Mechanical interlock, lateral	3RA19 24-2B		3/156
5 6	Assembly kit	3RA19 33-2A		3/157

The assembly kit contains:

5 2 connecting clips for 2 contactors with 10 mm distance

6 Wiring modules on the top and bottom for connecting the main current paths



3RA13 3.-8XB30-1...

Rated data AC-2 and AC-3					Rated control supply voltage U_s [1]	DT	Screw terminals		PU (UNIT, SET, M)	PS*	PG
Operational current I_e up to	Rating of induction motors at 50 Hz and						Order No.	Price per PU			
500 V	230 V	**400 V**	500 V	690 V							
A	kW	**kW**	kW	kW	V						
AC operation, 50/60 Hz											
32	7.5	**15**	18.5	18.5	24 AC	A	**3RA13 34-8XB30-1AC2**		1	1 unit	41B
					110 AC	A	**3RA13 34-8XB30-1AG2**		1	1 unit	41B
					230 AC	A	**3RA13 34-8XB30-1AL2**		1	1 unit	41B
40	11	**18.5**	22	22	24 AC	A	**3RA13 35-8XB30-1AC2**		1	1 unit	41B
					110 AC	A	**3RA13 35-8XB30-1AG2**		1	1 unit	41B
					230 AC	A	**3RA13 35-8XB30-1AL2**		1	1 unit	41B
50	15	**22**	30	22	24 AC	B	**3RA13 36-8XB30-1AC2**		1	1 unit	41B
					110 AC	B	**3RA13 36-8XB30-1AG2**		1	1 unit	41B
					230 AC	A	**3RA13 36-8XB30-1AL2**		1	1 unit	41B
DC operation											
32	7.5	**15**	18.5	18.5	24 DC	A	**3RA13 34-8XB30-1BB4**		1	1 unit	41B
40	11	**18.5**	22	22	24 DC	A	**3RA13 35-8XB30-1BB4**		1	1 unit	41B
50	15	**22**	30	22	24 DC	A	**3RA13 36-8XB30-1BB4**		1	1 unit	41B

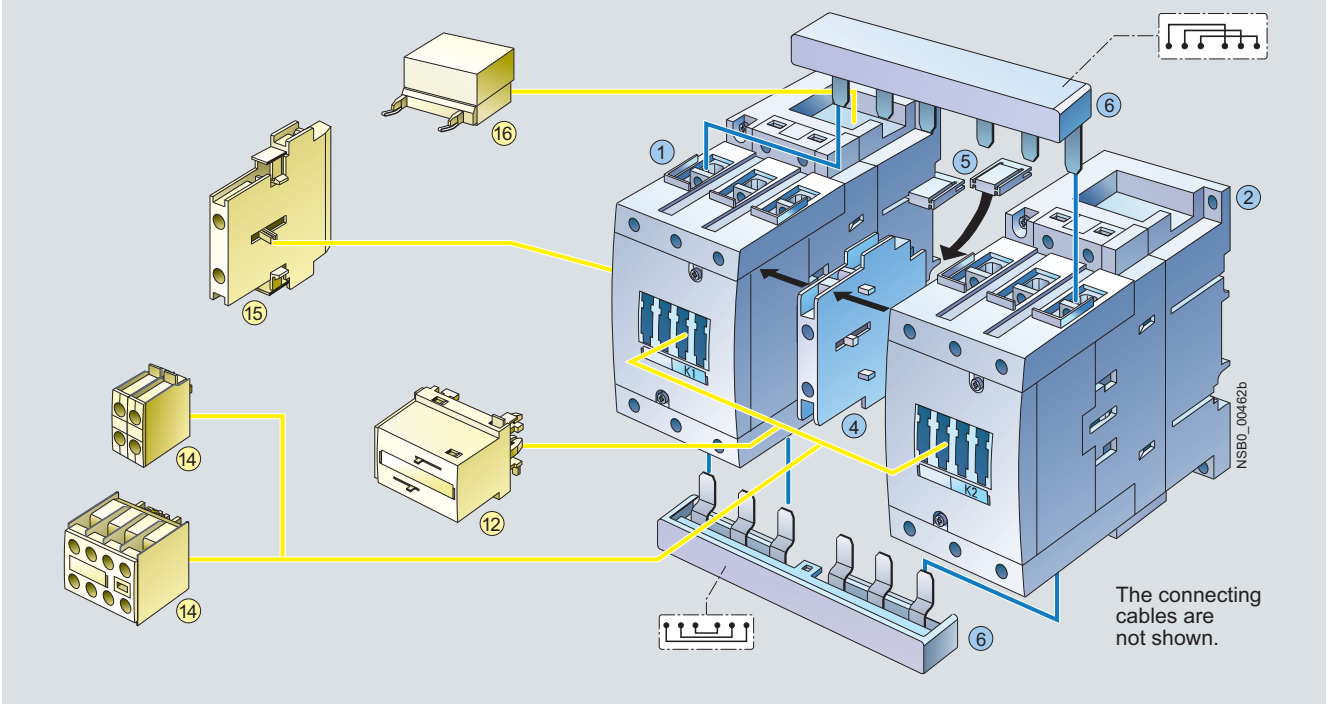
[1] Coil operating range at 50 Hz: 0.8 ... 1.1 x U_s; at 60 Hz: 0.85 ... 1.1 x U_s.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RA13 reversing contactor assemblies

Fully wired and tested contactor assemblies · Size S3 · up to 45 kW



Mountable accessories (optional)

	To be ordered separately	Order No.	Page
12	Mechanical interlock, front	3RA19 24-1A	3/156
14	Auxiliary switch block, front	3RH19 21-1CA..	3/98
15	Auxiliary switch block, lateral	3RH19 21-1EA..	3/100
16	Surge suppressors	3RT19 26-1.... 3RT19 36-1....	3/103

Complete contactor assemblies

	Individual parts	Order No. Q1	Q2	Page
1 2	Contactor, 30 kW	3RT10 44	3RT10 44	3/79
1 2	Contactor, 37 kW	3RT10 45	3RT10 45	3/79
1 2	Contactor, 45 kW	3RT10 46	3RT10 46	3/79
4	Mechanical interlock, lateral	3RA19 24-2B		3/156
5 6	Assembly kit	3RA19 43-2A		3/157

The assembly kit contains:

5 2 connecting clips for 2 contactors with 10 mm distance

6 Wiring modules on the top and bottom for connecting the main current paths



3RA13 4.-8XB30-1...

Rated data AC-2 and AC-3 Operational current I_e up to 500 V	Ratings of induction motors at 50 Hz and 230 V	400 V	500 V	690 V	Rated control supply voltage U_s [1]	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	kW	**kW**	kW	kW	V						
AC operation at 50/60 Hz											
65	18.5	**30**	37	45	24 AC	B	**3RA13 44-8XB30-1AC2**		1	1 unit	41B
					110 AC	B	**3RA13 44-8XB30-1AG2**		1	1 unit	41B
					230 AC	B	**3RA13 44-8XB30-1AL2**		1	1 unit	41B
80	22	**37**	45	55	24 AC	B	**3RA13 45-8XB30-1AC2**		1	1 unit	41B
					110 AC	B	**3RA13 45-8XB30-1AG2**		1	1 unit	41B
					230 AC	B	**3RA13 45-8XB30-1AL2**		1	1 unit	41B
95	22	**45**	55	55	24 AC	B	**3RA13 46-8XB30-1AC2**		1	1 unit	41B
					110 AC	B	**3RA13 46-8XB30-1AG2**		1	1 unit	41B
					230 AC	B	**3RA13 46-8XB30-1AL2**		1	1 unit	41B
DC operation											
65	18.5	**30**	37	45	24 DC	B	**3RA13 44-8XB30-1BB4**		1	1 unit	41B
80	22	**37**	45	55	24 DC	B	**3RA13 45-8XB30-1BB4**		1	1 unit	41B
95	22	**45**	55	55	24 DC	B	**3RA13 46-8XB30-1BB4**		1	1 unit	41B

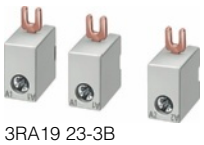
[1] Coil operating range at 50 Hz: 0.8 ... 1.1 x U_s; at 60 Hz: 0.85 ... 1.1 x U_s.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RA13 reversing contactor assemblies

Components for customer assembly

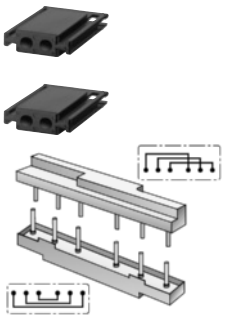
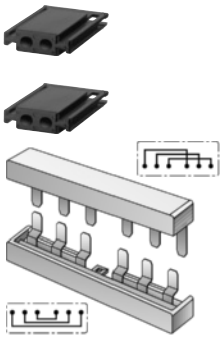
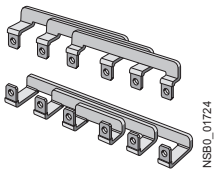
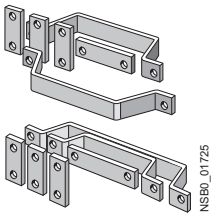
	For contactors Type	Size	Version		Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Mechanical interlocks									
 3RA19 24-1A mounted onto 2 contactors	3RT10 3 3RT10 4 3RT13 3 3RT13 4 3RT14 4 3RT15 3	**S2** **S3**	**Laterally mountable**[1] Each with one auxiliary contact (1 NC contact) per contactor (can only be used to connect contactors which are not more than 1 size larger or smaller). The mounting depth of the smaller contactor has to be adapted.)	►	**3RA19 24-2B**		1	1 unit	41B
	3RT10 3 3RT10 4	**S2** **S3**	**Can be mounted onto the front**[2] Onto contactor sizes S2 and S3 (for contactors of the same size) Note: Sizes S2 and S3: Use 3RA19 32-2C mechanical connectors.	►	**3RA19 24-1A**		1	1 unit	41B
 3RA19 54-2A	3RT1. 5 3RT1. 6 3RT1. 7	**S6** **S10** **S12**	**Laterally mountable**, without auxiliary contacts Contactor sizes S6, S10 and S12 can be interlocked with each other as required; no adaptation of mounting depth is necessary. Contactor clearance 10 mm.	►	**3RA19 54-2A**		1	1 unit	41B
 3RA19 54-2C	3RT10 4.-A with 3RT10 5	**S3** with **S6**	**Adapters, laterally mountable**; for mechanical interlocking of contactor S3 (only for AC operation) with contactor S6 using 3RA19 54-2A locking device (must be ordered separately) incl. connecting clips	A	**3RA19 54-2C**		1	1 unit	41B
Coil repeat terminals									
 3RA19 23-3B	3RT10 3 3RT10 4	**S2, S3**	For the coil terminals A1 and A2 for reversing starters (contactor sizes S2 and S3). 2 x A1 and 1 x A2 required per assembly (one set contains 10 x A1 and 5 x A2)	B	**3RA19 23-3B**		1	1 unit	41B
Base plates									
	3RT10 5 3RT1. 6 3RT1. 7	**S6** **S10** **S12**	For customer assembly of reversing contactor assemblies	B B B	**3RA19 52-2A** **3RA19 62-2A** **3RA19 72-2A**		1 1 1	1 unit 1 unit 1 unit	41B 41B 41B

[1] Can also be used for 4-pole contactors with sizes S2 and S3.

[2] Can also be used for size S0 4-pole contactors.

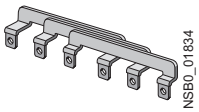
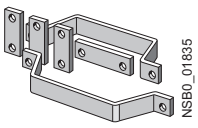
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SIRIUS 3RA13 reversing contactor assemblies

Type	For contactors	Size	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Assembly kits for making 3-pole contactor assemblies									
 3RA19 33-2A	3RT10 3	**S2**	The assembly kit contains: 2 connecting clips for 2 contactors; wiring modules on the top and bottom	▶	**3RA19 33-2A**		1	1 unit	41B
 3RA19 43-2A	3RT10 4	**S3**	The assembly kit contains: 2 connecting clips for 2 contactors; wiring modules on the top and bottom	▶	**3RA19 43-2A**		1	1 unit	41B
 3RA19 53-2A	3RT10 5	**S6**	The assembly kit contains: Wiring modules on the top and bottom (for connection with box terminal)	A	**3RA19 53-2A**		1	1 unit	41B
 3RA19 53-2M	3RT10 5 3RT1. 6 3RT1. 7	**S6** **S10** **S12**	The assembly kit contains: Wiring modules on the top and bottom (for connection without box terminal)	A A A	**3RA19 53-2M** **3RA19 63-2A** **3RA19 73-2A**		1 1 1	1 unit 1 unit 1 unit	41B 41B 41B

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SIRIUS 3RA13 reversing contactor assemblies

	For contactors Type	Size	Contactor clearance mm	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Wiring modules, single										
	3RT10 3	**S2-S2**	10	Top (in-phase)	►	**3RA19 33-3D**		1	1 unit	41B
				Bottom (with phase reversal)	►	**3RA19 33-3E**		1	1 unit	41B
	3RT10 4	**S3-S3**	10	Top (in-phase)	►	**3RA19 43-3D**		1	1 unit	41B
				Bottom (with phase reversal)	►	**3RA19 43-3E**		1	1 unit	41B
 NSB0_01834 3RA19 53-3D	3RT10 5	**S6-S6**	10	Top (in-phase, for connection with box terminal)	A	**3RA19 53-3D**		1	1 unit	41B
 NSB0_01835 3RA19 53-3P				Top (with phase reversal, for connection without box terminal)	A	**3RA19 53-3P**		1	1 unit	41B

	For contactors Type	Size	Contactor clearance mm	Interlocking	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Mechanical connectors							1 pack = 10 units for 10 assemblies				
 3RA19 32-2C	3RT1. 3 3RT1. 4	**S2-S2** **S3-S3**	0	On front	For 3-pole contactors	►	**3RA19 32-2C**		1	10 units	41B
 3RA19 32-2D	3RT1. 3 3RT1. 4 3RT1. 5	**S2-S2** **S3-S3** **S6-S6**	10	Lateral	For 3-pole contactors	►	**3RA19 32-2D**		1	10 units	41B
 3RA19 32-2G	3RT1. 3	**S2-S2**	10	Lateral	For 4-pole contactors	A	**3RA19 32-2G**		1	10 units	41B
 3RA19 42-2G	3RT1. 4	**S3-S3**	10	Lateral	For 4-pole contactors	B	**3RA19 42-2G**		1	10 units	41B

1) This pack contains 10 additional interlocks.

2) The connector function can be fulfilled with the wiring modules for size S0, a contactor clearance of 10 mm and a lateral interlock.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

These 3RA24 contactor assemblies for wye-delta starting are designed for standard applications.

Note:

Contactor assemblies for wye-delta starting in special applications such as very heavy starting[1)] or wye-delta starting of special motors must be customized. Help with designing such special applications is available from Technical Assistance.

The 3RA24 contactor assemblies for wye-delta starting can be ordered as follows:

Sizes S00 and S0

- Fully wired and tested, with electrical and mechanical interlock.
- As individual parts for customer assembly

A dead interval of 50 ms on reversing is already integrated in the function module for wye-delta starting.

There is also a range of accessories (lateral auxiliary switch blocks, etc.) that must be ordered separately.

Overload relays for motor protection see Chapter 7 "Protection Equipment" → "Overload Relays" → "SIRIUS 3RB3 Solid-State Overload Relays".

The 3RA24 contactor assemblies have screw or spring-type terminals and are suitable for screwing or snapping onto TH 35 standard mounting rails.

With the fully wired and tested 3RA24 contactor assemblies, the auxiliary contacts included in the basic devices are unassigned.

1) For effective support from Technical Assistance you must provide the following details:
- Rated motor voltage
- Rated motor current
- Service factor, operating values
- Motor starting current factor
- Starting time
- Ambient temperature

Screw terminals

Rated data at 50 Hz 400 V AC			Size	Order No.		
Rating	Operational current I_e	Motor current		Line/delta contactor	Star contactor	**Complete combinations**
kW	A	A				
5.5	12	9.5 ... 13.8	**S00-S00-S00**	3RT20 15-1....	3RT20 15-1....	**3RA24 15-8XF31-1...**
7.5	16	12.1 ... 17		3RT20 17-1....	3RT20 15-1....	**3RA24 16-8XF31-1...**
11	25	19 ... 25		3RT20 18-1....	3RT20 16-1....	**3RA24 17-8XF31-1...**
11	25	19 ... 25	**S0-S0-S0**	3RT20 24-1...0	3RT20 24-1...0	**3RA24 23-8XF32-1...**
15	32	24.1 ... 34		3RT20 26-1...0	3RT20 24-1...0	**3RA24 25-8XF32-1...**
18.5	40	34.5 ... 40		3RT20 26-1...0	3RT20 24-1...0	**3RA24 25-8XF32-1...**
22	50	31 ... 43		3RT20 27-1...0	3RT20 26-1...0	**3RA24 26-8XF32-1...**

Spring-type terminals

Rated data at 50 Hz 400 V AC			Size	Order No.		
Rating	Operational current I_e	Motor current		Line/delta contactor	Star contactor	**Complete combinations**
kW	A	A				
5.5	12	9.5 ... 13.8	**S00-S00-S00**	3RT20 15-2....	3RT20 15-2....	**3RA24 15-8XF31-2...**
7.5	16	12.1 ... 17		3RT20 17-2....	3RT20 15-2....	**3RA24 16-8XF31-2...**
11	25	19 ... 25		3RT20 18-2....	3RT20 16-2....	**3RA24 17-8XF31-2...**
11	25	19 ... 25	**S0-S0-S0**	3RT20 24-2...0	3RT20 24-2...0	**3RA24 23-8XF32-2...**
15	32	24.1 ... 34		3RT20 26-2...0	3RT20 24-2...0	**3RA24 25-8XF32-2...**
18.5	40	34.5 ... 40		3RT20 26-2...0	3RT20 24-2...0	**3RA24 25-8XF32-2...**
22	50	31 ... 43		3RT20 27-2...0	3RT20 26-2...0	**3RA24 26-8XF32-2...**

Note:

The selection of contactor types refers to fused design.

Motor protection

Overload relays or thermistor motor protection releases can be used for overload protection.

The overload relay can be either mounted onto the line contactor or separately fitted. It must be set to 0.58 times the rated motor current.

Surge suppression

Sizes S00 and S0

Surge suppression (varistor) is included in the function modules for wye-delta starting.

Function modules for wye-delta starting

The 3RA28 16-0EW20 wye-delta function module (see page 3/167) replaces the complete wiring in the control circuit and can be used in the voltage range from 24 to 240 V AC/DC.

It is snapped onto the front of the contactor assembly size S00 or S0.

One function module comprises a complete module kit:

- 3RA29 12-0 basic module with integrated control logic and time setting
- Two 3RA29 11-0 coupling modules with related connecting cables

The scope of supply thus comprises a complete module kit for one contactor assembly for wye-delta starting size S00 or S0, regardless of the connection method.

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SIRIUS 3RA24 contactor assemblies for wye-delta starting

Components for customer assembly

Assembly kits with wiring modules and mechanical connectors are available for contactor assemblies for wye-delta starting. Contactors, overload relays, function modules for wye-delta starting or wye-delta timing relays, auxiliary switches for electrical interlock – if required also feeder terminals and base plates – must be ordered separately.

The wiring kits for sizes S00 and S0 contain the top and bottom main conducting path connections between the line and delta contactors (top) and between the delta and star contactors (bottom).

Control circuit

Features:
- Time setting range 0.5 to 60 s (3 selectable settings)
- Wide voltage range 24 to 240 V AC/DC
- Dead interval of 50 ms, non-adjustable.

Screw terminals

Rating	Accessories for customer assembly		Overload relay, thermal (CLASS 10 trip class)		Overload relay, solid-state (CLASS 10 trip class)	
	Function modules for wye-delta starting	Assembly kit B, for single infeed	Setting range	Order No.	Setting range	Order No.
kW			A		A	
5.5	3RA28 16-0EW20	3RA29 13-2BB1[1]	5.5 ... 8	3RU21 16-1HB0	4 ... 16	3RB30 16-1TB0
7.5			7 ... 10	3RU21 16-1JB0		
11			11 ... 16	3RU21 16-4AB0		
11	3RA28 16-0EW20	3RA29 23-2BB1[2]	11 ... 16	3RU21 26-4AB0	6 ... 25	3RB30 26-1QB0
15			14 ... 20	3RU21 26-4BB0		
18.5			20 ... 25	3RU21 26-4DB0		
22			20 ... 25	3RU21 26-4DB0		

Spring-type terminals

Rating	Accessories for customer assembly		Overload relay, thermal (CLASS 10 trip class)		Overload relay, solid-state (CLASS 10 trip class)	
	Function modules for wye-delta starting	Assembly kit B, for single infeed	Setting range	Order No.	Setting range	Order No.
kW			A		A	
5.5	3RA28 16-0EW20	3RA29 13-2BB2[1]	5.5 ... 8	3RU21 16-1HC0	4 ... 16	3RB30 16-1TE0
7.5			7 ... 10	3RU21 16-1JC0		
11			11 ... 16	3RU21 16-4AC0		
11	3RA28 16-0EW20	3RA29 23-2BB2[2]	11 ... 16	3RU21 26-4AC0	6 ... 25	3RB30 26-1QE0
15			14 ... 20	3RU21 26-4BC0		
18.5			20 ... 25	3RU21 26-4DC0		
22			20 ... 25	3RU21 26-4DC0		

[1] The assembly kit contains: mechanical interlock, 4 connecting clips; wiring modules on the top (connection between line and delta contactor) and on the bottom (connection between delta and star contactor); star jumper and auxiliary circuit wiring.

[2] The assembly kit contains: mechanical interlock, 4 connecting clips; wiring modules on the top (connection between line and delta contactor) and on the bottom (connection between delta and star contactor); star jumper.

Order No. scheme

Digit of the Order No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th		13th	14th	15th	16th
	□□□	□	□	□	□	–	□	□	□	□	□	–	□	□	□	□
SIRIUS contactor assemblies	**3 R A**															
2nd generation		**2**														
Device type (e.g. 4 = contactor assembly for wye-delta starting)			**4**													
Contactor size (1 = S00, 2 = S0)				□												
Power dependent on size (e.g. 25 = 15 kW)					□											
Type of overload relay (8X = without)							□	□								
Assembly (B = ready-assembled, E, H = ready-assembled with communication)									□							
Interlock (3 = mechanical and electrical)										□						
Free auxiliary switches (e.g. S00: 1 = 3 NO total, S0: 2 = 3 NO + 3 NC in total)											□					
Connection type (1 = screw, 2 = spring)													□			
Operating range / solenoid coil circuit (e.g. A = AC standard / without)														□		
Rated control supply voltage (e.g. L2 = 230 V, 50/60 Hz)															□	□
Example	**3 R A**	**2**	**4**	**2**	**5**	–	**8**	**X**	**F**	**3**	**2**	–	**1**	**A**	**L**	**2**

Note:

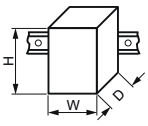
The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quoted in the catalog in the Selection and ordering data.

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Technical specifications

All technical specifications not mentioned in the table below are identical to those of the individual 3RT2 contactors and 3RU2 overload relays

Type			**3RA24 15**	**3RA24 16**	**3RA24 17**	**3RA24 23**	**3RA24 25**	**3RA24 26**
Sizes **S..-S..-S..**			**00-00-00**	**00-00-00**	**00-00-00**	**0-0-0**	**0-0-0**	**0-0-0**
Dimensions (W x H x D) with function module								
• AC operation		mm	135 x 68 x 145 / 135 x 84 x 145			135 x101 x 171 / 135 x114 x 171		
• DC operation		mm	135 x 68 x 145 / 135 x 84 x 145			135 x101 x 181 / 135 x114 x 181		
General data								
Individual contactors								
• Q11 line contactor		Type	3RT20 15	3RT20 17	3RT20 18	3RT20 24	3RT20 26	3RT20 27
• Q13 delta contactor		Type	3RT20 15	3RT20 17	3RT20 18	3RT20 24	3RT20 26	3RT20 27
• Q12 star contactor		Type	3RT20 15	3RT20 15	3RT20 16	3RT20 24	3RT20 24	3RT20 26
Mechanical endurance		Operating cycles	3 million					
Unassigned auxiliary contacts of the individual contactors			2)					
Short-circuit protection								
Main circuit without overload relays3)								
Fuse links, gG operational class: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE with single or double infeed								
Highest rated current of the fuse acc. to IEC 60947-4-1/EN 60947-4-1								
• Type of coordination "1"		A	35	35	63	63	100	125
• Type of coordination "2"		A	20	20	25	25	35	63
Control circuit								
• Short-circuit test with fuse links of gG operational class: DIAZED, type 5SB; NEOZED, type 5SE with I_k = 1 kA acc. to IEC 60947-5-1		A A	10 6[4], if the auxiliary contact of the overload relay is connected in the contactor coil circuit					
• Test with miniature circuit breaker up to 230 V with C characteristic: Short-circuit current I_k = 400 A acc. to IEC 60947-5-1		A A	10 6[4], if the auxiliary contact of the overload relay is connected in the contactor coil circuit					
Main circuit								
Current-carrying capacity with reversing time up to 10 s								
• Rated operational current I_e	At 400 V	A	12	17	25	25	40	55
	500 V	A	8.7	11.3	20.8	20.8	31.2	50
	690 V	A	6.9	9	20.8	20.8	22.5	35
• Rated power for induction motors with 50 Hz and 60 Hz	At 230 V	kW	3.3	4.7	7.2	7.2	12	16.6
	400 V	kW	5.8	8.2	12.5	12.5	21	30.1
	500 V	kW	5.3	6.9	13	13	20.5	34.2
	690 V	kW	5.8	7.5	18	18	20.4	33
	1000 V	kW	--	--	--	--	--	--
• **Switching frequency** with overload relay		h^{-1}	15	15	15	15	15	15
Current-carrying capacity with reversing time up to 15 s								
• Rated operational current I_e	At 400 V	A	12	17	25	25	31	44
	500 V	A	8.7	11.3	20.8	20.8	31	44
	690 V	A	6.9	9	20.8	20.8	22.5	35
• Rated power for induction motors with 50 Hz and 60 Hz	At 230 V	kW	3.3	4.7	7.2	7.2	9.4	13.8
	400 V	kW	5.8	8.2	12.5	12.5	16.3	24
	500 V	kW	5.3	6.9	13	13	20.4	30
	690 V	kW	5.8	7.5	18	18	20.4	33
	1000 V	kW	--	--	--	--	--	--
• **Switching frequency** with overload relay		h^{-1}	15	15	15	15	15	15
Current-carrying capacity with reversing time up to 20 s								
• Rated operational current I_e	At 400 V	A	12	17	25	25	28	39
	500 V	A	8.7	11.3	20.8	20.8	28	39
	690 V	A	6.9	9	20.8	20.8	22.5	35
• Rated power for induction motors with 50 Hz and 60 Hz	At 230 V	kW	3.3	4.7	7.2	7.2	8.5	12.2
	400 V	kW	5.8	8.2	12.5	12.5	14.7	21.3
	500 V	kW	5.3	6.9	13	13	18.4	26.7
	690 V	kW	5.8	7.5	18	18	20.4	33
	1000 V	kW	--	--	--	--	--	--
• **Switching frequency** with overload relay		h^{-1}	15	15	15	15	15	15

1) Dimensions for devices with screw terminals / spring-type terminals.

2) For circuit diagrams of the control circuit see operating instructions.

3) Short-circuit protection with overload relays see Configuration Manual "Configuring SIRIUS Innovations - Selection data for Fuseless and Fused Load Feeders".

4) Up to I_k < 0.5 kA; ≤ 260 V.

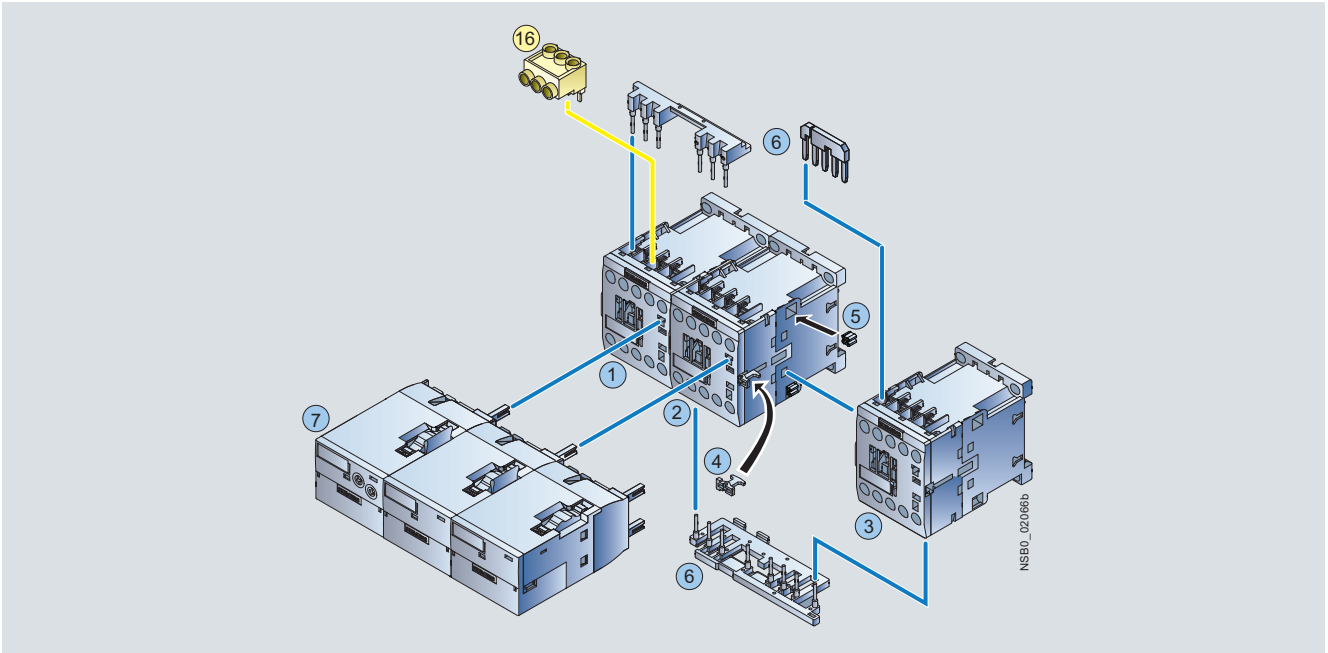
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SIRIUS 3RA24 contactor assemblies for wye-delta starting

Selection and ordering data

Fully wired and tested contactor assemblies · Size S00-S00-S00 · up to 11 kW

The figure shows the version with screw terminals



Mountable accessories (optional)

To be ordered separately		Order No.	Page
16	Three-phase feeder terminal[2]	3RA29 13-3K	3/167

Complete contactor assemblies

Individual parts		Order No. Q11[1]	Q13	Q12	Page
1 2 3	Contactor, 5.5 kW	3RT20 15	3RT20 15	3RT20 15	3/26, 3/31
1 2 3	Contactor, 7.5 kW	3RT20 17	3RT20 17	3RT20 15	3/26, 3/31
1 2 3	Contactor, 11 kW	3RT20 18	3RT20 18	3RT20 16	3/26, 3/31
4 5 6	Assembly kit comprising 4 Mechanical interlock 5 4 connecting clips 6 Wiring modules on the top and bottom for connecting the main current paths	3RA29 13-2BB1			3/167
7	Function modules for wye-delta starting	3RA28 16-0EW20			3/167

[1] The version with 1 NO is required for momentary-contact operation. For circuit diagrams see "Operating Instructions".

[2] Part 16 can only be mounted with contactors with screw terminal.

Note:

When using the function modules for contactor assemblies for wye-delta starting, no other auxiliary switches are allowed to be connected to the basic units.

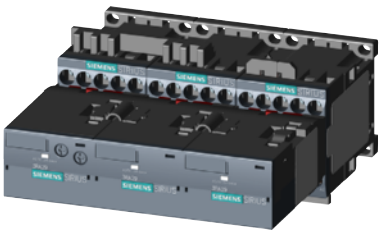
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Fully wired and tested contactor assemblies · Size S00-S00-S00 · up to 11 kW

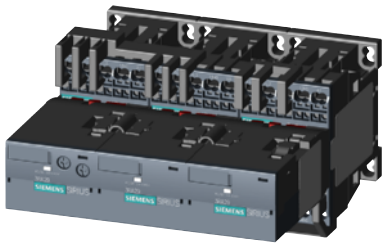
PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B



3RA24 1.-8XE31-2BB4



3RA24 1.-8XF31-1A.0



3RA24 1.-8XF31-2A.0

Rated data AC-3					Rated control supply voltage U_s [1]	DT	Screw terminals	DT	Spring-type terminals
Operational current I_e up to	Rating of induction motors at 50 Hz and						Order No. Price per PU		Order No. Price per PU
400 V	230 V	**400 V**	500 V	690 V					
A	kW	**kW**	kW	kW	V				
AC operation, 50/60 Hz									
12	3.3	**5.5**	7.2	9.2	24 AC	A	**3RA24 15-8XF31-1AB0**	A	**3RA24 15-8XF31-2AB0**
					110 AC	A	**3RA24 15-8XF31-1AF0**	A	**3RA24 15-8XF31-2AF0**
					230 AC	A	**3RA24 15-8XF31-1AP0**	A	**3RA24 15-8XF31-2AP0**
16	4.7	**7.5**	10.3	9.2	24 AC	A	**3RA24 16-8XF31-1AB0**	A	**3RA24 16-8XF31-2AB0**
					110 AC	A	**3RA24 16-8XF31-1AF0**	A	**3RA24 16-8XF31-2AF0**
					230 AC	A	**3RA24 16-8XF31-1AP0**	A	**3RA24 16-8XF31-2AP0**
25	5.5	**11**	11	11	24 AC	A	**3RA24 17-8XF31-1AB0**	A	**3RA24 17-8XF31-2AB0**
					110 AC	A	**3RA24 17-8XF31-1AF0**	A	**3RA24 17-8XF31-2AF0**
					230 AC	A	**3RA24 17-8XF31-1AP0**	A	**3RA24 17-8XF31-2AP0**
DC operation									
12	3.3	**5.5**	7.2	9.2	24 DC	A	**3RA24 15-8XF31-1BB4**	A	**3RA24 15-8XF31-2BB4**
16	4.7	**7.5**	10.3	9.2	24 DC	A	**3RA24 16-8XF31-1BB4**	A	**3RA24 16-8XF31-2BB4**
25	5.5	**11**	11	11	24 DC	A	**3RA24 17-8XF31-1BB4**	A	**3RA24 17-8XF31-2BB4**
For IO-Link connection									
12	3.3	**5.5**	7.2	9.2	24 DC	A	**3RA24 15-8XE31-1BB4**	A	**3RA24 15-8XE31-2BB4**
16	4.7	**7.5**	10.3	9.2	24 DC	A	**3RA24 16-8XE31-1BB4**	A	**3RA24 16-8XE31-2BB4**
25	5.5	**11**	11	11	24 DC	A	**3RA24 17-8XE31-1BB4**	A	**3RA24 17-8XE31-2BB4**
For AS-Interface connection									
12	3.3	**5.5**	7.2	9.2	24 DC	A	**3RA24 15-8XH31-1BB4**	A	**3RA24 15-8XH31-2BB4**
16	4.7	**7.5**	10.3	9.2	24 DC	A	**3RA24 16-8XH31-1BB4**	A	**3RA24 16-8XH31-2BB4**
25	5.5	**11**	11	11	24 DC	A	**3RA24 17-8XH31-1BB4**	A	**3RA24 17-8XH31-2BB4**

[1] Coil operating range
at 50 Hz: 0.8 ... 1.1 x U_s; at 60 Hz: 0.85 ... 1.1 x U_s.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

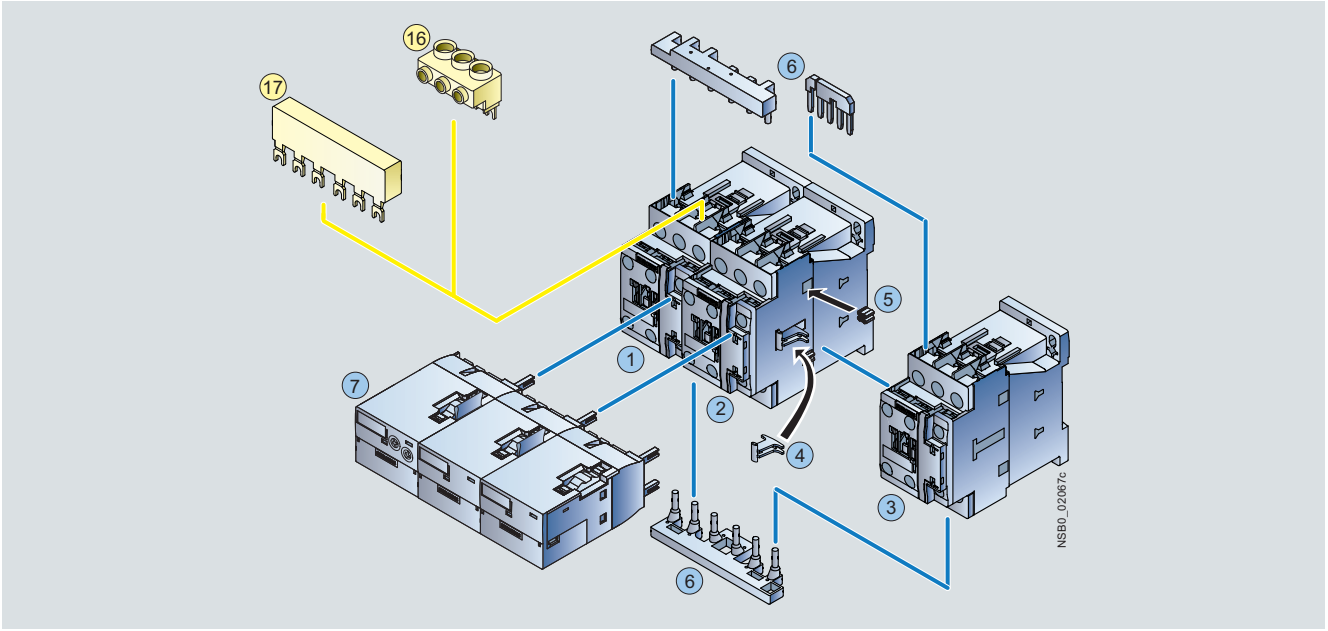
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3RA23, 3RA13, 3RA24, 3RA14 Contactor Assemblies

SIRIUS 3RA24 contactor assemblies for wye-delta starting

Fully wired and tested contactor assemblies · Size S0-S0-S0 · up to 22 kW

The figure shows the version with screw terminals



Mountable accessories (optional)

To be ordered separately	Order No.	Page
(16) Three-phase feeder terminal[1)]	3RV29 25-5AB	3/166
(17) Three-phase busbar[1)]	3RV19 15-1AB	3/166

Complete contactor assemblies

Individual parts	Order No. Q11	Q13	Q12	Page
(1)(2)(3) Contactor, 11 kW	3RT20 24	3RT20 24	3RT20 24	3/28, 3/33
(1)(2)(3) Contactor, 15/18.5 kW	3RT20 26	3RT20 26	3RT20 24	3/28, 3/33
(1)(2)(3) Contactor, 22 kW	3RT20 27	3RT20 27	3RT20 26	3/28, 3/33
(4)(5)(6) Assembly kit	3RA29 23-2BB1			3/166
The assembly kit contains: (4) Mechanical interlock (5) Connecting clips (6) Wiring modules on the top and bottom for connecting the main current paths				
(7) Function modules for wye-delta starting	3RA28 16-0EW20			3/167

[1)] The parts (16) and (17) can only be mounted with contactors with screw terminal.

Note:

When using the function modules for contactor assemblies for wye-delta starting, no other auxiliary switches are allowed to be connected to the basic units.

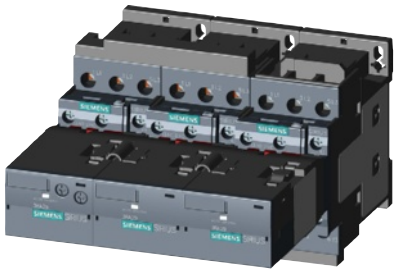
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Fully wired and tested contactor assemblies · Size S0-S0-S0 · up to 22 kW

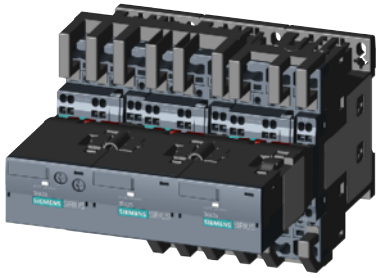
PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B



3RA24 2.-8XE32-1BB4



3RA24 2.-8XF32-1A.2



3RA24 2.-8XF32-2A.2

Rated data AC-3					Rated control supply voltage U_s [1]	DT	Screw terminals	DT	Spring-type terminals
Operational current I_e up to	Rating of induction motors at 50 Hz and						Order No. Price per PU		Order No. Price per PU
400 V	230 V	**400 V**	500 V	690 V					
A	kW	**kW**	kW	kW	V				
AC operation, 50/60 Hz									
25	7.1	**11**	15.6	19	24 AC	A	**3RA24 23-8XF32-1AC2**	A	**3RA24 23-8XF32-2AC2**
					110 AC	A	**3RA24 23-8XF32-1AG2**	A	**3RA24 23-8XF32-2AG2**
					230 AC	B	**3RA24 23-8XF32-1AL2**	B	**3RA24 23-8XF32-2AL2**
32 / 40	11.4	**15 / 18.5**	19	19	24 AC	A	**3RA24 25-8XF32-1AC2**	A	**3RA24 25-8XF32-2AC2**
					110 AC	A	**3RA24 25-8XF32-1AG2**	A	**3RA24 25-8XF32-2AG2**
					230 AC	B	**3RA24 25-8XF32-1AL2**	B	**3RA24 25-8XF32-2AL2**
50	--	**22**	19	19	24 AC	A	**3RA24 26-8XF32-1AC2**	A	**3RA24 26-8XF32-2AC2**
					110 AC	A	**3RA24 26-8XF32-1AG2**	A	**3RA24 26-8XF32-2AG2**
					230 AC	B	**3RA24 26-8XF32-1AL2**	B	**3RA24 26-8XF32-2AL2**
DC operation									
25	7.1	**11**	15.6	19	24 DC	A	**3RA24 23-8XF32-1BB4**	A	**3RA24 23-8XF32-2BB4**
32 / 40	11.4	**15 / 18.5**	19	19	24 DC	A	**3RA24 25-8XF32-1BB4**	A	**3RA24 25-8XF32-2BB4**
50	--	**22**	19	19	24 DC	A	**3RA24 26-8XF32-1BB4**	A	**3RA24 26-8XF32-2BB4**
For IO-Link connection									
25	7.1	**11**	15.6	19	24 DC	A	**3RA24 23-8XE32-1BB4**	A	**3RA24 23-8XE32-2BB4**
32 / 40	11.4	**15 / 18.5**	19	19	24 DC	A	**3RA24 25-8XE32-1BB4**	A	**3RA24 25-8XE32-2BB4**
50	--	**22**	19	19	24 DC	A	**3RA24 26-8XE32-1BB4**	A	**3RA24 26-8XE32-2BB4**
For AS-Interface connection									
25	7.1	**11**	15.6	19	24 DC	A	**3RA24 23-8XH32-1BB4**	A	**3RA24 23-8XH32-2BB4**
32 / 40	11.4	**15 / 18.5**	19	19	24 DC	A	**3RA24 25-8XH32-1BB4**	A	**3RA24 25-8XH32-2BB4**
50	--	**22**	19	19	24 DC	A	**3RA24 26-8XH32-1BB4**	A	**3RA24 26-8XH32-2BB4**

[1] Coil operating range at 50 Hz: 0.8 ... 1.1 x U_s ; at 60 Hz: 0.85 ... 1.1 x U_s.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

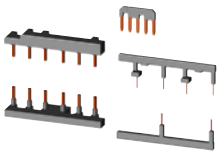
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3RA23, 3RA13, 3RA24, 3RA14 Contactor Assemblies

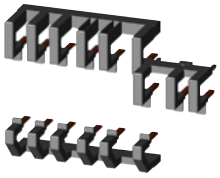
SIRIUS 3RA24 contactor assemblies for wye-delta starting

Components for customer assembly

PU (UNIT, SET, M) = 1
PS* = 1 unit (unless otherwise specified)
PG = 41B



3RA29 23-2BB1



3RA29 23-2BB2

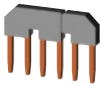
For contactors / Type	Size	Version	DT	Screw terminals Order No.	Price per PU	DT	Spring-type terminals Order No.	Price per PU
Assembly kits[1] for making 3-pole contactor assemblies								
3RT20 1	**S00**	The assembly kit contains: mechanical interlock, 4 connecting clips, star jumper, wiring modules on the top and bottom						
		• For main, auxiliary and control circuits	▶	**3RA29 13-2BB1**		▶	**3RA29 13-2BB2**	
3RT20 2	**S0**	The assembly kit contains: mechanical interlock, 4 connecting clips, star jumper, wiring modules on the top and bottom						
		• For main, auxiliary and control circuits	▶	**3RA29 23-2BB1**			**--**	
		• Only for main circuit[2]		**--**		▶	**3RA29 23-2BB2**	



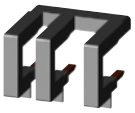
3RV29 25-5AB



3RV19 15-1AB



3RT19 16-4BA31



3RT29 16-4BA32

Three-phase feeder terminal								
		Feeder terminal blocks for the line contactor for large conductor cross-sections						
3RT20 1	**S00**	• Conductor cross-section 6 mm² PS = 10 units	A	**3RA29 13-3K**			**--**	
3RT20 2	**S0**	• Conductor cross-section 16 mm²	▶	**3RV29 25-5AB**			**--**	
Three-phase busbars								
3RT20 2	**S0**	Bridging phase-by-phase of all input terminals of the line contactor (Q11) and the delta contactor (Q13)	▶	**3RV19 15-1AB**			**--**	
Links for paralleling, 3-pole (star jumpers)								
3RT20 1	**S00**	Without connection terminal (the links for paralleling can be reduced by one pole)	▶	**3RT19 16-4BA31**		A	**3RT29 16-4BA32**	
3RT20 2	**S0**		▶	**3RT19 26-4BA31**		A	**3RT29 26-4BA32**	

[1] When using the function modules for wye-delta starting, the wiring modules for the auxiliary current are not required.

[2] Version in size S0 with spring-type terminals:
Only the wiring modules for the main circuit are included.
No connectors are included for the auxiliary and control circuit.

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Components for customer assembly

PU (UNIT, SET, M) = 1
PS* = 1 unit (unless otherwise specified)
PG = 41B



3RA28 16-0EW20



3RA27 12-1CA00



3RA27 11-2CA00

For contactors Type	Size	Version		DT	Order No.	Price per PU		Order No.	Price per PU
Function modules for wye-delta starting									
3RT20 1, 3RT20 2	**S00, S0**	Comprising one basic module and two coupling modules Rated control supply voltage 24 ... 240 V AC/DC Time setting range 0.5 ... 60 s (10, 30, 60 s selectable)		A	**3RA28 16-0EW20**		A	**3RA28 16-0EW20**	
Accessories for 3RA28 function modules									
3RT20 1, 3RT20 2	**S00, S0**	**Sealable covers**	PS = 5 units	A	**3RA29 10-0**		A	**3RA29 10-0**	
Function modules for wye-delta starting for connection to the control system									
					Screw terminals		DT	**Spring-type terminals**	
3RT20 1, 3RT20 2	**S00, S0**	**IO-Link connection**, comprising one basic module and two coupling modules, plus an additional module connector for assembling an IO-Link group		A	**3RA27 11-1CA00**		A	**3RA27 11-2CA00**	
3RT20 1, 3RT20 2	**S00, S0**	**AS-Interface connection**, comprising one basic module and two coupling modules		A	**3RA27 12-1CA00**		A	**3RA27 12-2CA00**	
Accessories for 3RA27 function modules									
		Module connectors							
3RT20 1, 3RT20 2	**S00, S0**	**Module connector set**, comprising: • 2 module connectors, 14-pole, short + 2 interface covers		A	**3RA27 11-0EE01**		A	**3RA27 11-0EE01**	
3RT20 1, 3RT20 2	**S00, S0**	14-pole, 8 cm long • For size jump S00-S0 + 1 space		A	**3RA27 11-0EE02**		A	**3RA27 11-0EE02**	
3RT20 1, 3RT20 2	**S00, S0**	14-pole, 21 cm long • For various space combinations		A	**3RA27 11-0EE03**		A	**3RA27 11-0EE03**	
3RT20 1, 3RT20 2	**S00, S0**	10-pole, 8 cm long • For separate auxiliary voltage supply within an IO-Link group		A	**3RA27 11-0EE04**		A	**3RA27 11-0EE04**	
3RT20 1, 3RT20 2	**S00, S0**	**Sealable covers**	PS = 5 units	A	**3RA29 10-0**		A	**3RA29 10-0**	

Operator panels for IO-Link see page 3/187.

Note:

When using the function modules for contactor assemblies for wye-delta starting, no other auxiliary switches are allowed to be connected to the basic units.

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SIRIUS 3RA14 contactor assemblies for wye-delta starting

Overview

These 3RA14 contactor assemblies for wye-delta starting are designed for standard applications.

Note:

Contactor assemblies for wye-delta starting in special applications such as very heavy starting[1] or wye-delta starting of special motors must be customized. Help with designing such special applications is available from Technical Assistance.

The 3RA14 contactor assemblies for wye-delta starting can be ordered as follows:

Sizes S2 and S3

- Fully wired and tested, with electrical interlock, reversing time up to 10 s.

Sizes S2 to S12

- As individual parts for customer assembly

A dead interval of 50 ms on reversing is already integrated in the time relay function.

There is also a range of accessories (auxiliary switch blocks, surge suppressors, etc.) that must be ordered separately.

Overload relays for motor protection see Chapter 7 "Protection Equipment" → "Overload Relays" → "SIRIUS 3RB2 Solid-State Overload Relays".

The 3RA14 contactor assemblies have screw terminals and are suitable for screw fixing and snap-on mounting onto TH 35 standard mounting rails.

Fully wired and tested 3RA14 contactor assemblies have one unassigned NO contact which is mounted onto the front of the K3 delta contactor.

With the preassembled contactor assembly sizes S2 and S3, 11 to 75 kW, a timing relay is laterally mounted.

[1] For effective support from Technical Assistance you must provide the following details:
- Rated motor voltage
- Rated motor current
- Service factor, operating values
- Motor starting current factor
- Starting time
- Ambient temperature.

Rated data at 50 Hz 400 V AC			Size			
Rating *P*	Operational current I_e	Motor current		Line/delta contactor	Star contactor	**Order No. complete**
kW	A	A				
22	50	31 ... 43	**S2-S2-S0**	3RT10 34	3RT10 26	**3RA14 34-8XC21-1...**
30	50	48.3 ... 65		3RT10 34		**--**
37	80	62.1 ... 77.8	**S2-S2-S2**		3RT10 34	**3RA14 35-8XC21-1...**
45	86	69 ... 86		3RT10 36		**3RA14 36-8XC21-1...**
55	115	77.6 ... 108.6	**S3-S3-S2**	3RT10 44	3RT10 35	**3RA14 44-8XC21-1...**
75	150	120.7 ... 150		3RT10 45	3RT10 36	**3RA14 45-8XC21-1...**
90	160	86 ... 160	**S6-S6-S3**	3RT10 54	3RT10 44	**--**
110	195	86 ... 195				
132	230	86 ... 230		3RT10 55	3RT10 45	
160	280	86 ... 280		3RT10 56	3RT10 46	
200	350	95 ... 350	**S10-S10-S6**	3RT10 64	3RT10 54	**--**
250	430	95 ... 430		3RT10 65	3RT10 55	
315	540	277 ... 540	**S12-S12-S10**	3RT10 75	3RT10 64	**--**
355	610	277 ... 610				
400	690	277 ... 690			3RT10 65	
500	850	277 ... 850		3RT10 76	3RT10 66	

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Components for customer assembly

Assembly kits with wiring modules and, if necessary, mechanical connectors are available for contactor assemblies for wye-delta starting. Contactors, overload relays, wye-delta timing relays, auxiliary switches for electrical interlock – if required also feeder terminals, mechanical interlocks and base plates – must be ordered separately.

In the case of sizes S2 to S12 only the bottom main conducting path connection between the delta and star contactors is included in the wiring module, owing to the larger conductor cross-section at the infeed.

Motor protection

Overload relays or thermistor motor protection releases can be used for overload protection.

The overload relay can be either mounted onto the line contactor or separately fitted. It must be set to 0.58 times the rated motor current.

Note:

The selection of contactor types refers to fused design.

	Accessories for customer assembly					Overload relay, thermal (CLASS 10 trip class)		Overload relay, solid-state (CLASS 10 trip class)	
P **kW**	Timing relays	Assembly kit A, for double infeed	Assembly kit B, for single infeed	Star jumper	Base plates	Setting range A	Order No.	Setting range A	Order No.
22	3RP15 74-1N.30	3RA19 33-2C[1)]	3RV19 35-1A	3RT19 26-4BA31	3RA19 32-2E	18 ... 25	3RU11 36-4DB0	12.5 ... 50	3RB20 36-1UB0
30						28 ... 40	3RU11 36-4FB0		
37	3RP15 74-1N.30	3RA19 33-2B[1)]	3RV19 35-1A	3RT19 36-4BA31	3RA19 32-2F	36 ... 45	3RU11 36-4GB0	12.5 ... 50	3RB20 36-1UB0
45						40 ... 50	3RU11 36-4HB0		
55	3RP15 74-1N.30	3RA19 43-2C[1)]	--	3RT19 36-4BA31	3RA19 42-2E	45 ... 63	3RU11 46-4JB0	25 ... 100	3RB20 46-1EB0
75						70 ... 90	3RU11 46-4LB0		
90	3RP15 74-1N.30	--	3RA19 53-3D[2)]	3RT19 46-4BA31	3RA19 52-2E	--	--	50 ... 200	3RB20 56-1FC2
110									
132									
160									
200	3RP15 74-1N.30	--	--	3RT19 56-4BA31	3RA19 62-2E	--	--	55 ... 250	3RB20 66-1GC2
250								160 ... 630	3RB20 66-1MC2
315	3RP15 74-1N.30	--	--	3RT19 66-4BA31	3RA19 72-2E	--	--	160 ... 630	3RB20 66-1MC2
355									
400									
500									

1) Assembly kit contains wiring module on the bottom (connection between delta and star contactor) and star jumper.

2) Wiring module on top from reversing contactor assembly (note conductor cross-sections).

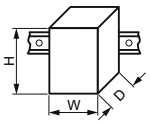
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3RA23, 3RA13, 3RA24, 3RA14 Contactor Assemblies

SIRIUS 3RA14 contactor assemblies for wye-delta starting

Technical specifications

All technical specifications not mentioned in the table below are identical to those of the individual 3RT1 contactors and 3RU1 overload relays

Type			**3RA14 35**	**3RA14 36**	**3RA14 44**	**3RA14 45**
Size			**S2-S2-S2**	**S2-S2-S2**	**S3-S3-S2**	**S3-S3-S2**
Dimensions (W x H x D) with base plate						
• DC operation		mm	198 x 140 x 184		218 x 180 x 207	
• AC operation		mm	198 x 140 x 169		218 x 180 x 194	
General data						
Individual contactors						
• Q1 line contactor		Type	3RT10 35	3RT10 36	3RT10 44	3RT10 45
• Q3 delta contactor		Type	3RT10 35	3RT10 36	3RT10 44	3RT10 45
• Q2 star contactor		Type	3RT10 34	3RT10 34	3RT10 35	3RT10 36
Mechanical endurance		Operating cycles	3 million			
Unassigned auxiliary contacts of the individual contactors			[1]			
Short-circuit protection						
Main circuit without overload relays[2]						
Fuse links, gG operational class: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE with single or double infeed						
Highest rated current of the fuse acc. to IEC 60947-4-1/EN 60947-4-1						
• Type of coordination "1"		A	125	160	250	250
• Type of coordination "2"		A	63	80	125	160
Control circuit						
• Short-circuit test with fuse links of gG operational class: DIAZED, type 5SB; NEOZED, type 5SE with I_k = 1 kA acc. to IEC 60947-5-1		A A	10 6[3], if the auxiliary contact of the overload relay is connected in the contactor coil circuit			
• Test with miniature circuit breaker up to 230 V with C characteristic: Short-circuit current I_k = 400 A acc. to IEC 60947-5-1		A A	10 6[3], if the auxiliary contact of the overload relay is connected in the contactor coil circuit			
Main circuit						
Current-carrying capacity with reversing time up to 10 s						
• Rated operational current I_e	At 400 V	A	80	86	115	150
	500 V	A	69.3	86	112.6	138.6
	690 V	A	69.3	69.3	98.7	138.6
• Rated power for induction motors at 50 Hz and 60 Hz and	At 230 V	kW	25.5	27.8	37	49
	400 V	kW	44	48	65	85
	500 V	kW	48	60	80	98
	690 V	kW	66	67	97	136
	1000 V	kW	--	--	--	--
• **Switching frequency** with overload relay		h^{-1}	15	15	15	15
Current-carrying capacity with reversing time up to 15 s						
• Rated operational current I_e	At 400 V	A	57	67	97	106
	500 V	A	57	67	97	106
	690 V	A	57	67	97	106
• Rated power for induction motors at 50 Hz and 60 Hz and	At 230 V	kW	18.2	21.6	32	35
	400 V	kW	31.6	38	55	60
	500 V	kW	40	47	69	75
	690 V	kW	55	65	95	104
	1000 V	kW	--	--	--	--
• **Switching frequency** with overload relay		h^{-1}	15	15	15	15
Current-carrying capacity with reversing time up to 20 s						
• Rated operational current I_e	At 400 V	A	51	57	85	92
	500 V	A	51	57	85	92
	690 V	A	51	57	85	92
• Rated power for induction motors at 50 Hz and 60 Hz and	At 230 V	kW	16.3	18.4	28	30
	400 V	kW	28	32	48	52
	500 V	kW	35	40	60	65
	690 V	kW	49	55	83	90
	1000 V	kW	--	--	--	--
• **Switching frequency** with overload relay		h^{-1}	15	15	15	15

1) For circuit diagrams of the control circuit see operating constructions.

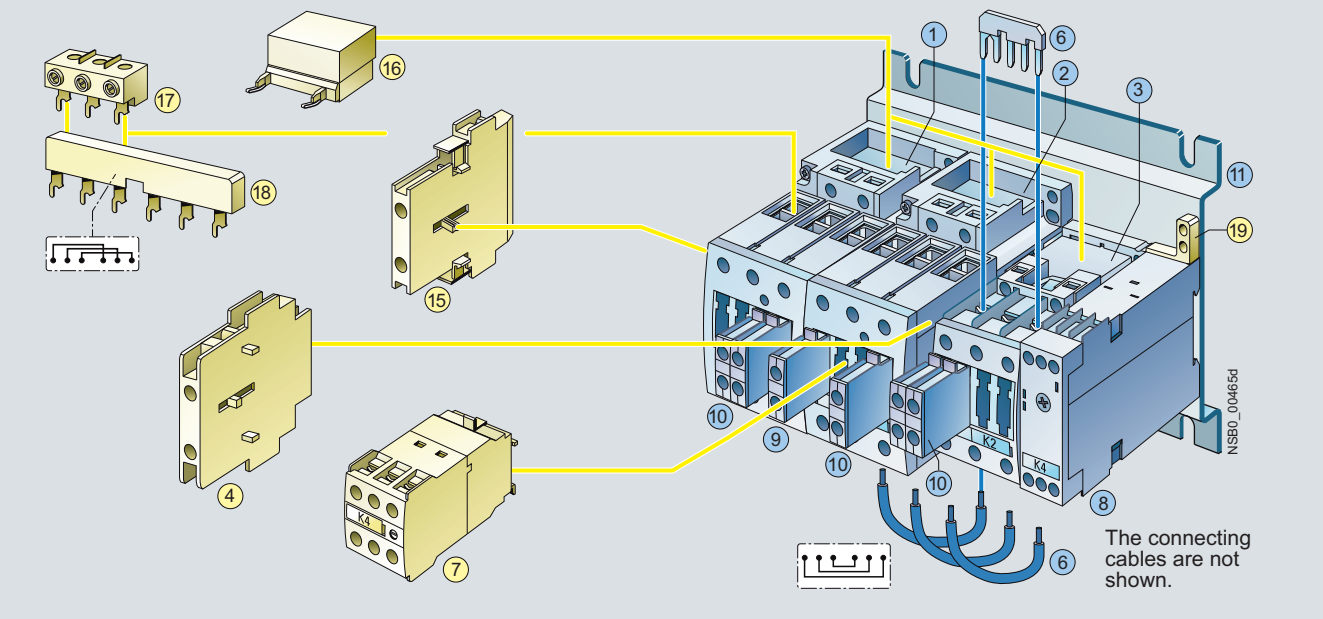
2) Short-circuit protection with overload relays see Configuration Manual "SIRIUS Configuration - Selection data for Fuseless Load Feeders.

3) Up to I_k < 0.5 kA; ≤ 260 V.

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Selection and ordering data

Fully wired and tested contactor assemblies · Size S2-S2-S0 · up to 30 kW



Mountable accessories (optional)

	To be ordered separately	Order No.	Page
4	Mechanical interlock, lateral Depth compensation required K3: 1.5 mm; K2: 0 mm[1]	3RA19 24-2B	3/156
7	Solid-state time-delay auxiliary switch block, front[2]	3RT19 26-2G…	3/102
15	Auxiliary switch block, lateral	3RH19 21-1EA..	3/100
16	Surge suppressors	3RT19 26-1…. 3RT19 36-1….	3/103, 3/103
17	Three-phase feeder terminals	3RV19 35-5A	3/174
18	Three-phase busbars	3RV19 35-1A	3/174
19	Push-in lug for timing relay screw mounting	3RP19 03	3)

[1] Use the 3RA19 32-2B base plate for this design.

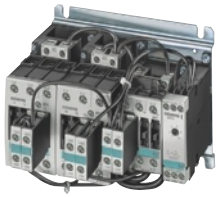
[2] Generally possible. If a solid-state time-delay auxiliary switch block is mounted onto the front of K3, a standard auxiliary switch block can only be mounted onto the side.

Complete contactor assemblies

	Individual parts	Order No. Q1	Q3	Q2	Page
1 2 3	Contactor, 22/30 kW	3RT10 34	3RT10 34	3RT10 26	3/78
8	Timing relay, lateral	3RP15 74-1N.30			3)
9	Auxiliary switch block with 1 unassigned NO contact				
10	Auxiliary switch block for local control - 2 units - 3 units	3RH19 21-1CA10 3RH19 21-1CA01 3RH19 21-1CA10			3/98 3/98
11	Base plate	3RA19 32-2E			3/174
6	Assembly kit	3RA19 33-2C			3/174

The assembly kit contains the star jumper on the top and the wiring module on the bottom for connecting the main current paths.

3) See Chapter 10 "Monitoring and Control Devices" → "3RP, 7PV Timing Relays" → "3RP15 Timing Relays in Industrial Enclosure, 22.5 mm".



3RA14 34-8XC21-1…

Rated data AC-3 Operational current I_e up to 400 V	Ratings of induction motors at 50 Hz and 230 V	**400 V**	500 V	690 V	Rated control supply voltage U_s[1]	DT	**Screw terminals** Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	kW	**kW**	kW	kW	V						
AC operation, 50/60 Hz											
50 / 65	19.6	**22 / 30**	35	34	24 AC	B	**3RA14 34-8XC21-1AC2**		1	1 unit	41B
					110 AC	B	**3RA14 34-8XC21-1AG2**		1	1 unit	41B
					230 AC	▶	**3RA14 34-8XC21-1AL2**		1	1 unit	41B
DC operation											
50 / 65	19.6	**22 / 30**	35	34	24 DC	▶	**3RA14 34-8XC21-1BB4**		1	1 unit	41B

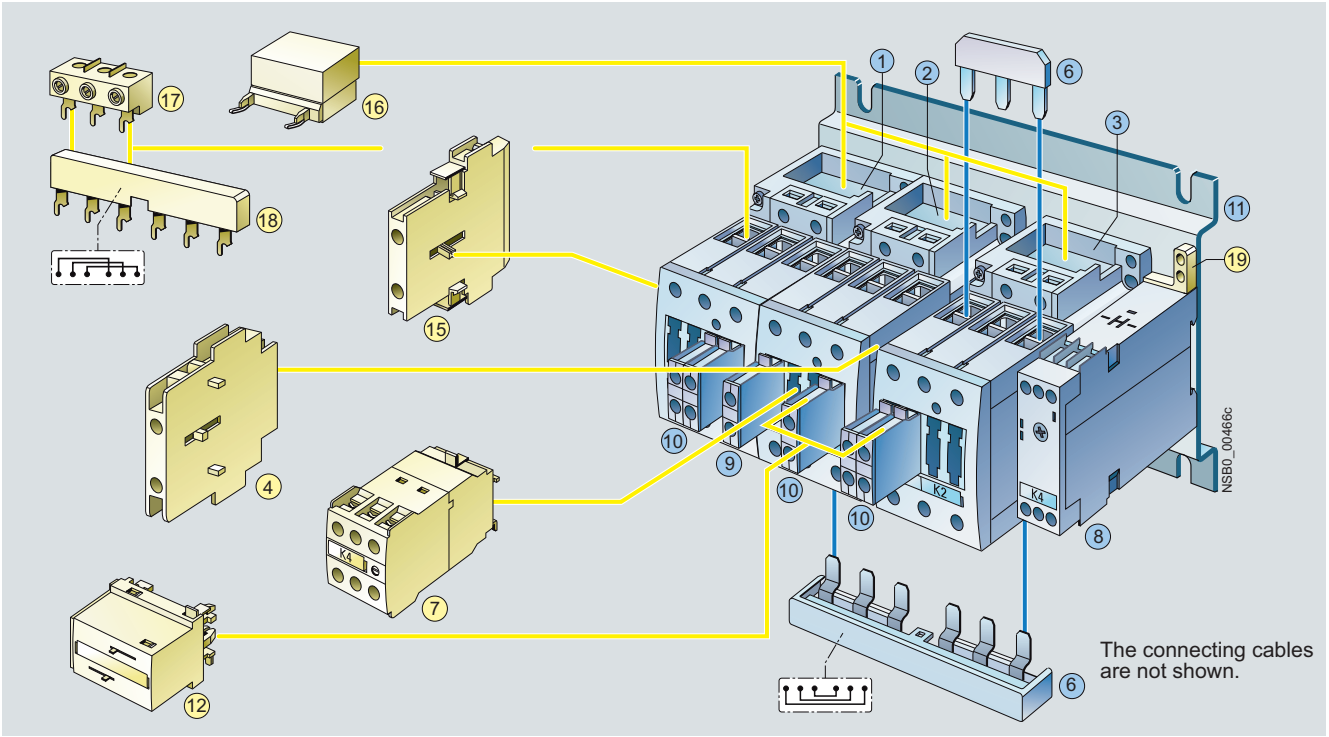
[1] Coil operating range at 50 Hz: 0.8 ... 1.1 x U_s; at 60 Hz: 0.85 ... 1.1 x U_s.

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3RA23, 3RA13, 3RA24, 3RA14 Contactor Assemblies

SIRIUS 3RA14 contactor assemblies for wye-delta starting

Fully wired and tested contactor assemblies · Size S2-S2-S2 · up to 45 kW



Mountable accessories (optional)

To be ordered separately		Order No.	Page
4	Mechanical interlock, lateral	3RA19 24-2B	3/156
7	Solid-state time-delay auxiliary switch block, front[1]	3RT19 26-2G...	3/102
12	Mechanical interlock, front	3RA19 24-1A	3/156
15	Auxiliary switch block, lateral	3RH19 21-1EA..	3/100
16	Surge suppressors	3RT19 26-1.... 3RT19 36-1....	3/103, 3/103
17	Three-phase feeder terminal	3RV19 35-5A	3/174
18	Three-phase busbars	3RV19 35-1A	3/174
19	Push-in lug for timing relay screw mounting	3RP19 03	[2]

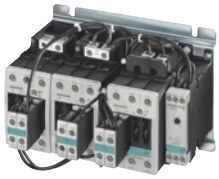
Complete contactor assemblies

Individual parts		Order No. Q1	Q3	Q2	Page
1 2 3	Contactor, 37 kW	3RT10 35	3RT10 35	3RT10 34	3/78
1 2 3	Contactor, 45 kW	3RT10 36	3RT10 36	3RT10 34	3/78
8	Timing relay, lateral	3RP15 74-1N.30			[2]
9	Auxiliary switch block with 1 unassigned NO contact	3RH19 21-1CA10			3/98
10	Auxiliary switch block for local control - 2 units - 3 units	 3RH19 21-1CA01 3RH19 21-1CA10			 3/98
11	Base plate	3RA19 32-2F			3/174
6	Assembly kit	3RA19 33-2B			3/174

The assembly kit contains the star jumper on the top and the wiring module on the bottom for connecting the main current paths.

[1] Generally possible. If a solid-state time-delay auxiliary switch block is mounted onto the front of K3, a standard auxiliary switch block can only be mounted onto the side.

[2] See Chapter 10 "Monitoring and Control Devices" → "3RP, 7PV Timing Relays" → "3RP15 Timing Relays in Industrial Enclosure, 22.5 mm".



3RA14 3.-8XC21-1...

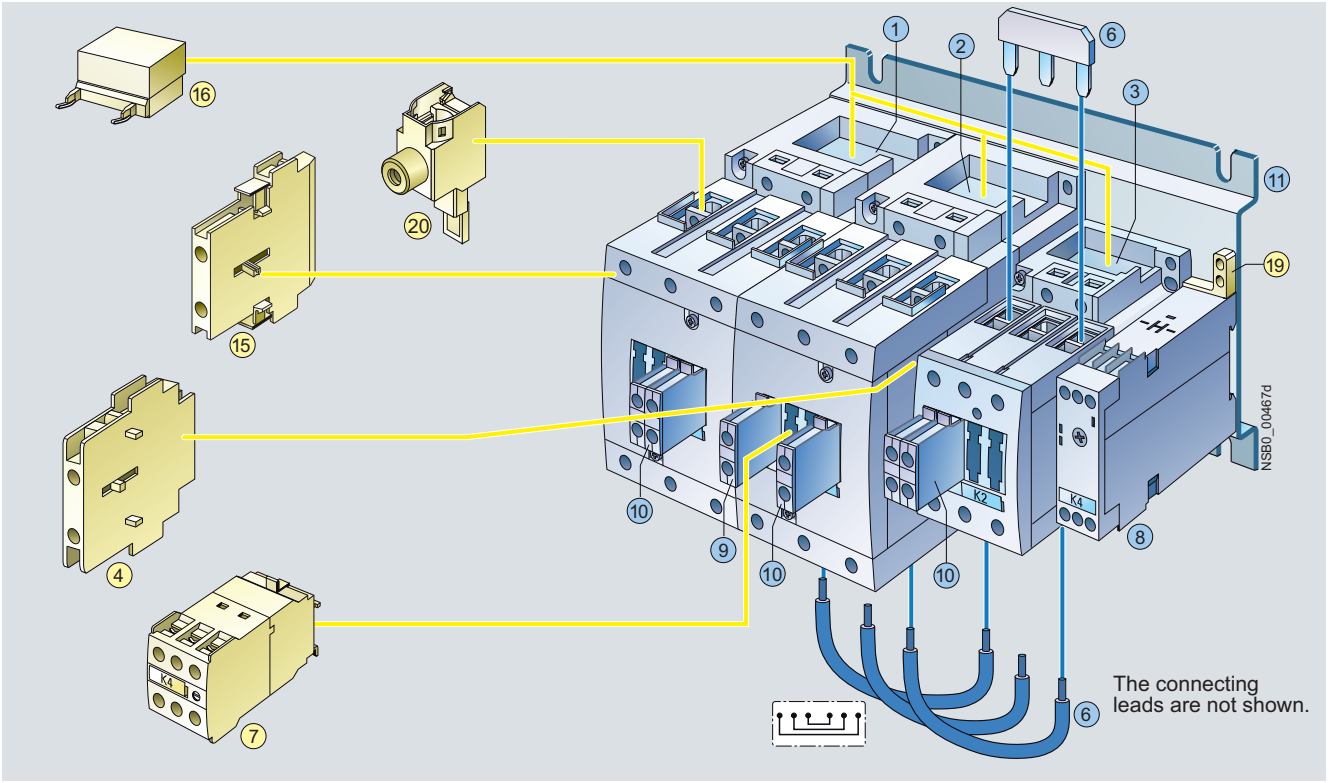
Rated data AC-3 Operational current I_e up to 400 V	Ratings of induction motors at 50 Hz and 230 V	**400 V**	500 V	690 V	Rated control supply voltage U_s[1]	DT	**Screw terminals** Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	kW	**kW**	kW	kW	V						
AC operation, 50/60 Hz											
80	25	**37**	51	63	24 AC	B	**3RA14 35-8XC21-1AC2**		1	1 unit	41B
					110 AC	B	**3RA14 35-8XC21-1AG2**		1	1 unit	41B
					230 AC	▶	**3RA14 35-8XC21-1AL2**		1	1 unit	41B
86	27	**45**	55	63	24 AC	B	**3RA14 36-8XC21-1AC2**		1	1 unit	41B
					110 AC	B	**3RA14 36-8XC21-1AG2**		1	1 unit	41B
					230 AC	▶	**3RA14 36-8XC21-1AL2**		1	1 unit	41B
DC operation											
80	25	**37**	51	63	24 DC	B	**3RA14 35-8XC21-1BB4**		1	1 unit	41B
86	27	**45**	55	63	24 DC	B	**3RA14 36-8XC21-1BB4**		1	1 unit	41B

[1] Coil operating range at 50 Hz: 0.8 ... 1.1 x U_s; at 60 Hz: 0.85 ... 1.1 x U_s.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Fully wired and tested contactor assemblies · Size S3-S3-S2 · up to 75 kW



Mountable accessories (optional)

To be ordered separately		Order No.	Page
4	Mechanical interlock, lateral, depth compensation required K3: 0 mm; K2: 27.5 mm[1]	3RA19 24-2B	3/156
7	Solid-state time-delay auxiliary switch block, front[2]	3RT19 26-2G...	3/102
15	Auxiliary switch block, lateral	3RH19 21-1EA..	3/100
16	Surge suppressors	3RT19 .6-1....	3/103
19	Push-in lug for timing relay screw mounting	3RP19 03	3) 3/174
20	Single-phase feeder terminals	3RA19 43-3L	

Complete contactor assemblies

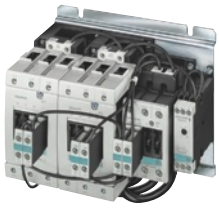
Individual parts		Order No. Q1	Q3	Q2	Page
1 2 3	Contactor, 55 kW	3RT10 44	3RT10 44	3RT10 35	3/78
1 2 3	Contactor, 75 kW	3RT10 45	3RT10 45	3RT10 36	3/78
8	Timing relay, lateral	3RP15 74-1N.30			3)
9	Auxiliary switch block with 1 unassigned NO contact				
10	Auxiliary switch block for local control	3RH19 21-1CA10			3/98
	- 2 units	3RH19 21-1CA01			
	- 3 units	3RH19 21-1CA10			3/98
11	Base plate	3RA19 42-2E			3/174
6	Assembly kit	3RA19 43-2C			3/174

The assembly kit contains the star jumper on the top and the wiring module on the bottom for connecting the main current paths.

1) Use the 3RA19 42-2B base plate for this design.

2) Generally possible. If a solid-state time-delay auxiliary switch block is mounted onto the front of K3, a standard auxiliary switch block can only be mounted onto the side.

3) See Chapter 10 "Monitoring and Control Devices" → "3RP, 7PV Timing Relays" → "3RP15 Timing Relays in Industrial Enclosure, 22.5 mm".



3RA14 4.-8XC21-1...

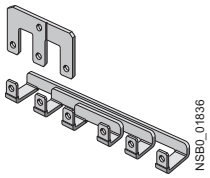
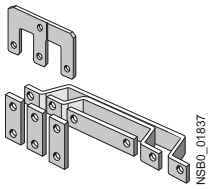
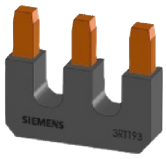
Rated data AC-3 Operational current I_e up to 400 V	Ratings of induction motors at 50 Hz and 230 V	**400 V**	500 V	690 V	Rated control supply voltage U_s[1]	DT	**Screw terminals** Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	kW	**kW**	kW	kW	V						
AC operation, 50/60 Hz											
115	37	**55**	81	93	24 AC	B	**3RA14 44-8XC21-1AC2**		1	1 unit	41B
					110 AC	B	**3RA14 44-8XC21-1AG2**		1	1 unit	41B
					230 AC	▶	**3RA14 44-8XC21-1AL2**		1	1 unit	41B
150	47	**75**	103	110	24 AC	B	**3RA14 45-8XC21-1AC2**		1	1 unit	41B
					110 AC	B	**3RA14 45-8XC21-1AG2**		1	1 unit	41B
					230 AC	▶	**3RA14 45-8XC21-1AL2**		1	1 unit	41B
DC operation											
115	37	**55**	81	93	24 DC	B	**3RA14 44-8XC21-1BB4**		1	1 unit	41B
150	47	**75**	103	110	24 DC	B	**3RA14 45-8XC21-1BB4**		1	1 unit	41B

1) Coil operating range at 50 Hz: 0.8 ... 1.1 x U_s; at 60 Hz: 0.85 ... 1.1 x U_s.

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SIRIUS 3RA14 contactor assemblies for wye-delta starting

Components for customer assembly

Version	Size	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Assembly kits							
 NSB0_01836 3RA19 53-2B The assembly kit contains: star jumper, wiring module on the bottom (Wiring module on the top is not included in the scope of supply. A double infeed between the line contactor and the delta contactor is recommended.)	**S2-S2-S0**	▶	**3RA19 33-2C**		1	1 unit	41B
	S2-S2-S2	▶	**3RA19 33-2B**		1	1 unit	41B
	S3-S3-S2	▶	**3RA19 43-2C**		1	1 unit	41B
	S3-S3-S3	▶	**3RA19 43-2B**		1	1 unit	41B
	S6-S6-S6	A	**3RA19 53-2B**		1	1 unit	41B
	S6-S6-S6	A	**3RA19 53-2N**		1	1 unit	41B
	S10-S10-S10	A	**3RA19 63-2B**		1	1 unit	41B
	S12-S12-S12	B	**3RA19 73-2B**		1	1 unit	41B
 NSB0_01837 3RA19 53-2N, 3RA19 63-2B, 3RA19 73-2B							
Single-phase feeder terminals							
Conductor cross-section: 95 mm²	**S3**	A	**3RA19 43-3L**		1	1 unit	41B
Three-phase feeder terminal							
Feeder terminal blocks for the line contactor for large conductor cross-sections Conductor cross-section: 50 mm²	**S2**	▶	**3RV19 35-5A**		1	1 unit	41E
Three-phase busbars							
Bridging phase-by-phase of all input terminals of the line contactor (Q1) and the delta contactor (Q3)	**S2**	▶	**3RV19 35-1A**		1	1 unit	41E
Links for paralleling, 3-pole (star jumpers)							
 SIEMENS 3RT19 3RT19 36-4BA31 Without connection terminal (the links for paralleling can be reduced by one pole)	**S2**	▶	**3RT19 36-4BA31**		1	1 unit	41B
	S3	▶	**3RT19 46-4BA31**		1	1 unit	41B
	S6[1]	▶	**3RT19 56-4BA31**		1	1 unit	41B
	S10, S12[1]	▶	**3RT19 66-4BA31**		1	1 unit	41B
Base plates							
For customer assembly of contactor assemblies for wye-delta starting with a **laterally mounted** timing relay							
Side-by-side mounting	**S2, S2, S0**	B	**3RA19 32-2E**		1	1 unit	41B
10 mm distance between Q3 and Q2	**S2, S2, S2**	B	**3RA19 32-2F**		1	1 unit	41B
Side-by-side mounting	**S3, S3, S2**	B	**3RA19 42-2E**		1	1 unit	41B
10 mm distance between Q1, Q3 and Q2	**S6, S6, S3**	B	**3RA19 52-2E**		1	1 unit	41B
	S6, S6, S6	B	**3RA19 52-2F**		1	1 unit	41B
	S10, S10, S6	B	**3RA19 62-2E**		1	1 unit	41B
	S10, S10, S10	B	**3RA19 62-2F**		1	1 unit	41B
	S12, S12, S10	B	**3RA19 72-2E**		1	1 unit	41B
	S12, S12, S12	B	**3RA19 72-2F**		1	1 unit	41B
For customer assembly of contactor assemblies for wye-delta starting with a **front-mounted** timing relay							
10 mm distance between Q1, Q3 and Q2	**S2, S2, S0**	B	**3RA19 32-2B**		1	1 unit	41B
	S2, S2, S2	B	**3RA19 32-2B**		1	1 unit	41B
	S3, S3, S2	B	**3RA19 42-2B**		1	1 unit	41B

[1] The 3RT19 56-4EA1 (S6) or 3RT19 66-4EA1 (S10, S12) cover can be used for touch protection.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3TD6 reversing contactor assemblies, 335 kW

Overview

The contactor assemblies are suitable for use in any climate and the contactors are mechanically interlocked. They are finger-safe according to EN 50274.

Complete units and components for customer assembly are available. For motor protection, either overload relays for stand-alone installation or thermistor motor protection releases must be ordered separately.

Complete units

3TD68 contactor assemblies each consist of two mechanically interlocked 3TF68 contactors. Electrical interlocking is wired.

The main and control circuits are wired according to the circuit diagrams.

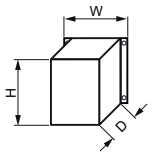
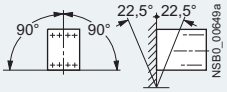
An internal circuit diagram, a type designation and an unit labeling plate are provided on a common cover.

Auxiliary contacts

The contactor assemblies each have 2 NO + 2 NC contacts per contactor. 1 NO + 1 NC contacts with momentary-contact operation and 2 NO + 1 NC contacts with continuous operation are unassigned.

Technical specifications

The technical specifications are identical to those of the 3TF68 individual contactors unless otherwise stated.

Type			**3TD68**
Size			**14**
Dimensions (W x H x D) with base plate		mm	520 x 310 x 278
General data			
Permissible mounting position Installation instructions[1] The contactors are designed for operation on a vertical mounting surface.			
Mechanical endurance		Operating cycles	5 million
(SP) and (UL) rated data			
Rated insulation voltage		V AC	600
Uninterrupted current enclosed		A	550
Maximum horsepower ratings ((SP) and (UL) approved values)			
• Rated power for induction motors at 60 Hz	At 200 V 230 V 460 V 575 V	hp hp hp hp	200 229 464 582
NEMA/EEMAC ratings	NEMA/EEMAC SIZE		6
• Uninterrupted current			
- Open		A	600
- Enclosed		A	540
• Rated power for induction motors at 60 Hz	At 200 V 230 V 460 V 575 V	hp hp hp hp	150 200 400 400
Overload relays	Type		3RB20 66
• Setting range		A	160 ... 630

[1] If the contactors are mounted at a 90° angle (conducting paths horizontally one above the other), the following reductions apply: switching frequency: to 80 % of the standard values.

Selection and ordering data

Size	Rated data AC-3					Auxiliary contacts per direction of rotation		Rated control supply voltage U_s	DT	**Screw terminals**		PU (UNIT, SET, M)	PS*	PG
	Operational current I_e up to	Ratings of induction motors at 50 Hz and				Version				Order No.	Price per PU			
	690 V	230 V	**400 V**	500 V	690 V									
	A	kW	**kW**	kW	kW	NO	NC	V AC						
Complete units														
AC operation, 50/60 Hz														
14	630	200	**335**	434	600	4	4	110 ... 132	C	**3TD68 04-2CF7**		1	1 unit	41B
								200 ... 240	C	**3TD68 04-2CM7**		1	1 unit	41B

For motor protection, overload relays must be ordered separately; see Chapter 7, "Protection Equipment" → "Overload Relays" → "SIRIUS 3RB2 Solid-State Overload Relays".

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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3TE6 contactor assemblies for wye-delta starting, 630 kW

Overview

The contactor assemblies are suitable for use in any climate. They are finger-safe according to EN 50274.

3TE contactor assemblies are available as complete units and components for customer assembly.

The complete unit combinations are optionally supplied without a main conducting path connection between the line contactor and the delta contactor.

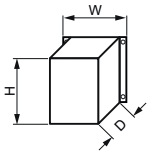
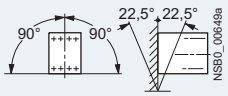
Motor protection

3TE68 contactor assemblies are supplied without overload protection. Overload relays or thermistor motor protection releases must be ordered separately.

The overload relay can be either mounted onto the line contactor or separately fitted. It must be set to 0.58 times the rated motor current.

Technical specifications

The technical specifications are identical to those of the 3TF68 individual contactors unless otherwise stated.

Type			**3TE68**
Size			**14**
Dimensions (W x H x D) with base plate		mm	665 x 325 x 278
General data			
Permissible mounting position Installation instructions[1] The contactors are designed for operation on a vertical mounting surface.			
Individual contactors			
• K1 line contactor		Type	3TF68
• K3 delta contactor		Type	3TF68
• K2 star contactor		Type	3RT10 75
Mechanical endurance		Operating cycles	3 million
Unassigned auxiliary contacts of the individual contactors			[2]
Main circuit			
Current-carrying capacity with reversing time up to 10 s			
• Rated operational current I_e	Up to 690 V	A	1090
• Rated power for induction motors at 50 Hz	At 230 V	kW	355
	400 V	kW	612
	500 V	kW	800
	690 V	kW	1046
• Switching frequency with overload relay		h^{-1}	3
Current-carrying capacity with reversing time up to 15 s			
• Rated operational current I_e	Up to 500 V	A	923
	690 V	A	883
• Rated power for induction motors at 50 Hz	At 230 V	kW	295
	400 V	kW	515
	500 V	kW	677
	690 V	kW	885
• Switching frequency with overload relay		h^{-1}	2
Current-carrying capacity with reversing time up to 20 s			
• Rated operational current I_e	Up to 500 V	A	800
	690 V	A	765
• Rated power for induction motors at 50 Hz	At 230 V	kW	244
	400 V	kW	444
	500 V	kW	590
	690 V	kW	770
• Switching frequency with overload relay		h^{-1}	2

[1] If the contactors are mounted at a 90° angle (conducting paths horizontally one above the other), the following reductions apply: switching frequency: to 80 % of the standard values.

[2] See circuit diagrams of the control circuits (see operating instructions).

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Contactor	Type		3TE68
Short-circuit protection			
Main circuit			
Fuse links, gG operational class: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE			
Highest rated current of the fuse acc. to IEC 60947-4-1/EN 60947-4-1			
• Type of coordination "1"		A	1000
• Type of coordination "2"		A	500[1]
Auxiliary circuit			
• Short-circuit test with fuse links of gG operational class: DIAZED, type 5SB; NEOZED, type 5SE with I_k = 1 kA acc. to IEC 60947-5-1		A	10
• Test with miniature circuit breaker up to 230 V with C characteristic: Short-circuit current I_k = 400 A acc. to IEC 60947-5-1			
Short-circuit protection with fuses for motor feeders with short-circuit currents up to 50 kA and 690 V			
Rated motor current		A	277 ... 1090
Overload relays		Type	3RB20 66
Setting range (The overload relays must be set to 0.58 times the rated motor current.)		A	160 ... 630
Permissible back-up fuses for starters, comprising contactor assemblies and overload relays. Single or double infeed[1]			
• Fuse links, gG operational class: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE			
- Type of coordination "1"		A	1000
- Type of coordination "2"		A	500
• Fuse links, aM operational class: LV HRC, type 3ND			
- Type of coordination "2"		A	630
• Fuse links, Siemens Canada, HRC fuses, Type II		A	1000
• Fuse links, UL-listed fuses, CLASS L		A	1200
• Fuse links, British Standard Fuses, BS88			
- Type of coordination "1"		A	1000
- Type of coordination "2"		A	500

[1] The maximum rated motor current must not be exceeded.

Use double infeed for higher rated motor currents; see the circuit diagrams in the operating instructions.

Selection and ordering data

Size	Rated data AC-3					Rated control supply voltage U_s	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
	Operational current I_e up to	Rating of induction motors at 50 Hz and						Order No. / Price per PU			
	690 V	230 V	**400 V**	500 V	690 V						
	A	kW	**kW**	kW	kW	V AC					
Complete units, reversing time up to 10 s											
AC operation, 50/60 Hz											
Without main conducting path connection between line and delta contactor											
14	1090	315	**630**	800	1000	110	C	**3TE68 04-5CF0**	1	1 unit	41B
						230/220[1]	D	**3TE68 04-5CP0**	1	1 unit	41B

[1] Operating range at 220 V: 0.85 ... 1.15 x U_s; lower operating range limit according to IEC 60947.

For motor protection, overload relays for stand-alone installation must be ordered separately; see Chapter 7, "Protection Equipment" → "Overload Relays" → "SIRIUS 3RB2 Solid-State Overload Relays".

* You can order this quantity or a multiple thereof.
Illustrations are approximate

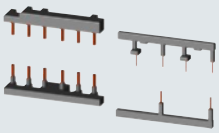
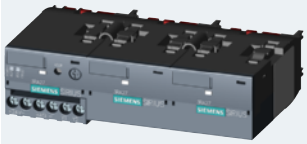
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Introduction

Overview

The function modules for mounting onto contactors enable the assembly of starters and contactor assemblies for direct-on-line, reversing and wye-delta starting without any additional, complicated wiring of the individual components.

They include the key control functions required for the particular feeder, e.g. timing and interlocking, and can be connected to the control system by either parallel wiring or through IO-Link or AS-Interface.

Version	SIRIUS 3RA28 function modules	SIRIUS 3RA27 function modules for IO-Link[1]	SIRIUS 3RA27 function modules for AS-Interface[1]
For direct-on-line starting	Timing relays: ON-delay or OFF-delay with semiconductor output With screw or spring-type terminals 	With screw or spring-type terminals 	With screw or spring-type terminals 
For reversing starting	Wiring modules for sizes S00 and S0 With screw or spring-type terminals (with screw terminals for main and control circuit) 	1 function module for size S00 and S0, screw or spring-type connection, plus the respective wiring modules[1] 	1 function module for size S00 and S0, screw or spring-type connection, plus the respective wiring modules[1] 
For wye-delta starting	1 function module for size S00 and S0, screw or spring-type connection of the contactors, plus the respective wiring modules[2] 	1 function module for size S00 and S0, screw or spring-type connection, plus the respective wiring modules[2] 	1 function module for size S00 and S0, screw or spring-type connection, plus the respective wiring modules[2] 
Accessories	Sealable covers 	Operator panel for autonomous controlling of up to 4 feeders Module connector for the grouping of starters Connection cable between the operator panel and the feeder group Sealable covers 	AS-Interface addressing units Sealable covers 

[1] Use of the communication-capable function modules for IO-Link or AS-Interface requires contactors with communication interface (see pages 3/32 and 3/34).

[2] The modules for the control current wiring, which are included in the wiring kit, are not required.

Note:

When using the function modules, no other auxiliary switches are allowed to be connected to the basic units.

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Overview

Simply by being plugged in place, the SIRIUS function modules enable different functionalities required for the assembly of starters to be realized in the feeder. The function modules and wiring kits thus help to reduce the wiring work within the feeder practically to zero.

SIRIUS function modules for direct-on-line starting

All solid-state timing relays which can be mounted onto the contactor are designed for applications in the range from 24 to 240 V AC/DC (wide voltage range). Both the electrical and mechanical connection are made by simple snapping on and locking.

A protection circuit (varistor) is integrated in each module.

The solid-state timing relay with semiconductor output uses two contact legs to actuate the contactor underneath by means of a semiconductor after the set time *t* has elapsed.

The switching state feedback is performed by a mechanical switching state indicator (plunger). In addition, the auxiliary switches in the contactors are freely accessible and can be used for feedbacks to the control system or for signal lamps.

A sealable cover is available to protect against careless adjustment of the set times.

SIRIUS function modules for reversing starting

The wiring kits for reversing starters enable the cost-effective assembly of contactor assemblies. They can be used for all applications with reversing duty up to 18.5 kW.

For detailed description see page 3/145.

SIRIUS function modules for wye-delta starting

Both interlocking and timing functions are required for the assembly of wye-delta starters. With the function modules for wye-delta starting and the matching link modules for the main circuit, these starters can be assembled easily and with absolutely no errors.

The entire sequence in the control circuit is integrated in the snap-on modules. This covers:

- An adjustable star time *t* from 0.5 to 60 s
- A non-adjustable dead interval of 50 ms
- Electrical contacting to the contactors by means of coil pick-off (contact legs)
- Feedback of the switching state at the contactor using a mechanical switch position indicator (plunger)
- Electrical interlocking between the contactors

These modules do not require their own terminals and can therefore be used for contactors with both screw and spring-type terminals in the two sizes S00 and S0. To start the wye-delta starter, only the first of the three contactors (line contactor) is actuated. All other functions then take place inside the individual modules.

This also offers advantages if the timing function was previously implemented in a controller, as it again results in a significant reduction in the number of PLC outputs, the programming work and the wiring outlay.

The kits for the main circuit include the mechanical interlock, the star jumper, the wiring modules at the top and at the bottom, and the required connecting clips.

A protection circuit (varistor) is integrated in the basic module.

Application

The snap-on function modules for direct-on-line starting are used above all for realizing timing functions independently of the control system.

With the OFF-delay version of the timing relay it is possible for example for the fan motor for cooling a main drive to be switched off with a delay so that sufficient cooling after operation is guaranteed even if the plant and its control system have already been switched off.

The ON-delay timing relays enable for example the time-delayed starting of several drives so that the summation starting current does not rise too high, which could result in voltage failure.

The function modules for wye-delta starting are mostly used where current-limiting measures for starting a drive are required, e.g. for large fans and ventilators, and a high level of availability is essential at the same time. This technology has been used with success for several decades and has the additional advantage of requiring relatively little know-how. Through the use of function modules, the assembly work with simple standard components is even easier and error-free.

Benefits

The use of snap-on function modules for direct-on-line starting (timing relays) results in the following advantages:

- Reduction of control current wiring
- Prevention of wiring errors
- Reduction of testing costs
- Implementation of timing functions independently of the control system
- Less space required in the control cabinet compared to a separate timing relay
- No additive protection circuit required (varistor integrated)

Advantages of using wiring kits for the assembly of reversing starters see page 3/146.

The use of function modules for wye-delta starting results in the following advantages:

- Operation solely through the line contactor A1/A2 – no further wiring needed
- Reduction of the control current wiring inside the contactor assembly and to the higher-level control system where applicable
- Prevention of wiring errors
- Reduction of testing costs
- Integrated electrical interlocking saves costs and prevents errors
- Less space needed in the control cabinet compared to using a separate timing relay
- Adjustable starting in star mode from 0.5 to 60 s
- Independent of the contactor's control supply voltage (24 to 240 V AC/DC)
- Varistor integrated – no additive protection circuit required
- No control current wiring thanks to plug-in technology and connecting cables
- Mechanically coded assembly enables easy configuration and reliable wiring
- Fewer versions – one module kit for screw and spring-type connection and for the two sizes S00 and S0
- Mechanical interlocking (with wiring kit for the main circuit)

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Introduction

Technical specifications

Type			**3RA28 11**	**3RA28 12**	**3RA28 16**
Function			**ON-delay**	**OFF-delay with auxiliary voltage**	**Wye-delta function**
Dimensions			See 3RT20 contactors, pages 3/17 and 3/21.		
General data					
Rated insulation voltage U_i Pollution degree 3 Overvoltage category III		V AC	300		
Operating range of excitation			0.85 ... 1.1 x U_s, 0.95 ... 1.05 times the rated frequency		
Overvoltage protection			Varistor integrated		
Rated power		W	1		1
• Power consumption at 230 V AC, 50 Hz		VA	1		2
Rated operational currents I_e					
• AC-140	At 24 ... 240 V, 50 Hz	A	0.4		--
• DC-13	At 24 ... 240 V	A	0.4		--
• AC-15	At 24 ... 240 V, 50 Hz	A	--		3
• DC-13	- At 24 V	A	--		1
	- At 125 V	A	--		0.2
	- At 250 V	A	--		0.1
DIAZED protection	gG operational class	A	--		4
Switching frequency for load					
• With I_e at 230 V AC		h^{-1}	2500		--
• With 3RT2 contactor at 230 V AC		h^{-1}	2500		--
Recovery time		ms	50		150
Minimum ON period		ms	--	35	--
Residual current	Max.	mA	5		--
Voltage drop With conducting output	Max.	VA	3.5		--
Short-time loading capacity	Up to 10 ms	A	10		--
Setting accuracy With reference to upper limit of scale	Typ.		±15 %		
Repeat accuracy	Max.		±1 %		
Mechanical endurance		Operating cycles	100×10^6		10×10^6
Permissible ambient temperature					
• During operation		°C	-25 ... +60		
• During storage		°C	-40 ... +80		
Degree of protection acc. to IEC 60947-1, Appendix C			IP20		
Shock resistance Half-sine acc. to IEC 60068-2-27		g/ms	15/11		
Vibration resistance according to IEC 60068-2-6		Hz/mm	10 ... 55/0.35		
Electromagnetic compatibility (EMC)			IEC 61812-1, IEC 61000-6-2, IEC 61000-6-4		IEC 60947-4-1
Permissible mounting positions			Any		
Conductor cross-sections					
Connection type			**Screw terminals**		
• Solid		mm^2	1 x (0.5 ... 4), 2 x (0.5 ... 2.5)		--
• Finely stranded with end sleeve		mm^2	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5)		--
• AWG cables, solid or stranded		AWG	2 x (20 ... 14)		--
• Terminal screws			M3 (for standard screw driver size 2 or Pozidriv 2)		--
• Tightening torque		Nm	0.8 ... 1.2		--
Connection type			**Spring-type terminals**		
• Operating devices		mm	3.0 x 0.5		--
• Solid		mm^2	2 x (0.25 ... 1.5)		--
• Finely stranded with end sleeve		mm^2	2 x (0.25 ... 1.5)		--
• Finely stranded		mm^2	2 x (0.25 ... 1.5)		--
• AWG cables, solid or stranded		AWG	2 x (24 ... 16)		--

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SIRIUS 3RA28 Function Modules for 3RT2 Contactors and 3RH21 Contactor Relays

Selection and ordering data

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B



3RA28 11-1CW10



3RA28 11-2CW10

For contactors Type	Rated control supply voltage U_s [1] V	Time setting range t s	DT	Screw terminals Order No.	Price per PU	DT	Spring-type terminals Order No.	Price per PU
Solid-state timing relays with semiconductor output, for snapping onto the front								
	The electrical connection between the timing relay and the contactor underneath is established automatically when it is snapped on and locked.							
	ON-delay Two-wire design, varistor integrated							
3RT20 1., 3RT20 2., 3RH21[2], 3RH24	24 ... 240 AC/DC	0.05 ...100 (1, 10, 100, selectable)	A	**3RA28 11-1CW10**		A	**3RA28 11-2CW10**	
	OFF-delay with auxiliary voltage Varistor integrated							
3RT20 1., 3RT20 2., 3RH21[2], 3RH24	24 ... 240 AC/DC	0.05 ...100 (1, 10, 100, selectable)	A	**3RA28 12-1DW10**		A	**3RA28 12-2DW10**	
Accessories								
	Sealable covers for 3RA27, 3RA28, 3RA29		A	**3RA29 10-0**		A	**3RA29 10-0**	

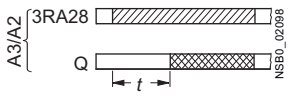
[1] AC voltage values apply for 50 Hz and 60 Hz.

[2] Cannot be fitted onto coupling contactors.

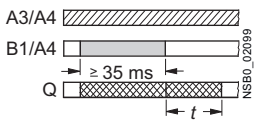
Note:

When using the function modules, no other auxiliary switches are allowed to be connected to the basic units.

Function	Function charts
	Timing relay energized Contact closed Contact open
1 NO contact (semiconductor output)	
ON-delay	3RA28 11-.CW10



OFF-delay with auxiliary voltage	3RA28 12-.DW10



* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RA28 Function Modules for 3RT2 Contactors and 3RH21 Contactor Relays

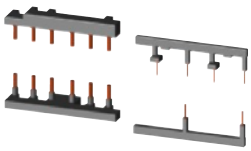
For reversing starting / for wye-delta starting

Selection and ordering data

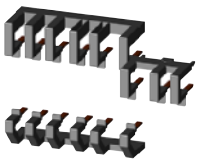
PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B



3RA28 16-0EW20



3RA29 23-2AA1



3RA29 23-2BB2

For contactors	Rated control supply voltage U_s [1]	Time setting range t	DT	Screw terminals	DT	Spring-type terminals
Type	V	s		Order No. / Price per PU		Order No. / Price per PU
Assembly kits for reversing starting						
	Assembly kits for making 3-pole contactor assemblies The assembly kit contains: mechanical interlock; 2 connecting clips for 2 contactors, wiring modules on the top and bottom					
3RT20 1.	• For size S00		▶	**3RA29 13-2AA1**	▶	**3RA29 13-2AA2**
3RT20 2.	• For size S0		▶	**3RA29 23-2AA1**	▶	**3RA29 23-2AA2**
Assembly kits for wye-delta starting						
	Assembly kits for making 3-pole contactor assemblies The assembly kit contains: Mechanical interlock, 4 connecting clips for 3 contactors; star jumper, wiring modules on the top and bottom					
3RT20 1.	• For size S00		▶	**3RA29 13-2BB1**	▶	**3RA29 13-2BB2**
3RT20 2.	• For size S0 (only main current for version with spring-type terminals)		▶	**3RA29 23-2BB1**	▶	**3RA29 23-2BB2**
Function modules for wye-delta starting						
	The electrical connection between the function module and the contactor assembly is established automatically by snapping on and plugging in the connecting cables. **Wye-delta function** (varistor integrated)					
3RT20 1. 3RT20 2. [2]	24 ... 240 AC/DC	0.5 ... 60 (10, 30, 60 selectable)	A	**3RA28 16-0EW20**	A	**3RA28 16-0EW20**
	Individual modules					
	24 ... 240 AC/DC	Basic modules for wye-delta starting	A	**3RA29 12-0**	A	**3RA29 12-0**
	--	Coupling modules for wye-delta starting	A	**3RA29 11-0**	A	**3RA29 11-0**
Accessories						
	Sealable covers for 3RA27, 3RA28, 3RA29		A	**3RA29 10-0**	A	**3RA29 10-0**

[1] AC voltage values apply for 50 Hz and 60 Hz.

[2] Cannot be fitted onto coupling contactors.

Note:

When using the function modules, no other auxiliary switches are allowed to be connected to the basic units.

Function	Function charts
	Timing relay energized Contact closed Contact open
2 NO contacts (interconnected internally)	
Wye-delta function • 1 NO contact delayed • 1 NO contact instantaneous	3RA28 16-0EW20 A1/A2 Q1 Y Q2 Δ Q3 t 50 ms NSB0_02072a

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

The SIRIUS function modules for IO-Link enable the assembly of starters and contactor assemblies for direct-on-line, reversing and wye-delta starting without any additional, complicated wiring of the individual components. They include the key control functions required for the particular feeder, e.g. timing and interlocking.

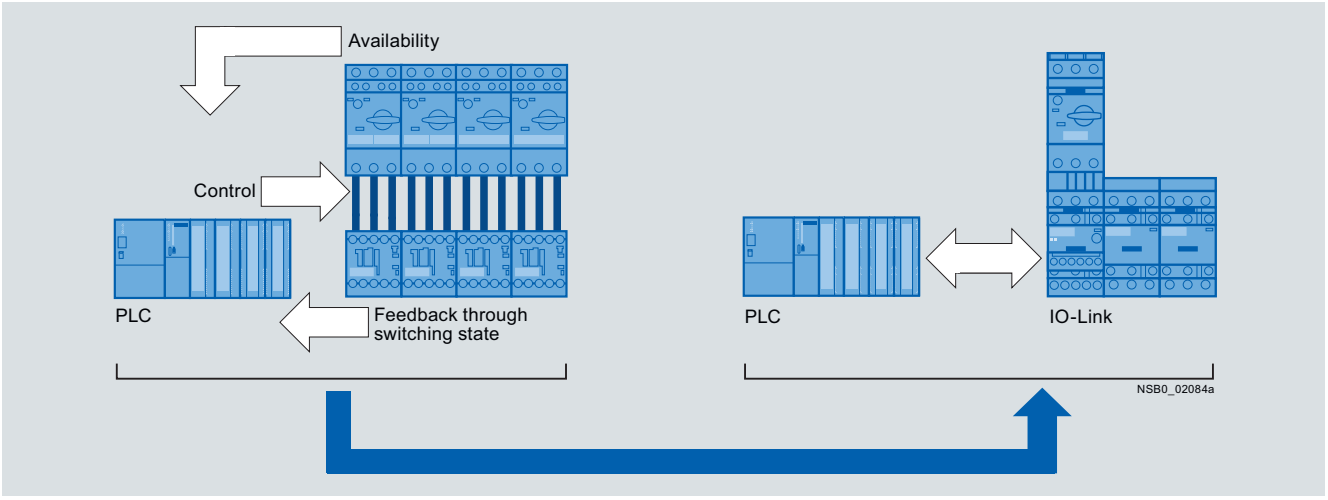
The electrical and mechanical connection to the contactor is established by snapping on and locking. An additive protection circuit for the individual contactors can be dispensed with completely because a varistor is integrated in the modules. Feedback from the contactor contacts is performed with Hall sensors which provide reliable feedback concerning the switching state even under extremely dusty conditions.

The starters are connected to the higher-level control system through IO-Link, with the possibility of connecting up to four starters as a group to one port of the IO-Link master.

Through this type of connection to the control system, a maximum of wiring is saved.

The following essential signals are transmitted:

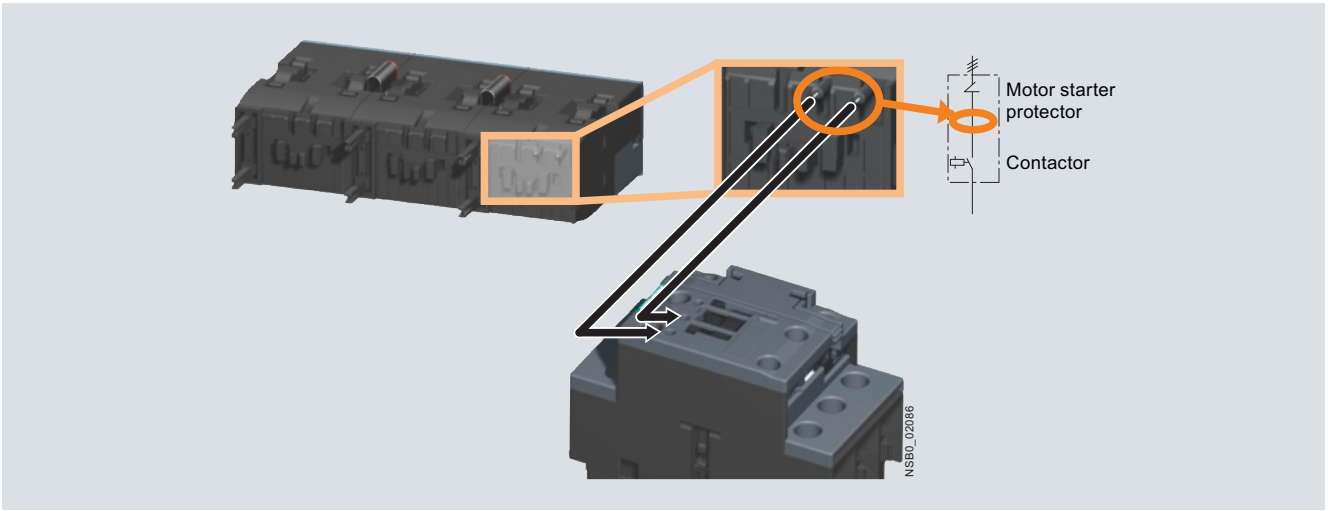
- Availability of the feeder in response to an indirect inquiry from the motor starter protector
- Starter operation
- Feedback concerning the switching state of the starter



Signal transmission through IO-Link

The inquiry from the motor starter protector does not take place through additive wiring between the auxiliary switch and the module but by means of a voltage inquiry at the contactor input.

This requires special versions of the contactors with communication interface (see pages 3/32 and 3/34).



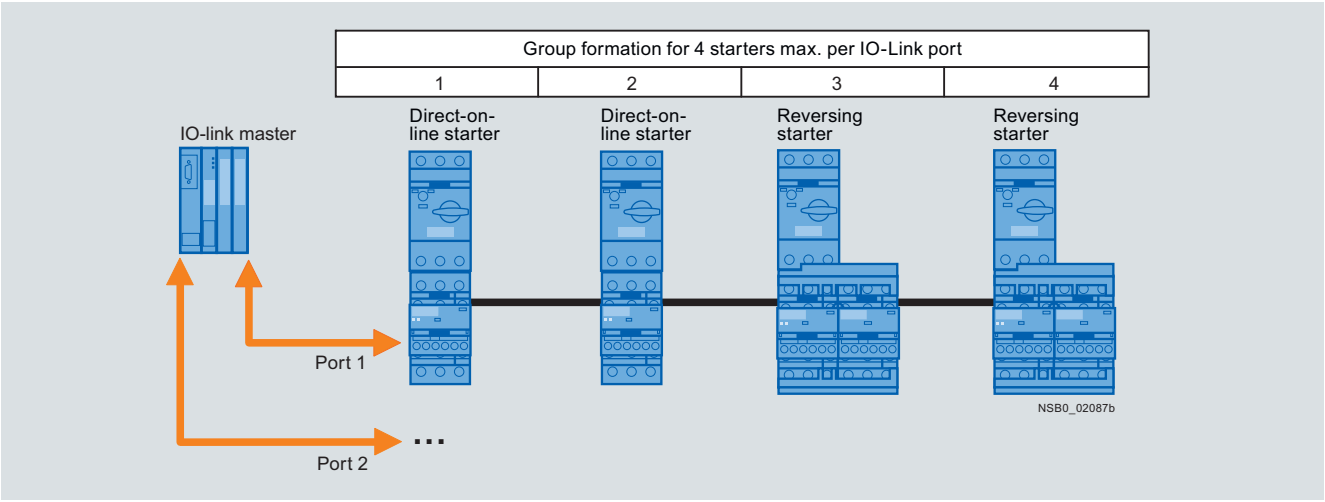
Availability signal through voltage pick-off

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SIRIUS 3RA27 Function Modules for IO-Link for Mounting on 3RT2 Contactors

Introduction

By grouping up to four starters it is possible to connect up to 16 starters to one master of the ET200 S. In this case, all the signals of the individual controls are made available directly in the process image of the input through only 3 individual wires per starter group. If the potential at the master of the ET200 S is the same as that of the controls, a further reduction in wiring is possible by providing the control supply voltage to the contactors by jumpering the corresponding communication wires.



Group formation with IO-Link

In case of a malfunction, the corresponding error signals are also sent directly to the PLC in acyclic mode. This is in addition to transmission of the switching signals and status signals.

Possible error signals:

- Device defect
- No main voltage (motor starter protector tripped)
- No control supply voltage
- Limit position on the right / on the left
- Manual mode
- Process image fault

This easy integration of the starters in the TIA world does not limit the flexibility in the field in the least. For example, all function modules have special terminals in order to enable direct local disconnection. These terminals can be connected for example to a position switch. The input interrupts the voltage supply to the contactor coil directly, i.e. without going through the PLC. These terminals are jumpered in the as-delivered state.

Local manual operation of the complete starter group is also straight-forward using a handheld device. The latter is easily connected to the last starter and can be built into the front panel of the control cabinet if required. This offers significant advantages particularly for commissioning.

Application

The use of SIRIUS function modules with IO-Link is recommended above all in machines and plants in which there are several motor feeders in one control cabinet. Using IO-Link, the connection of these feeders to the automation level is easy, quick and error-free. And with IO modules no longer needed, the width of the ET200 S is far smaller.

Benefits

- Reduction of the control current wiring to no more than three cables for four feeders
- Elimination of testing costs and wiring errors
- Reduction of configuration work
- Integration in TIA means clear diagnostics if a fault occurs
- Dispensing with IO modules saves space in the control cabinet
- All essential timing and interlocking functions for reversing duty and wye-delta starting are integrated
- No additive protection circuit required

For further information on the IO-Link bus systems see Chapter 2, "Industrial Communication".

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Technical specifications

Type			**3RA27 11**
Dimensions			See 3RT20 contactors, pages 3/17 and 3/21.
General data			
Suitable for IO-Link masters acc. to specification			1.0
Permissible ambient temperature			
• During operation	According to IEC 60947-1	°C	-25 ... +60
• During storage	According to IEC 60721-3-1	°C	-40 ... +80
• During transport	According to IEC 60721-3-2	°C	-40 ... +80
Degree of protection			IP20
Operational voltage U_{Hi}		V DC	24 ± 20 %
Power consumption, max. at U_{Hi}		A	2
Max. length of the cables for the input Y1–Y2	According to EN 50295	m	30
EMC interference immunity			
• Electrostatic discharge	According to IEC 61000-4-2	kV	6/8
• Field-related interference	According to IEC 61000-4-3	V/m	10 (80 MHz ... 3 GHz)
• Burst	According to IEC 61000-4-4	kV	2/1
• Conductor-related interference	According to IEC 61000-4-5	kV	0.5/1
• High frequency, asymmetric	According to IEC 61000-4-6	V rms	10 (150 kHz ... 80 MHz)
Conductor cross-sections			
Connection type			**Screw terminals**
• Solid		mm^2	1 x (0.5 ... 4), 2 x (0.5 ... 2.5)
• Finely stranded with end sleeve		mm^2	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5)
• AWG cables		AWG	2 x (20 ... 14)
• Terminal screws			M3 (for standard screwdriver Ø 6 mm or Pozidriv 2)
• Tightening torque of the terminal screws		Nm	0.8 ... 1.2
Connection type			**Spring-type terminals**
• Operating devices		mm	3.0 x 0.5
• Solid		mm^2	2 x (0.25 ... 1.5)
• Finely stranded with end sleeve		mm^2	2 x (0.25 ... 1.5)
• Finely stranded		mm^2	2 x (0.25 ... 1.5)
• AWG cables		AWG	2 x (24 ... 16)

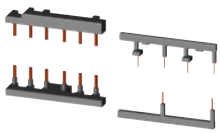
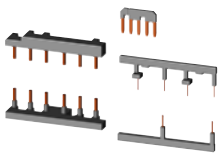
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SIRIUS 3RA27 Function Modules for IO-Link for Mounting on 3RT2 Contactors

For direct-on-line starting / for reversing starting / for wye-delta starting

Selection and ordering data

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

Version	DT	Screw terminals Order No.	Price per PU	DT	Spring-type terminals Order No.	Price per PU
Function modules for direct-on-line starting						
 3RA27 11-1AA00  3RA27 11-2AA00 **IO-Link connection** Includes one module connector for assembling an IO-Link group	A	**3RA27 11-1AA00**		A	**3RA27 11-2AA00**	
Function modules for reversing starting[1]						
 3RA27 11-1BA00 **IO-Link connection**, comprising one basic and one coupling module and an additional module connector for assembling an IO-Link group	A	**3RA27 11-1BA00**		A	**3RA27 11-2BA00**	
 3RA29 23-2AA1 **Assembly kits for making 3-pole contactor assemblies**[3] The assembly kit contains: mechanical interlock; 2 connecting clips for 2 contactors, wiring modules on the top and bottom						
• For size S00	▶	**3RA29 13-2AA1**		▶	**3RA29 13-2AA2**	
• For size S0						
- For main, auxiliary and control current	▶	**3RA29 23-2AA1**			**--**	
- Only for main current[4]		**--**		▶	**3RA29 23-2AA2**	
  3RA29 23-2AA2						
Function modules for wye-delta starting[2]						
 3RA27 11-1CA00 **IO-Link connection**, comprising one basic module and two coupling modules, plus an additional module connector for assembling an IO-Link group	A	**3RA27 11-1CA00**		A	**3RA27 11-2CA00**	
 3RA29 23-2BB1 **Assembly kits for making 3-pole contactor assemblies**[3] The assembly kit contains: Mechanical interlock, 4 connecting clips for 3 contactors; star jumper, wiring modules on the top and bottom						
• For size S00	▶	**3RA29 13-2BB1**		▶	**3RA29 13-2BB2**	
• For size S0						
- For main, auxiliary and control current	▶	**3RA29 23-2BB1**			**--**	
- Only for main current[4]		**--**		▶	**3RA29 23-2BB2**	

1) For prewired contactor assemblies for reversing starting with communication interface see pages 3/148 and 3/150. When these contactor assemblies are used, the assembly kit for the wiring is already integrated.

2) For complete contactor assemblies for wye-delta starting including function modules see pages 3/163 and 3/165.

3) When using the function modules for wye-delta starting, the wiring modules for the auxiliary current are not required.

4) Version in size S0 with spring-type terminals:
Only the wiring modules for the main circuit are included.
No connectors are included for the auxiliary and control circuit.

Matching contactors with communication interface required (see pages 3/32 and 3/34).

For matching IO-Link masters see Chapter 2, "Industrial Communication".

Note:

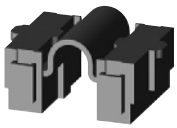
When using the function modules, no other auxiliary switches are allowed to be connected to the basic units.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RA27 Function Modules for IO-Link for Mounting on 3RT2 Contactors

For direct-on-line starting / for reversing starting / for wye-delta starting

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories							
 3RA27 11-0EE01	**Module connector set**, comprising: • 2 module connectors, 14-pole, short • 2 interface covers	A	**3RA27 11-0EE01**		1	1 unit	41B
	Module connector, 14-pole, 8 cm For size jump S00-S0 + 1 space	A	**3RA27 11-0EE02**		1	1 unit	41B
 3RA27 11-0EE02	**Module connector**, 14-pole, 21 cm For various space combinations	A	**3RA27 11-0EE03**		1	1 unit	41B
	Module connector, 10-pole, 8 cm For separate auxiliary voltage supply within an IO-Link group	A	**3RA27 11-0EE04**		1	1 unit	41B
 3RA29 10-0	**Sealable covers** for 3RA27, 3RA28, 3RA29	A	**3RA29 10-0**		1	5 units	41B
	Manual Function modules for IO-Link	C	**3ZX1 012-0RA27-1AB1**		1	1 unit	401
Operator panels[1]							
 3RA69 35-0A	**Operator panel (set)**, comprising: • 1 x operator panel • 1 x enabling module • 1 x interface cover • 1 x fixing terminal	A	**3RA69 35-0A**		1	1 unit	42F
	Connection cable, length 2 m, 10- to 14-pole For connecting the operator panel to the communication module	A	**3RA27 11-0EE11**		1	1 unit	41B
	Enabling modules (replacement)	A	**3RA69 36-0A**		1	1 unit	42F
	Interface covers (replacement)	A	**3RA69 36-0B**		1	5 units	42F

[1] Suitable only for communication through IO-Link.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 3RA27 Function Modules for AS-Interface for Mounting on 3RT2 Contactors

Introduction

Overview

The SIRIUS function modules for AS-Interface enable the assembly of starters and contactor assemblies for direct-on-line, reversing and wye-delta starting without any additional, complicated wiring of the individual components. They include the key control functions required for the particular feeder, e.g. timing and interlocking.

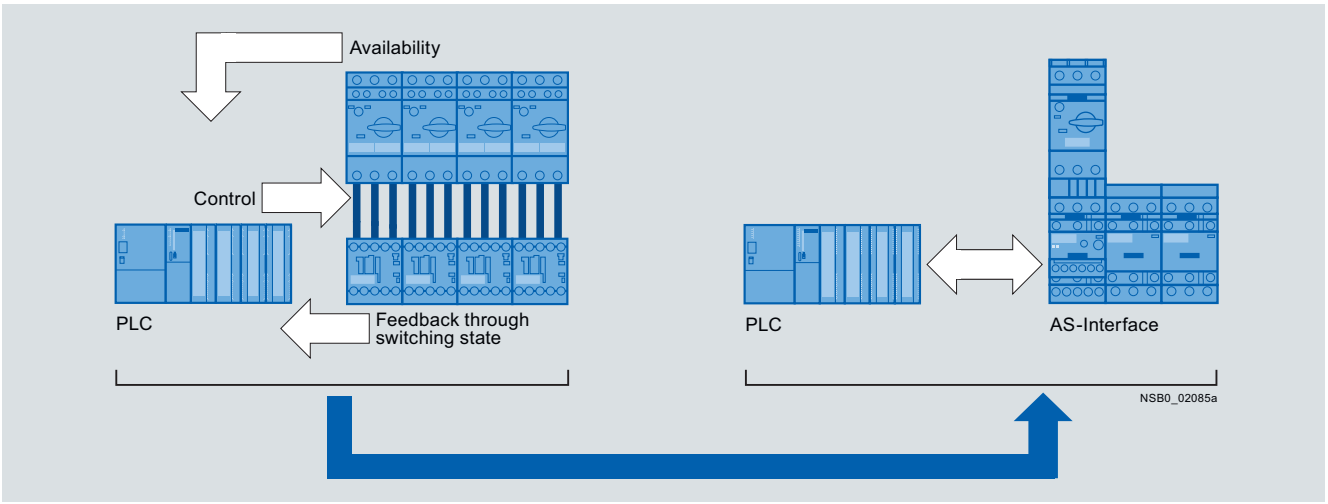
The electrical and mechanical connection to the contactor is established by snapping on and locking. An additive protection circuit for the individual contactors can be dispensed with completely because a varistor is integrated in the modules. Feedback from the contactor contacts is performed with Hall sensors which provide reliable feedback concerning the switching state even under extremely dusty conditions.

Connection of the starters to the higher-level control system takes place through AS-Interface with the Specification V2.1 in A/B technology. As the result, up to 62 starters can be connected to one master and the address is entered in normal manner with an addressing unit.

Through this type of connection to the control system, a maximum of wiring is saved. The wiring outlay is reduced to the control supply voltage and the two individual wires for AS-Interface.

The following essential signals are transmitted:

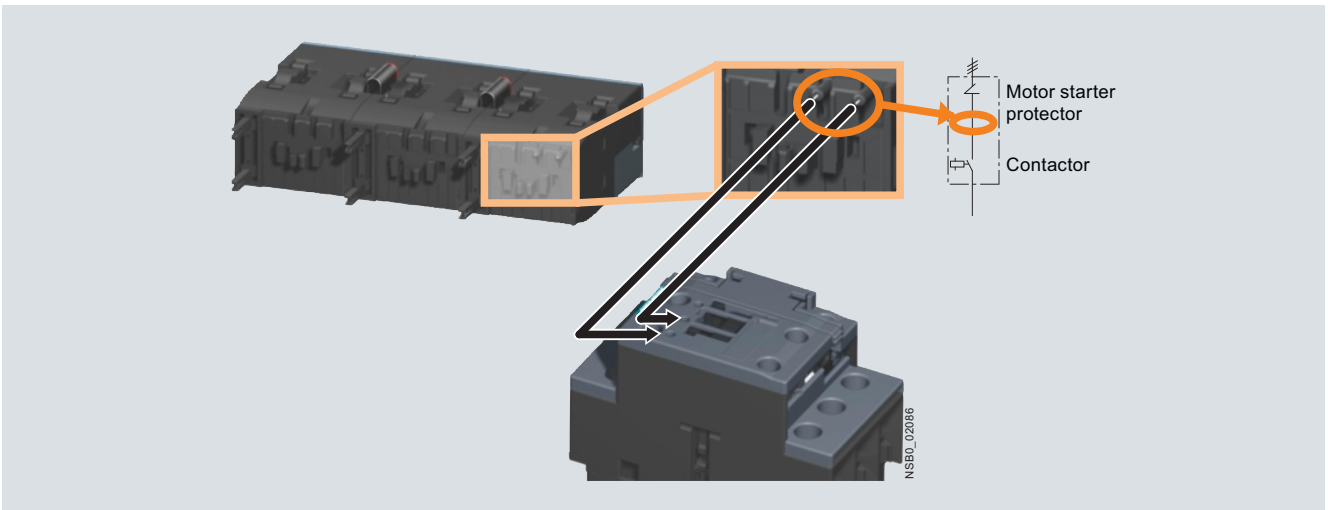
- Availability of the feeder in response to an indirect inquiry from the motor starter protector
- Starter operation
- Feedback concerning the switching state of the starter



Signal transmission through AS-Interface

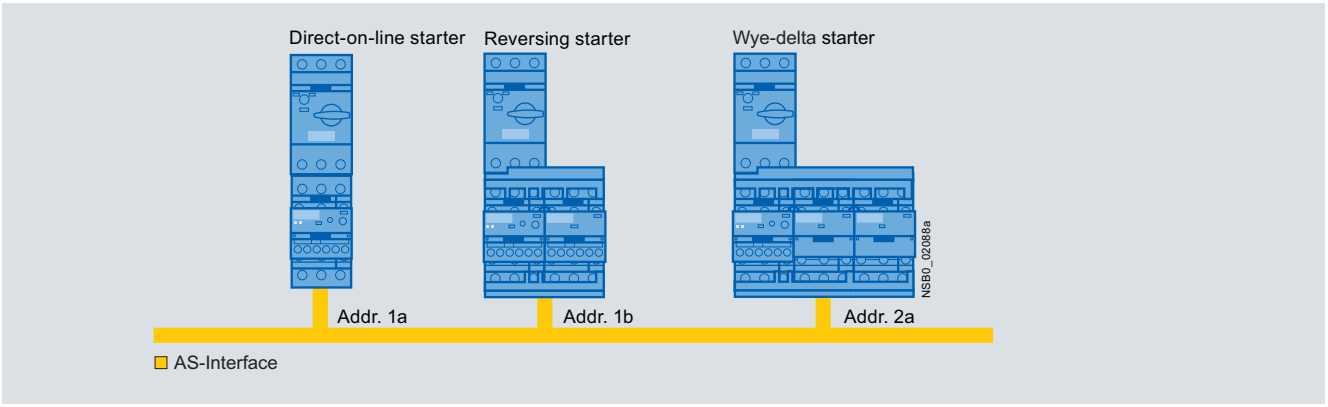
The inquiry from the motor starter protector does not take place through additive wiring between the auxiliary switch and the module but by means of a voltage inquiry at the contactor input.

This requires special versions of the contactors with communication interface (see pages 3/32 and 3/34).



Availability signal through voltage pick-off

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Topology with AS-Interface

This easy integration of the starters in the TIA world does not limit the flexibility in the field in the least. For example, all function modules have special terminals in order to enable direct local disconnection. These terminals can be connected for example to a position switch. The input interrupts the voltage supply to the contactor coil directly, i.e. without going through the PLC. These terminals are jumpered in the as-delivered state.

Application

The use of SIRIUS function modules with AS-Interface is recommended above all in machines and plants requiring easy connection of several different sensors and actuators both inside and outside the control cabinet to the higher-level control system. And with IO modules no longer needed, the width of the PLC is far smaller.

Benefits

- Reduction of control current wiring
- Elimination of testing costs and wiring errors
- Reduction of configuration work
- Dispensing with IO modules saves space in the control cabinet
- All essential timing and interlocking functions for reversing duty and wye-delta starting are integrated
- No additive protection circuit required

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SIRIUS 3RA27 Function Modules for AS-Interface for Mounting on 3RT2 Contactors

Introduction

Technical specifications

Type			**3RA27 12**
Dimensions			See 3RT20 contactors, pages 3/17 and 3/21.
General data			
Slave type			A/B slave
Suitable for AS-i masters acc. to Spec.			2.1 or higher
AS-i Slave Profile IO.ID.ID2			7.A.E
ID1 Code (factory setting)			7
Permissible ambient temperature			
• During operation	According to IEC 60947-1	°C	-25 ... +60
• During storage	According to IEC 60721-3-1	°C	-40 ... +80
• During transport	According to IEC 60721-3-2		-40 ... +80
Degree of protection			IP20
Operational voltage			
• AS-Interface		V	26.5 ... 31.6
• AUX PWR 24 V DC		V	24 ± 20 %
Power consumption, max.			
• AS-Interface		mA	30
• AUX PWR			
- Maximum pick-up/hold current	Size S00 Size S0	mA mA	200 300
Max. length of the cables for the input Y1–Y2	According to EN 50295	m	30
EMC interference immunity			
• Electrostatic discharge	According to IEC 61000-4-2	kV	6/8
• Field-related interference	According to IEC 61000-4-3	V/m	10 (80 MHz ... 3 GHz)
• Burst	According to IEC 61000-4-4	kV	1/2
• Conductor-related interference	According to IEC 61000-4-5	kV	0.5/1
• High frequency, asymmetric	According to IEC 61000-4-6	V rms	10 (150 kHz ... 80 MHz)
Conductor cross-sections			
Connection type			**Screw terminals**
• Solid		mm^2	1 x (0.5 ... 4), 2 x (0.5 ... 2.5)
• Finely stranded with end sleeve		mm^2	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5)
• AWG cables		AWG	2 x (20 ... 14)
• Terminal screws			M3 (for standard screwdriver Ø 6 mm or Pozidriv 2)
• Tightening torque of the terminal screws		Nm	0.8 ... 1.2
Connection type			**Spring-type terminals**
• Operating devices		mm	3.0 x 0.5
• Solid		mm^2	2 x (0.25 ... 1.5)
• Finely stranded with end sleeve		mm^2	2 x (0.25 ... 1.5)
• Finely stranded		mm^2	2 x (0.25 ... 1.5)
• AWG cables		AWG	2 x (24 ... 16)

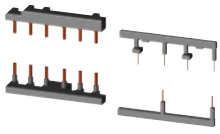
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SIRIUS 3RA27 Function Modules for AS-Interface for Mounting on 3RT2 Contactors

For direct-on-line starting / for reversing starting / for wye-delta starting

Selection and ordering data

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B

Version	DT	Screw terminals Order No.	Price per PU	DT	Spring-type terminals Order No.	Price per PU
Function modules for direct-on-line starting						
 3RA27 12-1AA00  3RA27 12-2AA00 **AS-Interface connection**	A	**3RA27 12-1AA00**		A	**3RA27 12-2AA00**	
Function modules for reversing starting[1]						
 3RA27 12-1BA00 **AS-Interface connection**, comprising one basic and one coupling module	A	**3RA27 12-1BA00**		A	**3RA27 12-2BA00**	
 3RA29 23-2AA1 **Assembly kits for making 3-pole contactor assemblies** The assembly kit contains: mechanical interlock; 2 connecting clips for 2 contactors, wiring modules on the top and bottom						
• For size S00	▶	**3RA29 13-2AA1**		▶	**3RA29 13-2AA2**	
• For size S0						
 - For main, auxiliary and control current	▶	**3RA29 23-2AA1**			--	
 3RA29 23-2AA2 - Only for main current		--		▶	**3RA29 23-2AA2**	

[1] For prewired contactor assemblies for reversing starting with communication interface see pages 3/148 and 3/150. When using the contactor assemblies, the assembly kit for the wiring is already integrated.

Matching contactors with communication interface required (see pages 3/32 and 3/34).

For matching AS-Interface masters, routers and power supply units see Chapter 2 "Industrial Communication".

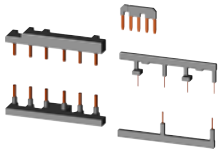
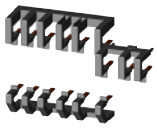
Note:

When using the function modules, no other auxiliary switches are allowed to be connected to the basic units.

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SIRIUS 3RA27 Function Modules for AS-Interface for Mounting on 3RT2 Contactors

For direct-on-line starting / for reversing starting / for wye-delta starting

Version	DT	Screw terminals Order No.	Price per PU	DT	Spring-type terminals Order No.	Price per PU
Function modules for wye-delta starting[1]						
 3RA27 12-1CA00  3RA27 12-2CA00						
AS-Interface connection, comprising one basic module and two coupling modules	A	**3RA27 12-1CA00**		A	**3RA27 12-2CA00**	
 3RA29 23-2BB1						
Assembly kits for making 3-pole contactor assemblies The assembly kit contains: Mechanical interlock, 4 connecting clips for 3 contactors; star jumper, wiring modules on the top and bottom						
• For size S00	▶	**3RA29 13-2BB1**		▶	**3RA29 13-2BB2**	
• For size S0						
- For main, auxiliary and control current	▶	**3RA29 23-2BB1**			**--**	
- Only for main current		**--**		▶	**3RA29 23-2BB2**	
 3RA29 23-2BB2						

[1] For complete contactor assemblies for wye-delta starting including function modules see pages 3/163 and 3/165.

Matching contactors with communication interface required (see pages 3/32 and 3/34).

For matching AS-Interface masters, routers and power supply units see Chapter 2 "Industrial Communication".

Note:

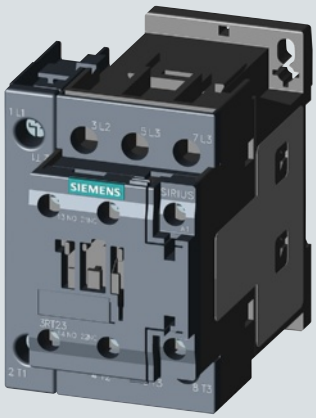
When using the function modules, no other auxiliary switches are allowed to be connected to the basic units.

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories						
 3RA29 10-0						
Sealable covers for 3RA27, 3RA28, 3RA29	A	**3RA29 10-0**		1	5 units	41B
Manual Function modules for AS-Interface	C	**3ZX1 012-0RA27-0AB0**		1	1 unit	401

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Controls – Contactors and Contactor Assemblies – Special Applications



Price groups
PG 41B, 41H

4/2 **Introduction**

Contactors for special applications

4/4 SIRIUS 3RT14 contactors for resistive loads (AC-1), 3-pole, 140 ... 690 A

4/11 SIRIUS 3RT23 contactors for resistive loads (AC-1), 4-pole, 4 NO, 18 ... 50 A

4/15 SIRIUS 3RT13 contactors for resistive loads (AC-1), 4-pole, 4 NO, 60 ... 140 A

4/18 3TK1 contactors for resistive loads (AC-1), 4-pole, 4 NO, 200 ... 1000 A

4/22 3TK20 contactors, 4-pole, 4 kW

4/29 SIRIUS 3RT25 contactors, 4-pole, 2 NO + 2 NC, 4 ... 11 kW

4/33 SIRIUS 3RT15 contactors, 4-pole, 2 NO + 2 NC, 18.5 kW

4/35 SIRIUS 3RT16 capacitor contactors, 12.5 ... 50 kvar

Contactors with extended operating range 0.7 ... 1.25 × U_s for railway applications

4/39 SIRIUS 3RT20 motor contactors, 5.5 ... 18.5 kW

4/43 SIRIUS 3RT10 motor contactors, 18.5 ... 45 kW

4/46 3TB5 motor contactors, 55 ... 200 kW

4/48 3TC contactors for switching DC voltage, 2-pole

Ch.5 SIRIUS 3RH21 contactor relays

Ch.5 3TH4 contactor relays

Contactors for switching DC voltage

4/50 3TC contactors,1- and 2-pole, 32 ... 400 A

Coupling contactors

Ch.3 SIRIUS 3RT20 coupling contactors (interface), 3-pole, 3 ... 15 kW

Ch.5 SIRIUS 3RH21 coupling relays for switching auxiliary circuits, 4-pole

Power relays/Miniature contactors

4/60 3TG10 contactors, 4-pole, 4 kW

More information can be found on the Internet: see the opening information, page 13

Note:
3RT1 contactors in sizes S00/S0 to S12 can be found

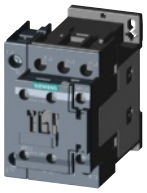
- in the Catalog Add-On IC 10 AO · 2012 in the CD/DVD box
- in the Catalog Add-On IC 10 AO · 2012 at the Information and Download Center
- in the interactive catalog CA 01
- in the Industry Mall

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Introduction

Overview





Size Type			S00 3RT23 1, 3RT25 1					S0 3RT23 2, 3RT25 2			
4-pole 3RT23, 3RT25 contactors											
Type			**3RT23 16**	**3RT23 17**	**3RT25 16**	**3RT25 17**	**3RT25 18**	**3RT23 25**	**3RT23 26**	**3RT23 27**	**3RT25 26**
Number of main contacts			4 NO		2 NO + 2 NC			4 NO			2 NO + 2 NC
AC, DC operation			(p. 4/13, 4/14)		(p. 4/31, 4/32)			(p. 4/13, 4/14)			(p. 4/31, 4/32)
AC-1											
I_e at 400 V		A	18 / 16	22 / 20	18 / 16	22 / 20	22 / 20	35 / 30	40 / 35	50 / 42	40 / 35
40 °C		**kW**	**12**	**14.5**	**11**	**13**	**13**	**22**	**26**	**33**	**26**
60 °C		kW	11	13	6.5	7.5	7.5	20	23	33	15
AC-2 and AC-3											
I_e at 400 V		A	9	12	9	12	16	15.5	17	17	25
400 V		**kW**	**4**	**5.5**	**4**	**5.5**	**7.5**	**7.5**	**9**	**9**	**11**
230 V		kW	3	3	3	3	4	4	4	4	5.5
Accessories for contactors											
Auxiliary switch blocks	On front Lateral		**3RH29 11** **3RH29 11**		(Chap. 3) (Chap. 3)			**3RH29 11** **3RH29 21**		(Chap. 3) (Chap. 3)	
Timing relay blocks			**3RA28 1.**		(Chap. 3)			**3RA28 1.**		(Chap. 3)	
Surge suppressors			**3RT29 16**		(Chap. 3)			**3RT29 26**		(Chap. 3)	







Size Type			S2 3RT13 36, 3RT15 35		S3 3RT13 4.		S6, S10, S12 3RT14 5.		
4-pole 3RT13, 3RT15 contactors • 3-pole 3RT14 contactors									
Type			**3RT13 36**	**3RT15 35**	**3RT13 44**	**3RT13 46**	**3RT14 46**	**3RT14 56**	**3RT14 66**	**3RT14 76**
Number of main contacts			4 NO	2 NO + 2 NC	4 NO		3 NO	3 NO		
AC, DC operation			(p. 4/16)	(p. 4/34)	(p. 4/16)		(p. 4/9)	(p. 4/9)		
AC-1 (≤ 690 V)										
I_e	40 °C	**A**	**60**	**60**	**110**	**140**	**140**	**275**	**400**	**690**
	60 °C	A	55	55	100	120	130	250	380	650
400 V	40 °C	**kW**	**39**	**36**	**72**	**92**	**92**	**180**	**263**	**454**
230 V	40 °C	kW	23	20	42	53	53	105	151	261
500 V		kW	--	--	--	--	115	225	329	568
690 V		kW	--	--	--	--	159	310	454	783
1000 V	60 °C	kW	--	--	--	--	98	165	247	410
AC-2 and AC-3										
I_e/AC-3/400 V		A					44	97	138	170
400 V		**kW**	**11**	**18.5**			**22**	**55**	**75**	**90**
230 V		kW	5.5	9.5	--	--	12.7	30	37	55
500 V		kW	--	--	--	--	29.9	55	90	110
690 V		kW	--	--	--	--	38.2	90	132	160
Accessories for contactors										
Auxiliary switch blocks	On front Lateral		**3RH19 21** **3RH19 21**	(Ch. 3) (Ch. 3)						
Terminal covers			**3RT19 36-4EA2**	(Ch. 3)	**3RT19 46-4EA1/2**	(Ch. 3)		**3RT19 56-4EA1/2/3**	(Ch. 3)	
Box terminal blocks			**--**		**--**			**3RT19 55/56-4G**	(Ch. 3)	
Surge suppressors			**3RT19 26/36**	(Ch. 3)				**3RT19 56-1C** (RC element)	(Ch. 3)	

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Size		--							**00**	--
Type		3TK1							3TK20	3TG10
3TK, 3TG contactors										
Type		**3TK10**	**3TK11**	**3TK12**	**3TK13**	**3TK14**	**3TK15**	**3TK17**	**3TK20**	**3TG10**
AC, DC operation		(p. 4/20)							(p. 4/27)	(p. 4/62)
AC-1 (40 °C, ≤ 690 V)										
I_e	**A**	**200**	**250**	**300**	**350**	**550**	**800**	**1000**	**18**	**20**
400 V	**kW**	**132**	**165**	**197**	**230**	**362**	**527**	**658**	**10**	**13**
230 V	kW	76	95	114	132	308	303	378	6	7.5
500 V	kW	165	206	247	288	452	658	828	13	--
690 V	kW	227	284	341	397	624	908	1135	17	--
AC-2 and AC-3										
I_e/AC-3/400 V	A	120	145	210	210	400	550	700	8.4	8.4
400 V	**kW**	**55**	**75**	**110**	**110**	**200**	**280**	**370**	**4**	**4**
127 V	kW	--	--	--	--	--	--	--	1.4	--
230 V	kW	30	45	75	75	110	160	220	2.5	
500 V	kW								4	
690 V	kW								4	
Accessories for contactors										
Auxiliary switch blocks	On front	**--**							**--**	**--**
	Lateral	**3TK19 10**							**--**	**--**
Terminal covers		**3TK19 40**		**3TK19 42**		**3TK19 44**		**3TK19 46**	**--**	**--**
Surge suppressors		**3TK19 30**				**3TK19 34**				**--**

Note:

Safety characteristics for contactors
see "Appendix" ➞ "Standards and Approvals" ➞ "Overview"

Connection methods

The contactors are available with screw terminals (box terminals or flat connectors) or with spring-type terminals.

Devices of the 3TK2 series are also available for connection with flat connectors and solder pin connectors.

As an option the devices of the 3RT2 series are also available for connection with ring terminal lugs, particularly versions for North America and Japan.

- Screw terminals
- Spring-type terminals
- Flat connectors
- Solder pin connections
- Ring terminal lug connections

The terminals are indicated in the corresponding tables by the symbols shown on orange backgrounds.

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SIRIUS 3RT14 contactors for resistive loads (AC-1), 3-pole, 140 ... 690 A

Overview

Standards

IEC 60947-1, EN 60947-1,
IEC 60947-4-1, EN 60947-4-1,
IEC 60947-5-1, EN 60947-5-1 (auxiliary switches)

The contactors are suitable for use in any climate. They are finger-safe according to EN 50274.

3RT14 contactors are used for switching resistive loads (AC-1) or as contactors, for example for variable-speed operating mechanisms that normally only have to carry the current.

Size S3: AC or DC operation
Sizes S6 to S12: AC/DC operation

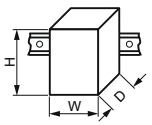
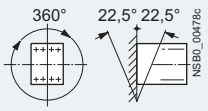
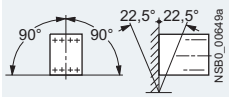
The following applies for sizes S6 to S12:

- Withdrawable coils
- Integrated coil circuit (varistor)
- Main conductors: Busbar connections
- Auxiliary and control conductors: Screw terminals

The accessories for the 3RT10 contactors can also be used here.

General descriptions of the sizes S3 to S12 see Chapter 3, "Power contactors for switching motors" → "SIRIUS 3RT10 contactors, 3-pole, 15 to 250 kW".

Technical specifications

Type			**3RT14 46**	**3RT14 56**	**3RT14 66**	**3RT14 76**
Size			**S3**	**S6**	**S10**	**S12**
Dimensions (W x H x D)		mm	70 x 146 x 134	120 x 172 x 170	145 x 210 x 202	160 x 214 x 225
• With mounted auxiliary switch block		mm	70 x 146 x 183	120 x 172 x 217	145 x 210 x 251	160 x 214 x 271
General technical specifications						
Permissible mounting positions The contactors are designed for operation on a vertical mounting surface.						
Upright mounting position			 Special version required.	--		
Mechanical endurance		Operating cycles	10 million			
Electrical endurance in operating cycles **Utilization category AC-1 at I_e**		Operating cycles	0.5 million			
Rated insulation voltage U_i (pollution degree 3)		V	1000			
Rated impulse withstand voltage U_{imp}		kV	6	8		
Protective separation between the coil and the main contacts acc. to IEC 60947-1, Appendix N		V	690			
Mirror contacts A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with a NO main contact.						
• Removable auxiliary switch block			Yes, acc. to IEC 60947-4-1, Appendix F			
• Permanently fitted auxiliary switch block			Acc. to Swiss regulations (SUVA) on request	--		
Permissible ambient temperature						
• During operation		°C	-25 ... +60	-25 ... +60		
• During operation, with AS-Interface interface		°C	--	-25 ... +55		
• During storage		°C	-55 ... +80	-55 ... +80		
Degree of protection acc. to IEC 60947-1, Appendix C			IP20 (terminal compartment IP00), AC coil assembly IP40, DC coil assembly IP30	IP00/open, coil assembly IP20		
Touch protection acc. to EN 50274			Finger-safe	Finger-safe with cover		
Shock resistance						
• Rectangular pulse, for AC and DC operation		*g*/ms	6.8/5 and 4/10	8.5/5 and 4.2/10		
• Sine pulse, for AC and DC operation		*g*/ms	10.6/5 and 6.2/10	13.4/5 and 6.5/10		
Conductor cross-sections			1)	1)		
Electromagnetic compatibility (EMC)			--	2)		

1) Conductor cross-sections see pages 4/7 and 4/8.

2) Electromagnetic compatibility see "SIRIUS 3RT10 Contactors", Chapter 3.

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SIRIUS 3RT14 contactors for resistive loads (AC-1), 3-pole, 140 ... 690 A

Contactors		Type	3RT14 46	3RT14 56	3RT14 66	3RT14 76
		Size	S3	S6	S10	S12
Short-circuit protection for contactors without overload relays						
Main circuit						
• Fuse links, operational class gG: LV HRC, type 3NA - Type of coordination "1"		A	250	355	500	800
• Fuse links, gR operational class: SITOR, type 3NE - Type of coordination "2"		A	250	350	500	710
Auxiliary circuit						
• Short-circuit test with fuse links of gG operational class: DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current I_k = 1 kA acc. to IEC 60947-5-1		A	10			
• Test with miniature circuit breakers up to 230 V with C characteristic: Short-circuit current I_k = 400 A acc. to IEC 60947-5-1		A	10			
Control circuit						
Coil operating range (AC/DC)			0.8 ... 1.1 x U_s	0.8 x $U_{s\,min}$ ... 1.1 x $U_{s\,max}$		
Power consumption of the solenoid coils (when coil is cold and 1.0 x U_s)						
Standard version:						
• AC operation, 50 Hz	Closing	VA	270	--		
	P.f.		0.68	--		
	Closed	VA	22	--		
	P.f.		0.27	--		
• AC operation, 50/60 Hz	Closing	VA	298/274	--		
	P.f.		0.7/0.62	--		
	Closed	VA	27/20	--		
	P.f.		0.29/0.31	--		
For USA and Canada:						
• AC operation, 50 Hz	Closing	VA	270	--		
	P.f.		0.68	--		
	Closed	VA	22	--		
	P.f.		0.27	--		
• AC operation, 60 Hz	Closing	VA	300	--		
	P.f.		0.52	--		
	Closed	VA	21	--		
	P.f.		0.29	--		
• DC operation	Closing = Closed	W	15	--		
Power consumption of the solenoid operation (when coil is cool and rated range $U_{s\,min}$ ... $U_{s\,max}$)						
• Conventional operating mechanisms						
- AC operation	Closing at $U_{s\,min}$	VA/p.f.	--	250/0.9	490/0.9	700/0.9
	Closing at $U_{s\,max}$	VA/p.f.	--	300/0.9	590/0.9	830/0.9
	Closed at $U_{s\,min}$	VA/p.f.	--	4.8/0.8	5.6/0.9	7.6/0.9
	Closed at $U_{s\,max}$	VA/p.f.	--	5.8/0.8	6.7/0.9	9.2/0.9
- DC operation	Closing at $U_{s\,min}$	W	--	300	540	770
	Closing at $U_{s\,max}$	W	--	360	650	920
	Closed at $U_{s\,min}$	W	--	4.3	6.1	8.5
	Closed at $U_{s\,max}$	W	--	5.2	7.4	10
• Solid-state operating mechanism						
- AC operation	Closing at $U_{s\,min}$	VA/p.f.	--	190/0.8	400/0.8	560/0.8
	Closing at $U_{s\,max}$	VA/p.f.	--	28/0.8	530/0.8	750/0.8
	Closed at $U_{s\,min}$	VA/p.f.	--	3.5/0.5	4/0.5	5.4/0.8
	Closed at $U_{s\,max}$	VA/p.f.	--	4./0.4	5/0.4	7/0.8
- DC operation	Closing at $U_{s\,min}$	W	--	250	440	600
	Closing at $U_{s\,max}$	W	--	320	580	800
	Closed at $U_{s\,min}$	W	--	2.3	3.2	4
	Closed at $U_{s\,max}$	W	--	2.8	3.8	5
PLC control input (IEC 61131-2/type 2)		V DC		24, at ≤ 30 mA power consumption		
• Operating range		V DC		17 ... 30		
Operating times for 0.8 ... 1.1 x U_s [1] Total break time = Opening delay + Arcing time						
• AC operation	- Closing delay	ms	17 ... 90	--		
	- Opening delay	ms	10 ... 25	--		
• DC operation	- Closing delay	ms	90 ... 230	--		
	- Opening delay	ms	14 ... 20	--		
• Arcing time		ms	10 ... 15	--		
Operating times for 1.0 x U_s [1]						
• AC operation	- Closing delay	ms	18 ... 30	--		
	- Opening delay	ms	11 ... 23	--		
• DC operation	- Closing delay	ms	100 ... 120	--		
	- Opening delay	ms	16 ... 20	--		

[1] The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (varistor +2 to 5 ms, diode assembly: 2 to 6 times).

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SIRIUS 3RT14 contactors for resistive loads (AC-1), 3-pole, 140 ... 690 A

Contactors		Type		3RT14 46	3RT14 56	3RT14 66	3RT14 76
		Size		S3	S6	S10	S12
Control circuit							
Operating times (Total break time = Opening delay + Arcing time)							
• Conventional operating mechanisms							
- For 0.8 x $U_{s\,min}$ ... 1.1 x $U_{s\,max}$	Closing delay		ms	--	20 ... 95	30 ... 95	45 ... 100
	Opening delay		ms	--	40 ... 60	40 ... 80	60 ... 100
- For $U_{s\,min}$ ... $U_{s\,max}$	Closing delay		ms	--	25 ... 50	35 ... 50	50 ... 70
	Opening delay		ms	--	40 ... 60	50 ... 80	70 ... 100
• Solid-state operating mechanism, actuated via A1/A2							
- For 0.8 x $U_{s\,min}$ ... 1.1 x $U_{s\,max}$	Closing delay		ms	--	95 ... 135	105 ... 145	120 ... 150
	Opening delay		ms	--	80 ... 90	80 ... 200	80 ... 100
- For $U_{s\,min}$ ... $U_{s\,max}$	Closing delay		ms	--	100 ... 120	110 ... 130	125 ... 150
	Opening delay		ms	--	80 ... 90	80 ... 100	80 ... 100
• Solid-state operating mechanism, actuated via PLC input							
- For 0.8 x $U_{s\,min}$ ... 1.1 x $U_{s\,max}$	Closing delay		ms	--	35 ... 75	45 ... 80	60 ... 90
	Opening delay		ms	--	80 ... 90	80 ... 100	80 ... 100
- For $U_{s\,min}$ ... $U_{s\,max}$	Closing delay		ms	--	40 ... 60	50 ... 65	65 ... 80
	Opening delay		ms	--	80 ... 90	80 ... 100	80 ... 100
• Arcing time			ms	--	10 ... 15	10 ... 15	10 ... 15

Contactors		Type		3RT14 46	3RT14 56	3RT14 66	3RT14 76
		Size		S3	S6	S10	S12
Main circuit							
AC capacity							
Utilization category AC-1, switching resistive loads							
• Rated operational currents I_e	At 40 °C up to 690 V		A	140	275	400	690
	At 60 °C up to 690 V		A	130	250	380	650[1]
	At 1000 V		A	60	100	150	250
• Rated power for AC loads[2] with p.f.= 0.95 (at 60 °C)	At 230 V		kW	50	95	145	245
	400 V		kW	86	165	250	430
	500 V		kW	107	205	315	535
	690 V		kW	148	285	430	740
	1000 V		kW	98	165	247	410
• Minimum conductor cross-section for loads with I_e	At 40 °C		mm^2	50	2 x 70	240	2 x 240
	At 60 °C		mm^2	50	120	240	2 x 240
Utilization categories AC-2 and AC-3 With an electrical endurance of 1.3 million operating cycles							
• Rated operational current I_e	Up to 690 V		A	44	97	138	170
• Rated power for slipring or squirrel-cage motors at 50 and 60 Hz (at 60 °C)	At 230 V		kW	12.7	30	37	55
	400 V		kW	22	55	75	90
	500 V		kW	29.9	55	90	110
	690 V		kW	38.2	90	132	160
Power loss per conducting path	At I_e/AC-1		W	12.5	20	27	55
Switching frequency							
Switching frequency *z* in operating cycles/hour							
• Contactors without overload relays	No-load switching frequency AC		1/h	5000			
	No-load switching frequency DC		1/h	1000			
• Rated operation	Acc. to AC-1 (AC/DC)		1/h	650			
	Acc. to AC-3 (AC/DC)		1/h	1000			

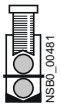
Dependence of the switching frequency z' on the operational current I' and operational voltage U': $z' = z \cdot (I_e/I') \cdot (400\ V/U')^{1.5} \cdot 1/h$.

1) 600 A for 3RT14 76-N contactor.

2) Industrial furnaces and electric heaters with resistance heating, etc. (increased power consumption on heating up has been taken into account).

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SIRIUS 3RT14 contactors for resistive loads (AC-1), 3-pole, 140 ... 690 A

Contactors	Type		3RT14 46
	Size		S3
Conductor cross-sections			
(1 or 2 conductors can be connected) **Front clamping point connected** 	**Main conductors:** With box terminal		⊕ **Screw terminals**
	• Finely stranded with end sleeve	mm²	2.5 ... 50
	• Finely stranded without end sleeve	mm²	4 ... 50
	• Solid	mm²	2.5 ... 16
	• Stranded	mm²	4 ... 70
	• Ribbon cable conductors (Number x Width x Thickness)	mm	6 x 9 x 0.8
	• AWG cables, solid or stranded	AWG	10 ... 2/0
Rear clamping point connected 	• Finely stranded with end sleeve	mm²	2.5 ... 50
	• Finely stranded without end sleeve	mm²	10 ... 50
	• Solid	mm²	2.5 ... 16
	• Stranded	mm²	10 ... 70
	• Ribbon cable conductors (Number x Width x Thickness)	mm	6 x 9 x 0.8
	• AWG cables, solid or stranded	AWG	10 ... 2/0
Both clamping points connected 	• Finely stranded with end sleeve	mm²	max. 2 x 35
	• Finely stranded without end sleeve	mm²	max. 2 x 35
	• Solid	mm²	max. 2 x 16
	• Stranded	mm²	max. 2 x 50
	• Ribbon cable conductors (Number x Width x Thickness)	mm	2 x (6 x 9 x 0.8)
	• AWG cables, solid or stranded	AWG	2 x (10 ... 1/0)
	• Terminal screws		M6 (hexagon socket, A/F 4)
	- Tightening torque	Nm	4 ... 6
		lb.in	36 ... 53
Connection for drilled copper bars	Max. width[1]	mm	10
	Main conductors: Without box terminal with cable lugs[2]		
	• Finely stranded with cable lug	mm²	10 ... 50[3]
	• Stranded with cable lug	mm²	10 ... 70[3]
	• AWG cables, solid or stranded	AWG	7 ... 1/0
	Auxiliary conductors:		
	• Solid	mm²	2 x (0.5 ... 1.5)[4]; 2 x (0.75 ... 2.5)[4] according to IEC 60947; max. 2 x (0.75 ... 4)[4]
	• Finely stranded with end sleeve	mm²	2 x (0.5 ... 1.5)[4]; 2 x (0.75 ... 2.5)[4]
	• AWG cables, solid or stranded	AWG	2 x (20 ... 16)[4]; 2 x (18 ... 14)[4]; 1 x 12
	• Terminal screws		M3
	- Tightening torque	Nm	0.8 ... 1.2
		lb.in	7 ... 10.3

1) If bars larger than 12 x 10 mm are connected, a 3RT19 46-4EA1 terminal cover is needed to comply with the phase clearance.

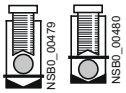
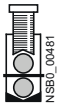
2) When connecting conductors which are larger than 25 mm², the 3RT19 46-4EA1 terminal cover must be used to keep the phase clearance.

3) Only with crimped cable lugs according to DIN 46234. Cable lug max. 20 mm wide.

4) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

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SIRIUS 3RT14 contactors for resistive loads (AC-1), 3-pole, 140 ... 690 A

Contactors	Type		3RT14 56	3RT14 66	3RT14 76
	Size		S6	S10	S12
Conductor cross-sections					
(1 or 2 conductors can be connected)	**Main conductors** With 3RT19 55-4G box terminal		**Screw terminals**		
Front or rear clamping point connected 	• Finely stranded with end sleeve	mm²	10 ... 70	--	
	• Finely stranded without end sleeve	mm²	16 ... 70	--	
	• Stranded	mm²	16 ... 70	--	
	• AWG cables, solid or stranded	AWG	6 ... 2/0	--	
	• Ribbon cable conductors (Number x Width x Thickness)	mm	3 x 9 x 0.8 ... 6 x 15.5 x 0.8	--	
Both clamping points connected 	• Finely stranded with end sleeve	mm²	1 x 50, 1 x 70	--	
	• Finely stranded without end sleeve	mm²	1 x 50, 1 x 70	--	
	• Stranded	mm²	2 x 70	--	
	• AWG cables, solid or stranded	AWG	2 x 1/0	--	
	• Ribbon cable conductors (Number x Width x Thickness)	mm	2 x (6 x 15.5 x 0.8)	--	
	• Terminal screws			--	
	- Tightening torque	Nm		--	
		lb.in		--	
	With 3RT19 56-4G box terminal				
Front clamping point connected 	• Finely stranded with end sleeve	mm²	10 ... 120	70 ... 240	
	• Finely stranded without end sleeve	mm²	16 ... 120	70 ... 240	
	• Stranded	mm²	16 ... 120	95 ... 300	
	• AWG cables, solid or stranded	AWG	6 ... 250 kcmil	3/0 ... 600 kcmil	
	• Ribbon cable conductors (Number x Width x Thickness)	mm	3 x 9 x 0.8 ... 10 x 15.5 x 0.8	Min. 6 x 9 x 0.8, max. 20 x 24 x 0.5	
Rear clamping point connected 	• Finely stranded with end sleeve	mm²	10 ... 120	120 ... 185	
	• Finely stranded without end sleeve	mm²	16 ... 120	120 ... 185	
	• Stranded	mm²	16 ... 120	120 ... 240	
	• AWG cables, solid or stranded	AWG	6 ... 250 kcmil	250 ... 500 kcmil	
	• Ribbon cable conductors (Number x Width x Thickness)	mm	3 x 9 x 0.8 ... 10 x 15.5 x 0.8	Min. 6 x 9 x 0.8, max. 20 x 24 x 0.5	
Both clamping points connected 	• Finely stranded with end sleeve	mm²	Max. 1 x 95, 1 x 120	Min. 2 x 50, max. 2 x 185	
	• Finely stranded without end sleeve	mm²	Max. 1 x 95, 1 x 120	Min. 2 x 50, max. 2 x 185	
	• Stranded	mm²	max. 2 x 120	Min. 2 x 70, max. 2 x 240	
	• AWG cables, solid or stranded	AWG	Max. 2 x 3/0	Min. 2 x 2/0, max. 2 x 500 kcmil	
	• Ribbon cable conductors (Number x Width x Thickness)	mm	Max. 2 x (10 x 15.5 x 0.8)	Max. 2 x (20 x 24 x 0.5)	
	• Terminal screws		M10 (hexagon socket, A/F4)	M12 (hexagon socket, A/F 5)	
	- Tightening torque	Nm	10 ... 12	20 ... 22	
		lb.in	90 ... 110	180 ... 195	
	Without box terminal/busbar connection		[1]	[2]	
	• Finely stranded with cable lug	mm²	16 ... 95	50 ... 240	
	• Stranded with cable lug	mm²	25 ... 120	70 ... 240	
	• AWG cables, solid or stranded	AWG	4 ... 250 kcmil	2/0 ... 500 kcmil	
	• Connecting bar (max. width)	mm	17	25	
	• Terminal screws		M8 x 25 (A/F 13)	M10 x 30 (A/F 17)	
	- Tightening torque	Nm	10 ... 14 (90 ... 110) lb.in	14 ... 24 (124 ... 210 lb.in)	
	Auxiliary conductors				
	• Solid	mm²	2 x (0.5 ... 1.5)[3], 2 x (0.75 ... 2.5)[3] according to IEC 60947; max. 2 x (0.75 ... 4)[3]		
	• Finely stranded with end sleeve	mm²	2 x (0.5 ... 1.5)[3]; 2 x (0.75 ... 2.5)[3]		
	• AWG cables, solid or stranded	AWG	2 x (18 ... 14)		
	• Terminal screws		M3 (PZ 2)	M3 (PZ 2)	
	- Tightening torque	Nm	0.8 ... 1.2		
		lb.in	7 ... 10.3		

1) When connecting cable lugs according to DIN 46235, use 3RT19 56-4EA1 terminal cover for conductor cross-sections from 95 mm² to ensure phase spacing.

2) When connecting cable lugs according to DIN 46234, the 3RT19 66-4EA1 terminal cover must be used for conductor cross-sections of 240 mm² and more as well as DIN 46235 for conductor cross-sections of 185 mm² and more to keep the phase clearance.

3) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in the range specified.

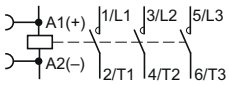
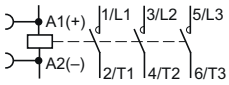
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Selection and ordering data

Size S3: AC or DC operation



3RT14 46-1A..0

Size	Rated data AC-1, T_u: 40 °C							Auxiliary contacts		Rated control supply voltage U_s	DT	Screw terminals		PU (UNIT, SET, M)	PS*	PG
	Operational current I_e	Rating of AC loads (p f. = 0.95) at						Version				Order No.	Price per PU			
	Up to															
	690 V	230 V		400 V		500 V	690 V									
	A	kW		kW		kW	kW	NO	NC	V						
For screw fixing and snap-on mounting onto TH 35 and TH 75 standard mounting rail																
AC operation																
																
S3	**140**	53		92		115	159	--	--	AC 24, 50 Hz	B	**3RT14 46-1AB00**		1	1 unit	41B
										AC 110, 50 Hz	B	**3RT14 46-1AF00**		1	1 unit	41B
										AC 230, 50 Hz	▶	**3RT14 46-1AP00**		1	1 unit	41B
DC operation · DC solenoid system																
																
S3	**140**	53		92		115	159	--	--	24 DC	▶	**3RT14 46-1BB40**		1	1 unit	41B
										220 DC	B	**3RT14 46-1BM40**		1	1 unit	41B

Other voltages according to page 4/38 on request.

Accessories and spare parts see "3RT10 Contactors", Chapter 3.

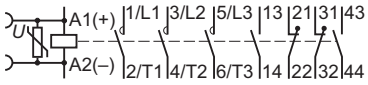
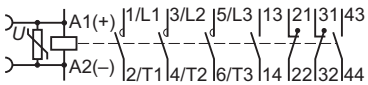
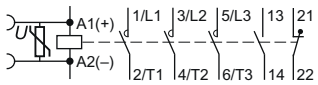
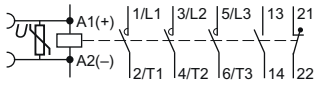
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SIRIUS 3RT14 contactors for resistive loads (AC-1), 3-pole, 140 ... 690 A

Sizes S6 to S12: UC operation (AC/DC)
Integrated coil circuit (varistor)
Main conductors: Busbar connections
Auxiliary and control conductors: Screw terminals



3RT14 6.

Size	Rated data AC-1, T_u: 40 °C					Auxiliary contacts		Rated control supply voltage U_s	DT	Screw terminals		PU (UNIT, SET, M)	PS*	PG
	Operational current I_e	Rating of AC loads (p f. = 0.95) at				Version				Order No.	Price per PU			
	Up to													
	690 V	230 V	400 V	500 V	690 V									
	A	kW	kW	kW	kW	NO	NC	V						
Conventional operating mechanisms														
														
S6	**275**	105	180	225	310	2	2	110 ... 127	▶	**3RT14 56-6AF36**		1	1 unit	41B
								220 ... 240	▶	**3RT14 56-6AP36**		1	1 unit	41B
S10	**400**	151	263	329	454	2	2	110 ... 127	▶	**3RT14 66-6AF36**		1	1 unit	41B
								220 ... 240	▶	**3RT14 66-6AP36**		1	1 unit	41B
S12	**690**	261	454	568	783	2	2	110 ... 127	A	**3RT14 76-6AF36**		1	1 unit	41B
								220 ... 240	▶	**3RT14 76-6AP36**		1	1 unit	41B
Solid-state operating mechanism														
For 24 V DC PLC output														
														
S6	**275**	105	180	225	310	2	2	96 ... 127	B	**3RT14 56-6NF36**		1	1 unit	41B
								200 ... 277	A	**3RT14 56-6NP36**		1	1 unit	41B
S10	**400**	151	263	329	454	2	2	96 ... 127	B	**3RT14 66-6NF36**		1	1 unit	41B
								200 ... 277	A	**3RT14 66-6NP36**		1	1 unit	41B
S12	**690**	261	454	568	783	2	2	96 ... 127	B	**3RT14 76-6NF36**		1	1 unit	41B
								200 ... 277	A	**3RT14 76-6NP36**		1	1 unit	41B
For 24 V DC PLC relay output, with remaining lifetime indicator (RLT)														
														
S6	**275**	105	180	225	310	1	1	96 ... 127	B	**3RT14 56-6PF35**		1	1 unit	41B
								200 ... 277	B	**3RT14 56-6PP35**		1	1 unit	41B
S10	**400**	151	263	329	454	1	1	200 ... 277	B	**3RT14 66-6PP35**		1	1 unit	41B
S12	**690**	261	454	568	783	1	1	200 ... 277	B	**3RT14 76-6PP35**		1	1 unit	41B
With AS-Interface interface and remaining lifetime indicator (RLT)														
														
S6	**275**	105	180	225	310	1	1	96 ... 127	B	**3RT14 56-6QF35**		1	1 unit	41B
								200 ... 277	B	**3RT14 56-6QP35**		1	1 unit	41B
S10	**400**	151	263	329	454	1	1	200 ... 277	B	**3RT14 66-6QP35**		1	1 unit	41B
S12	**690**	261	454	568	783	1	1	200 ... 277	B	**3RT14 76-6QP35**		1	1 unit	41B

Other voltages according to page 4/38 on request.

Accessories and spare parts see "3RT10 Contactors", Chapter 3.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RT23 contactors for resistive loads (AC-1), 4-pole, 4 NO, 18 ... 50 A

Overview

Standards

IEC 60947-1, EN 60947-1,
IEC 60947-4-1, EN 60947-4-1,
IEC 60947-5-1, EN 60947-5-1 (auxiliary switches)

The contactors are suitable for use in any climate. They are finger-safe according to EN 50274.

The accessories for the 3-pole SIRIUS 3RT20 contactors can also be used for the 4-pole versions.

Size S0 contactors have 2 auxiliary contacts 1 NO and 1 NC integrated in the basic unit.

Mountable auxiliary contacts

Size S00

4 auxiliary contacts, including no more than 3 NC.

Size S0

4 additional auxiliary contacts.

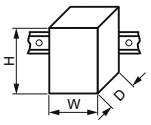
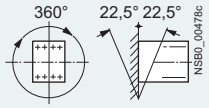
Application

The contactors are suitable

- For switching of resistive loads
- For isolating systems with ungrounded or poorly grounded neutral conductors
- For system transfers when alternative AC power supplies are used
- For use as contactors which only carry current and do not have to switch in case of inductive loads – e.g.variable-speed operating mechanisms
- For switching mixed loads in distribution systems (e.g. for supplying heaters, lamps, motors, PC power supply units) with p.f. > 0.8 according to IEC 60947-4-1, test conditions for utilization category AC-1.

General descriptions of the sizes S00 and S0 see Chapter 3, "Power contactors for switching motors" → "SIRIUS 3RT20 contactors, 3-pole, 3 to 18.5 kW".

Technical specifications

Type			**3RT23 16**	**3RT23 17**	**3RT23 25**	**3RT23 26**	**3RT23 27**
Size			**S00**		**S0**		
Dimensions (W x H x D)[1]		mm	45 x 57.5 x 73 / 45 x 70 x 73		60 x 85 x 97 / 60 x 101.5 x 97		
• With mounted auxiliary switch block		mm	45 x 57.5 x 116 / 45 x 70 x 121		60 x 85 x 141 / 60 x 101.5 x 144		
General technical specifications							
Permissible mounting positions							
The contactors are designed for operation on a vertical mounting surface.							
Upright mounting position			Special version required				
Mechanical endurance		Operating cycles	30 million		10 million		
Electrical endurance at I_e/AC-1		Operating cycles	Approx. 0.5 million				
Rated insulation voltage U_i (pollution degree 3)		V	690				
Permissible ambient temperature							
• During operation		°C	-25 ... +60				
• During storage		°C	-55 ... +80				
Degree of protection acc. to IEC 60947-1, Appendix C							
• Device		A	IP20				IP20
• Connection range		A	--				IP00
Touch protection acc. to EN 50274			Finger-safe				
Short-circuit protection of contactors without overload relays							
Main circuit							
Fuse links, operational class gG: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE according to IEC 60947-4-1/EN 60947-4-1							
• Type of coordination "1"[1]		A	35		63		
• Type of coordination "2"[1]		A	20		20		
• Weld-free		A	10		16		

[1] Dimensions for devices with screw terminals or spring-type terminals. Size S0 for AC operation. DC operation: Depth +10 mm

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SIRIUS 3RT23 contactors for resistive loads (AC-1), 4-pole, 4 NO, 18 ... 50 A

Type			3RT23 16	3RT23 17	3RT23 25	3RT23 26	3RT23 27
Size			S00		S0		
Control circuit							
Coil operating range							
• AC operation	At 50 Hz		0.8 ... 1.1 x U_s		--		
	At 60 Hz		0.85 ... 1.1 x U_s		--		
• DC operation	At 50 °C		0.8 ... 1.1 x U_s		--		
	At 60 °C		0.85 ... 1.1 x U_s		--		
• AC/DC operation			--		0.8 ... 1.1 x U_s		
Power consumption of the solenoid coils (when coil is cold and 1.0 x U_s)							
• AC operation, 50 Hz, standard version							
- Closing		VA	--		77		
- P.f.			--		0.82		
- Closed		VA	--		9.8		
- P.f.			--		0.25		
• AC operation, 50/60 Hz, standard version							
- Closing		VA	27/24.3	37/33	81/79		
- P.f.			0.8/0.75	0.8/0.75	0.72/0.74		
- Closed		VA	4.2/3.3	5.7/4.4	10.5/8.5		
- P.f.			0.25/0.25	0.25/0.25	0.25/0.28		
• AC operation, 60 Hz, USA, Canada							
- Closing		VA	31.7	43	87		
- P.f.			0.77	0.77	0.76		
- Closed		VA	4.8	6.5	9.4		
- P.f.			0.25	0.25	0.28		
• DC operation (closing = closed)		W	4		5.9		
Operating times for 0.8 ... 1.1 x U_s[1] Total break time = Opening delay + Arcing time							
• AC operation							
- Closing delay		ms	8 ... 35	8 ... 33	9 ... 38	8 ... 40	
- Opening delay		ms	3.5 ... 14	4 ... 15	4 ... 16	4 ... 16	
• DC operation							
- Closing delay		ms	30 ... 100		50 ... 170		
- Opening delay		ms	7 ... 13		15 ... 17.5		
• Arcing time		ms	10 ... 15		10		
Main circuit							
AC capacity							
Utilization category AC-1, switching resistive loads							
• Rated operational currents I_e	At 40 °C, up to 690 V	A	18	22	35	40	50
	At 60 °C, up to 690 V	A	16	20	30	35	42
• Rated power for AC loads	At 230 V	kW	6.5	7.5	11	13	16
P.f. = 0.95 (at 40 °C)	400 V	kW	12	14.5	23	26	33
• Minimum conductor cross-section	At 40 °C	mm^2	2.5	2.5	10	10	10
for loads with I_e	At 60 °C	mm^2	2.5	2.5	10	10	10
Utilization categories AC-2 and AC-3							
• Rated operational currents I_e	At 60 °C, up to 400 V	A	9	12	15.5	17	17
• Rated power for	At 230 V	kW	3	3	4	4	4
slipring or squirrel-cage motors	400 V	kW	4	5.5	7.5	9	9
at 50 and 60 Hz							

[1] With size S00, DC operation: Operating times for 0.85 ... 1.1 x U_s.

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SIRIUS 3RT23 contactors for resistive loads (AC-1), 4-pole, 4 NO, 18 ... 50 A

Selection and ordering data

AC operation

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B



3RT23 1.-1A.00



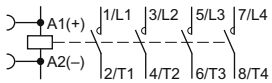
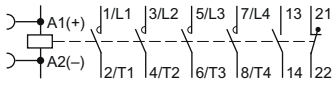
3RT23 1.-2A.00



3RT23 2.-1A.00



3RT23 2.-2A.00

Rated data AC-1, T_u: 40/60 °C		Auxiliary contacts			Rated control supply voltage U_s	DT	Screw terminals	DT	Spring-type terminals
Operational current I_e	Ratings of AC loads (p.f. = 0.95) at 50 Hz and 400 V	Ident. No.	Version NO	Version NC			Order No. / Price per PU		Order No. / Price per PU
A	kW		NO	NC	V AC				
For screw fixing and snap-on mounting onto TH 35 standard mounting rail									
Size S00[1]									
									
18 / 16	**12 / 11**	**--**	--	--	24, 50/60 Hz	B	**3RT23 16-1AB00**	B	**3RT23 16-2AB00**
					110, 50/60 Hz	B	**3RT23 16-1AF00**	B	**3RT23 16-2AF00**
					230, 50/60 Hz	B	**3RT23 16-1AP00**	A	**3RT23 16-2AP00**
22 / 20	**14.5 / 13**	**--**	--	--	24, 50/60 Hz	B	**3RT23 17-1AB00**	B	**3RT23 17-2AB00**
					110, 50/60 Hz	B	**3RT23 17-1AF00**	B	**3RT23 17-2AF00**
					230, 50/60 Hz	A	**3RT23 17-1AP00**	A	**3RT23 17-2AP00**
Size S0									
1 NO + 1 NC, Ident. No. **11**									
									
35 / 30[2]	**22 / 20**	**11**	1	1	24, 50 Hz	B	**3RT23 25-1AB00**	B	**3RT23 25-2AB00**
					110, 50 Hz	B	**3RT23 25-1AF00**	B	**3RT23 25-2AF00**
					230, 50 Hz	A	**3RT23 25-1AP00**	A	**3RT23 25-2AP00**
40 / 35[2]	**26 / 23**	**11**	1	1	24, 50 Hz	B	**3RT23 26-1AB00**	B	**3RT23 26-2AB00**
					110, 50 Hz	B	**3RT23 26-1AF00**	B	**3RT23 26-2AF00**
					230, 50 Hz	A	**3RT23 26-1AP00**	A	**3RT23 26-2AP00**
50[2]	**33**	**11**	1	1	24, 50 Hz	B	**3RT23 27-1AB00**	B	**3RT23 27-2AB00**
					110, 50 Hz	B	**3RT23 27-1AF00**	B	**3RT23 27-2AF00**
					230, 50 Hz	A	**3RT23 27-1AP00**	A	**3RT23 27-2AP00**

[1] For size S00: Coil operating range
at 50 Hz: 0.8 ... 1.1 x U_s,
at 60 Hz: 0.85 ... 1.1 x U_s.

[2] Minimum conductor cross-section 10 mm².

Other voltages according to page 4/38 on request.

Accessories and spare parts see "3RT20 Contactors", Chapter 3.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 3RT23 contactors for resistive loads (AC-1), 4-pole, 4 NO, 18 ... 50 A

DC operation · DC solenoid system

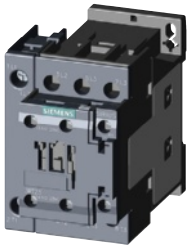
PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B



3RT23 1.-1B.40



3RT23 1.-2B.40



3RT23 2.-1B.40



3RT23 2.-2B.40

Rated data AC-1, T_u: 40/60 °C		Auxiliary contacts			Rated control supply voltage U_s	DT	Screw terminals	DT	Spring-type terminals
Operational current I_e	Ratings of AC loads (p.f. = 0.95) at 50 Hz and 400 V	Ident. No.	Version NO	Version NC			Order No. / Price per PU		Order No. / Price per PU
A	**kW**		NO	NC	V DC				
For screw fixing and snap-on mounting onto TH 35 standard mounting rail									
Size S00									
18 / 16	**12 / 11**	**--**	--	--	24	A	**3RT23 16-1BB40**	A	**3RT23 16-2BB40**
					220	B	**3RT23 16-1BM40**	B	**3RT23 16-2BM40**
22 / 20	**14.5 / 13**	**--**	--	--	24	A	**3RT23 17-1BB40**	A	**3RT23 17-2BB40**
					220	B	**3RT23 17-1BM40**	B	**3RT23 17-2BM40**
Size S0									
1 NO + 1 NC, Ident. No. **11**									
35 / 30[1]	**22 / 20**	**11**	1	1	24	A	**3RT23 25-1BB40**	A	**3RT23 25-2BB40**
					220	B	**3RT23 25-1BM40**	B	**3RT23 25-2BM40**
40 / 35[1]	**26 / 23**	**11**	1	1	24	A	**3RT23 26-1BB40**	A	**3RT23 26-2BB40**
					220	B	**3RT23 26-1BM40**	B	**3RT23 26-2BM40**
50[1]	**33**	**11**	1	1	24	A	**3RT23 27-1BB40**	A	**3RT23 27-2BB40**
					220	B	**3RT23 27-1BM40**	B	**3RT23 27-2BM40**

[1] Minimum conductor cross-section 10 mm².

Other voltages according to page 4/38 on request.

Accessories and spare parts see "3RT20 Contactors", Chapter 3.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RT13 contactors for resistive loads (AC-1), 4-pole, 4 NO, 60 ... 140 A

Overview

Standards

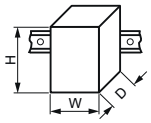
IEC 60947-1, EN 60947-1,
IEC 60947-4-1, EN 60947-4-1,
IEC 60947-5-1, EN 60947-5-1 (auxiliary switches)

The contactors are suitable for use in any climate. They are finger-safe according to EN 50274.

The accessories for the 3-pole 3RT10 contactors can also be used for the 4-pole versions.

The contactors are suitable for switching mixed loads in distribution systems (e.g. for supplying heaters, lamps, motors, PC power supply units) with p.f. > 0.8 according to IEC 60947-4-1, test conditions for utilization category AC-1.

Technical specifications

Type			**3RT13 36**	**3RT13 44**	**3RT13 46**
Size			**S2**	**S3**	**S3**
Dimensions (W x H x D)		mm	61 x 85 x 86	73 x 112 x 110	93 x 146 x 134
• With mounted auxiliary switch block		mm	61 x 85 x 135	73 x 112 x 160	93 x 146 x 183
General technical specifications					
Permissible mounting position[1]					
Mechanical endurance		Operating cycles	10 million		
Electrical endurance at I_e/AC-1		Operating cycles	Approx. 0.5 million		
Rated insulation voltage U_i (pollution degree 3)		V	690		
Permissible ambient temperature					
• During operation		°C	-25 ... +60		
• During storage		°C	-55 ... +80		
Degree of protection acc. to IEC 60947-1, Appendix C	Device		IP20		
	Connection range		IP00		
Touch protection acc. to EN 50274			Finger-safe		
Short-circuit protection of contactors without overload relays					
Main circuit					
Fuse links, operational class gG:	• Type of coordination "1"[1]	A	160	250	250
LV HRC, 3NA; DIAZED, 5SB; NEOZED, 5SE	• Type of coordination "2"[1]	A	63	125	160
according to IEC 60947-4-1/EN 60947-4-1	• Weld-free	A	50	63	100
Control circuit					
Coil operating range (AC/DC)			0.8 ... 1.1 x U_s		
Power consumption of the solenoid coils (when coil is cold and 1.0 x U_s)					
• AC operation, 50 Hz	- Closing	VA	145	270	
	- P.f.	VA	0.79	0.68	
	- Closed	VA	12.5	22	
	- P.f.	VA	0.36	0.27	
• AC operation, 50/60 Hz	- Closing	VA	170/155	298/274	
	- P.f.		0.76/0.72	0.72/0.62	
	- Closed	VA	15/11.8	27/20	
	- P.f.		0.35/0.38	0.29/0.31	
• DC operation	- Closing = Closed	W	13.3	15	
Operating times for 0.8 ... 1.1 x U_s[2] Total break time = Opening delay + Arcing time					
• DC operation	- Closing delay	ms	50 ... 110	110 ... 200	
	- Opening delay	ms	15 ... 30	14 ... 20	
• AC operation	- Closing delay	ms	4 ... 35	20 ... 50	
	- Opening delay	ms	10 ... 30	10 ... 25	
• Arcing time		ms	10 ... 15	10 ... 15	
Main circuit					
AC capacity					
Utilization category AC-1, switching resistive loads					
• Rated operational currents I_e	At 40 °C, up to 690 V	A	60	110	140
	At 60 °C, up to 690 V	A	55	100	120
• Rated power for AC loads P.f. = 0.95 (at 40 °C)	At 230 V	kW	23	42	53
	400 V	kW	39	72	92
• Minimum conductor cross-section for loads with I_e	At 40 °C	mm²	16	50	50
	At 60 °C	mm²	16	50	50
Utilization categories AC-2 and AC-3					
• Rated operational currents I_e	At 60 °C, up to 400 V	A	26	--	--
• Rated power for slipring or squirrel-cage motors at 50 and 60 Hz	At 230 V	kW	5.5	--	--
	400 V	kW	11	--	--

[1] In accordance with the corresponding 3-pole 3RT1 contactors.
[2] With size S00, DC operation: Operating times for 0.85 ... 1.1 x U_s

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SIRIUS 3RT13 contactors for resistive loads (AC-1), 4-pole, 4 NO, 60 ... 140 A

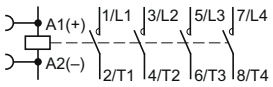
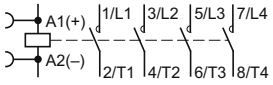
Selection and ordering data

AC operation, 4 NO contacts

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B



3RT13 3.-1A.00

Rated data AC-1, T_u: 40/60 °C		Rated control supply voltage U_s	DT	Screw terminals	DT	Spring-type terminals
Operational current I_e	Ratings of AC loads (p.f. = 0.95) at 50 Hz and **400 V**			Order No. / Price per PU		Order No. / Price per PU
A	**kW**	V AC				
For screw fixing and snap-on mounting onto TH 35 standard mounting rail						
Size S2						
						
60 / 55	**39 / 36**	24, 50 Hz	B	**3RT13 36-1AB00**		--
		110, 50 Hz	B	**3RT13 36-1AF00**		--
		230, 50 Hz	▶	**3RT13 36-1AP00**		--
Size S3						
						
110 / 100	**72 / 66**	24, 50 Hz	B	**3RT13 44-1AB00**		--
		110, 50 Hz	B	**3RT13 44-1AF00**		--
		230, 50 Hz	▶	**3RT13 44-1AP00**		--
140 / 120	**92 / 79**	24, 50 Hz	B	**3RT13 46-1AB00**		--
		110, 50 Hz	B	**3RT13 46-1AF00**		--
		230, 50 Hz	▶	**3RT13 46-1AP00**		--

Other voltages according to page 4/38 on request.

Accessories and spare parts see "3RT10 Contactors", Chapter 3.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RT13 contactors for resistive loads (AC-1), 4-pole, 4 NO, 60 ... 140 A

DC operation · DC solenoid system, 4 NO contacts

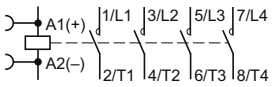
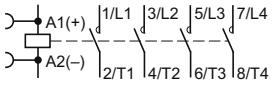
PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B



3RT13 36-1...0



3RT13 4.-1...0

Rated data AC-1, T_u: 40/60 °C		Rated control supply voltage U_s	DT	Screw terminals	DT	Spring-type terminals
Operational current I_e	Ratings of AC loads (p.f. = 0.95) at 50 Hz and **400 V**			Order No. / Price per PU		Order No. / Price per PU
A	**kW**	V DC				
For screw fixing and snap-on mounting onto TH 35 standard mounting rail						
Size S2						
						
60 / 55	**39 / 36**	24	▶	**3RT13 36-1BB40**		--
		220	B	**3RT13 36-1BM40**		--
Size S3						
						
110 / 100	**72 / 66**	24	B	**3RT13 44-1BB40**		--
		220	B	**3RT13 44-1BM40**		--
140 / 120	**92 / 79**	24	B	**3RT13 46-1BB40**		--
		220	B	**3RT13 46-1BM40**		--

Other voltages according to page 4/38 on request.

Accessories and spare parts see "3RT10 Contactors", Chapter 3.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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3TK1 contactors for resistive loads (AC-1), 4-pole, 4 NO, 200 ... 1000 A

Overview

Standards

IEC 60947-1, EN 60947-1,
IEC 60947-4-1, EN 60947-4-1,
IEC 60947-5-1, EN 60947-5-1 (auxiliary switches)

The contactors also comply with the requirements of the standards NFC 63-110 and NFC 20–040.

The contactors are suitable for use in any climate. They are finger-safe according to EN 50274. Terminal covers may have to be fitted onto the connecting bars, depending on the configuration with other devices.

The contactors are used mainly for resistive loads (AC-1 and p.f. > 0.95). They are also suitable for switching mixed loads in distribution systems (e.g. for supplying heaters, lamps, motors, PC power supply units) with p.f. > 0.8 according to IEC 60947-4-1, test conditions for utilization category AC-1.

Control circuits

The solenoid coils of the 3TK10 to 3TK13 contactors (operating currents up to 350 A) are designed as plug-in coils.

Surge suppression

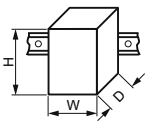
The solenoid coils of the 3TK1 contactors can be connected at a later stage with RC circuits (see "Accessories").

Technical specifications

Contactors	Type		3TK1
Rated data of the auxiliary contacts			according to IEC 60947-5-1
Rated insulation voltage U_i (pollution degree 3)		V	690
Conventional thermal current I_{th} = Rated operational current I_e/AC-12		A	10
AC load **Rated operational current I_e/AC-15/AC-14** • For rated operational voltage U_e			
	24 V	A	6
	110 V	A	6
	125 V	A	6
	220 V	A	6
	230 V	A	6
	380 V	A	4
	400 V	A	4
	500 V	A	1
	660 V	A	1
	690 V	A	1
DC load **Rated operational current I_e/DC-12** • For rated operational voltage U_e			
	24 V	A	--
	60 V	A	--
	110 V	A	--
	125 V	A	--
	220 V	A	--
	440 V	A	--
	600 V	A	--
Rated operational current I_e/DC-13 • For rated operational voltage U_e			
	24 V	A	6
	60 V	A	6
	110 V	A	1.8
	125 V	A	--
	220 V	A	0.6
	440 V	A	--
	600 V	A	--
CSA and UL rated data of the auxiliary contacts			
Rated voltage		V AC, max.	600
Switching capacity			A 600, P 600

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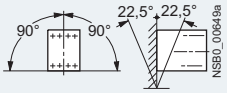
3TK1 contactors for resistive loads (AC-1), 4-pole, 4 NO, 200 ... 1000 A

Type				**3TK10**	**3TK11**	**3TK12**	**3TK13**	**3TK14**	**3TK15**	**3TK17**
Dimensions (W x H x D)			mm	165 x 156 x 155	165 x 172 x 155	201 x 198 x 172		244 x 273 x 226		

General technical specifications

Permissible mounting positions

Upright mounting position also permissible



Mechanical endurance	Operating cycles	Mio.	10				5		
Electrical endurance for I_e/AC-1 at 55 °C	Operating cycles	Mio.	0.8	0.8	0.8	0.4	0.65	0.5	0.4
Rated insulation voltage U_i (pollution degree 3)		V	1000						
Ambient temperature									
• During operation		°C	-25 ... +55						
• During storage		°C	-50 ... +70						
Degree of protection acc. to IEC 60947-1, Appendix C			IP00						
Touch protection acc. to EN 50274			Finger-safe with cover						
Shock resistance, sine pulse		g/ms	10/15						

Short-circuit protection

Main circuit Fuse links, operational class gG: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE according to IEC 60947-4-1/EN 60947-4-1									
• Type of coordination "1"		A	250		355		800	1000	
• Type of coordination "2"		A	250		315		630	850	
Auxiliary circuit Short-circuit test with fuse links of gG operational class: DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current I_k = 1 kA acc. to IEC 60947-5-1		A	10						

Control circuits

Coil operating range			0.85 ... 1.1 x U_s						
Power consumption of the solenoid coils (when coil is cold and 1.0 x U_s)									
• 50 Hz									
- Closing		VA	820		1100		3500		
- P.f.			0.4		0.35		0.26		
- Closed		VA	44		52		125		
- P.f.			0.34		0.35		0.4		
• 60 Hz									
- Closing		VA	990		1200		4000		
- P.f.			0.35		0.31		0.22		
- Closed		VA	52		65		140		
- P.f.			0.35		0.34		0.43		
Operating times for 1.0 x U_s									
• Closing delay		ms	20 ... 40				30 ... 60		
• Opening delay		ms	7 ... 15				10 ... 20		
• Arcing time		ms	10				10		

Main circuit

AC capacity

Utilization category AC-1, switching resistive loads									
• Rated operational currents I_e	At 40 °C up to 690 V	A	200	250	300	350	550	800	1000
	At 50 °C up to 690 V	A	180	230	270	310	470	650	850
• Rated power for AC loads with p.f. = 0.95 (at 40°C)	At 230 V	kW	76	95	114	132	208	303	378
	400 V	kW	132	165	197	230	362	527	658
	500 V	kW	165	206	247	288	452	658	828
	690 V	kW	227	284	341	397	624	908	1135
• Minimum conductor cross-section for load with I_e	At 40 °C	mm²	95	150	185	240	185	240	300
Utilization categories AC-2 and AC-3									
• Rated operational currents I_e	Up to 400 V	A	120	145	210	210	400	550	700
• Rated power of squirrel-cage or slipring motors at 50 Hz and 60 Hz	At 230 V	kW	30	45	75	75	110	160	220
	400 V	kW	55	75	110	110	200	280	370
• Short-time current at 40° C in cold state up to 10 s		A	900	1200	1600	1600	5300	5300	6400

Switching frequency[1)]

Switching frequency z in operating cycles/hour									
• Contactors without overload relays	No-load switching frequency	1/h	3600						
	AC-1	1/h	300						
	AC-3	1/h	300						

[1)] Dependence of the switching frequency z' on the operational current I' and operational voltage U' : $z' = z \cdot (I_e/I') \cdot (400\ V/U')^{1.5} \cdot 1/h$.

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3TK1 contactors for resistive loads (AC-1), 4-pole, 4 NO, 200 ... 1000 A

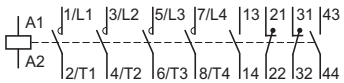
Contactors	Type	3TK10	3TK11	3TK12	3TK13	3TK14	3TK15	3TK17
Conductor cross-sections								
Main conductors:		Screw terminals						
• Stranded with cable lug	mm^2	2 x 70	2 x 120	2 x 120		2 x 300		
• AWG cables, solid or stranded	MCM	2 x 00 AWG	2 x 250	2 x 250		2 x 600		
• Connecting bar (max. width)	mm	30	30	33		55		
• Terminal screw		M6	M10	M10		M10		
- Tightening torque	Nm	5	16	16		16		
	lb.in	42	135	135		135		
Auxiliary conductors:								
• Solid	mm^2	2 x (0.5 ... 2.5)						
• Finely stranded with end sleeve	mm^2	2 x (0.5 ... 2.5)						
• AWG cables, solid or stranded	MCM	20 ... 14						
- Tightening torque	Nm	1.2 (10 lb.in)						

Selection and ordering data

Screw terminals
Screw fixing



3TK13

Rated data AC-1					Auxiliary contacts		Rated control supply voltage U_s	DT	Screw terminals		PU (UNIT, SET, M)	PS*	PG
Operational current I_e up to 690 V (at 40 °C)	Rating of AC loads (p f. = 0.95) at				Version				Order No.	Price per PU			
	230 V	400 V	690 V	1000 V	NO	NC							
A	kW	kW	kW	kW			V AC						
AC operation													
													
200	75	130	225	205	2	2	220 ... 230, 50 Hz	B	**3TK10 42-0AP0**		1	1 unit	41B
							230 ... 240, 50 Hz	D	**3TK10 42-0AU0**		1	1 unit	41B
							110/120, 50/60 Hz	D	**3TK10 42-0AF0**		1	1 unit	41B
							24, 50 Hz	D	**3TK10 42-0AB0**		1	1 unit	41B
250	90	165	280	200	2	2	220 ... 230, 50 Hz	B	**3TK11 42-0AP0**		1	1 unit	41B
							230 ... 240, 50 Hz	D	**3TK11 42-0AU0**		1	1 unit	41B
							110/120, 50/60 Hz	D	**3TK11 42-0AF0**		1	1 unit	41B
							24, 50 Hz	D	**3TK11 42-0AB0**		1	1 unit	41B
300	110	195	340	325	2	2	220 ... 230, 50 Hz	B	**3TK12 42-0AP0**		1	1 unit	41B
							230 ... 240, 50 Hz	D	**3TK12 42-0AU0**		1	1 unit	41B
							110/120, 50/60 Hz	D	**3TK12 42-0AF0**		1	1 unit	41B
							24, 50 Hz	D	**3TK12 42-0AB0**		1	1 unit	41B
350	130	230	395	370	2	2	220 ... 230, 50 Hz	B	**3TK13 42-0AP0**		1	1 unit	41B
							230 ... 240, 50 Hz	D	**3TK13 42-0AU0**		1	1 unit	41B
							110/120, 50/60 Hz	D	**3TK13 42-0AF0**		1	1 unit	41B
							24, 50 Hz	D	**3TK13 42-0AB0**		1	1 unit	41B
550	205	360	620	510	2	2	220 ... 230, 50 Hz[1)]	B	**3TK14 42-0AP0**		1	1 unit	41B
							230 ... 240, 50 Hz	D	**3TK14 42-0AU0**		1	1 unit	41B
							110/120, 50/60 Hz	D	**3TK14 42-0AF0**		1	1 unit	41B
800	300	525	905	575	2	2	220 ... 230, 50 Hz[1)]	B	**3TK15 42-0AP0**		1	1 unit	41B
							230 ... 240, 50 Hz	D	**3TK15 42-0AU0**		1	1 unit	41B
							110/120, 50/60 Hz	D	**3TK15 42-0AF0**		1	1 unit	41B
1000	375	655	1135	--	2	2	220 ... 230, 50 Hz[1)]	B	**3TK17 42-0AP0**		1	1 unit	41B
							230 ... 240, 50 Hz	D	**3TK17 42-0AU0**		1	1 unit	41B
							110/120, 50/60 Hz	D	**3TK17 42-0AF0**		1	1 unit	41B

[1)] At 60 Hz: 240 V.

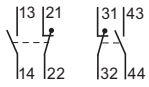
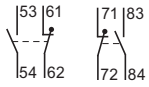
* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Accessories

For contactors	Version	Rated control supply voltage U_s	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type		V AC						
Surge suppressors								
3TK10 ... 3TK13	RC elements	24 ... 48	D	**3TK19 30-0A**		1	1 unit	41B
		110 ... 415	B	**3TK19 30-0B**		1	1 unit	41B
3TK14 ... 3TK17		48 ... 110	C	**3TK19 34-0C**		1	1 unit	41B
		220 ... 600	B	**3TK19 34-0D**		1	1 unit	41B
Terminal covers								
3TK10, 3TK11	For mounting onto contactors		B	**3TK19 40-0A**		1	2 units	41B
3TK12, 3TK13			B	**3TK19 42-0A**		1	2 units	41B
3TK14, 3TK15			B	**3TK19 44-0A**		1	2 units	41B
3TK17			B	**3TK19 46-0A**		1	2 units	41B
Mechanical interlocking of two identical contactors								
3TK10, 3TK11	Locking devices, auxiliary contacts 2 NC		B	**3TK19 20-0A**		1	1 unit	41B
3TK12, 3TK13			B	**3TK19 22-0A**		1	1 unit	41B
3TK14 ... 3TK17	Mechanical interlock including mounting plate		B	**3TK19 24-0A**		1	1 unit	41B

Spare parts

For contactors	Version	Auxiliary contacts Connections	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type								
Auxiliary switch blocks								
3TK1	For mounting on the side	Left Right						
	1. block 1 NO + 1 NC		B	**3TK19 10-3A**		1	1 unit	41B
	2. block 1 NO + 1 NC		B	**3TK19 10-3B**		1	1 unit	41B
Contacts with fixing parts								
3TK10	4 moving and 8 fixed contacts		D	**3TK19 60-0A**		1	1 unit	41B
3TK11			D	**3TK19 61-0A**		1	1 unit	41B
3TK12			D	**3TK19 62-0A**		1	1 unit	41B
3TK13			D	**3TK19 63-0A**		1	1 unit	41B
3TK14			D	**3TK19 64-0A**		1	1 unit	41B
3TK15			D	**3TK19 65-0A**		1	1 unit	41B
3TK17			D	**3TK19 67-0A**		1	1 unit	41B
Arc chutes								
3TK10	1 arc chute, 4-pole		D	**3TK19 50-0A**		1	1 unit	41B
3TK11			D	**3TK19 51-0A**		1	1 unit	41B
3TK12			D	**3TK19 52-0A**		1	1 unit	41B
3TK13			D	**3TK19 53-0A**		1	1 unit	41B
3TK14			D	**3TK19 54-0A**		1	1 unit	41B
3TK15			D	**3TK19 55-0A**		1	1 unit	41B
3TK17			D	**3TK19 57-0A**		1	1 unit	41B
Solenoid coils								
AC operation[1]								
3TK10, 3TK11				**3TK19 70-0A..**				
3TK12, 3TK13				**3TK19 72-0A..**				
3TK14 ... 3TK17				**3TK19 74-0A..**				

[1] Rated control supply voltages: The 10th and 11th digit of the Order No. must be supplemented according to the table.

For contactor type	**3TK10/11/12/13**	**3TK14/15/17**
Solenoid coil type	**3TK19 70-0A..** **3TK19 72-0A..**	**3TK19 74-0A..**
Rated control supply voltage U_s		
AC operation		
50 Hz **60 Hz**		
24 V --	B0	--
110 V 120 V	F0	F0
220 ... 230 V 240 V	P0	P0
230 ... 240 V --	U0	U0

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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3TK20 contactors, 4-pole, 4 kW

Overview

Standards

IEC 60947-1, EN 60947-1,
IEC 60947-4-1, EN 60947-4-1

The contactors are suitable for use in any climate. The contactors with screw terminals are finger-safe according to EN 50274.

Connection methods

The contactors are available in versions with screw terminals, 6.3 mm plug-in terminals and solder pin connections for soldering in printed circuit boards.

The contactors 3TK2 with 6.3 mm x 0.8 mm flat connectors are coded and can be used in the plug-in base with solder pin connections for printed circuit boards (see "Accessories").

Application

Contactors with plug-in terminals

The main area of application for the 3TK2 contactors with flat connectors is in household equipment. These contactors are also suitable for simple electric controllers.

No auxiliary switch blocks can be retrofitted.

Technical specifications

3TK20

Endurance of the main contacts

The characteristic curves show the contact endurance of the contactors when switching inductive AC loads (AC-3) depending on the breaking current and rated operational voltage. It is assumed that the operating mechanisms are switched randomly, i.e. not synchronized with the phase angle of the supply system.
The rated operational current I_e complies with utilization category AC-4 (breaking six times the rated operational current) and is intended for a contact endurance of at least 200000 operating cycles. If a shorter endurance is sufficient, the rated operational current I_e/AC-4 can be increased.
If the contacts are used for mixed operation, i.e. normal switching (breaking the rated operational current according to utilization category AC-3) in combination with intermittent inching (breaking several times the rated operational current according to utilization category AC-4), the contact endurance can be calculated approximately from the following equation:

$$X = \frac{A}{1 + \frac{C}{100}\left(\frac{A}{B} - 1\right)}$$

Characters in the equation:

X = Contact endurance for mixed operation in operating cycles

A = Contact endurance for normal operation ($I_a = I_e$) in operating cycles

B = Contact endurance for inching (I_a = multiple of I_e) in operating cycles

C = Inching operations as a percentage of total switching operations

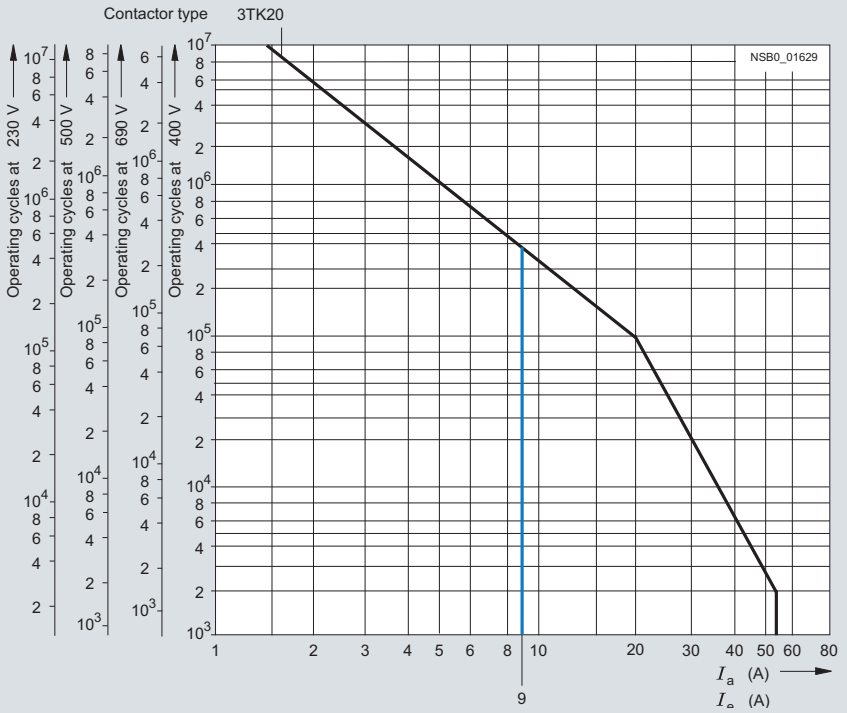
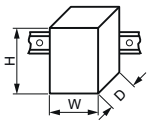


Diagram legend:

P_N= Rated power for squirrel-cage motors at 400 V
I_a= Breaking current
I_e= Rated operational current

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3TK20 contactors, 4-pole, 4 kW

Type			**3TK20**
Size			**00**
Dimensions (W x H x D)		mm	45 x 48 x 63

General technical specifications

Permissible mounting positions	AC and DC operation		Any
Mechanical endurance			
• AC operation		Operating cycles	10 million
• DC operation			30 million
• Auxiliary switch blocks			10 million
Rated insulation voltage U_i (pollution degree 3)			
• Screw terminals		V	690
• Flat connectors 6.3 mm x 0.8 mm		V	500
• Solder pin connections		V	500
Rated impulse withstand voltage U_{imp} (pollution degree 3)			
• Screw terminals		kV	6
• Flat connectors 6.3 mm x 0.8 mm		kV	6
• Solder pin connections		kV	6
Protective separation between coil and main contacts according to IEC 60947-1, Appendix N		V	Up to 300
Permissible ambient temperature[1]			
• During operation		°C	-25 ... +55
• During storage		°C	-55 ... +80
Degree of protection acc. to IEC 60947-1, Appendix C			IP00 open IP20 for screw terminals IP40 coil assembly
Touch protection acc. to EN 50274			Finger-safe for screw terminals
Shock resistance			
• Rectangular pulse			
- AC operation		*g*/ms	8.3/5 and 5.2/10
- DC operation		*g*/ms	11.3/5 and 9.2/10
• Sine pulse			
- AC operation		*g*/ms	13/5 and 8/10
- DC operation		*g*/ms	17.4/5 and 12.9/10
Conductor cross-sections			[2]

Short-circuit protection for contactors without overload relays

Main circuit[3]		
• Fuse links, operational class gG: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE according to IEC 60947-4-1/EN 60947-4-1		
- Type of coordination "1"	A	25
- Type of coordination "2"[4]	A	10
- Weld-free	A	10
• Miniature circuit breaker with C characteristic	A	10
Auxiliary circuit		
• Short-circuit test with fuse links of gG operational class: DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current I_k = 1 kA acc. to IEC 60947-5-1	A	6

1) Applies to 50/60 Hz coil:
At 50 Hz, 1.1 x U_s, side-by-side mounting and 100 % ON period the max. ambient temperature is +40 °C.

2) See page 4/26.

3) According to excerpt from IEC 60947-4-1
Type of coordination "1":
Destruction of the contactor and the overload relay is permissible. The contactor and/or overload relay can be replaced if necessary.
Type of coordination "2":
The overload relay must not suffer any damage. Contact welding on the contactor is permissible, however, if the contacts can be easily separated.

4) A short-circuit current of $I_q \leq$ 6 kA applies to type of coordination "2".

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3TK20 contactors, 4-pole, 4 kW

Contactors	Type	3TK20
	Size	00
Control circuits		
Coil operating range[1]		0.8 ... 1.1 x U_s
Power consumption of the solenoid coils (when coil is cold and 1.0 x U_s)		
Standard version:		
• AC operation, 50 Hz		
- Closing	VA	15
- P.f.		0.41
- Closed	VA	6.8
- P.f.		0.42
• AC operation, 60 Hz		
- Closing	VA	14.4
- P.f.		0.36
- Closed	VA	6.1
- P.f.		0.46
• AC operation, 50/60 Hz[1]		
- Closing	VA	16.5/13.2
- P.f.		0.43/0.38
- Closed	VA	8.0/5.4
- P.f.		0.48/0.42
For USA and Canada:		
• AC operation, 50 Hz		
- Closing	VA	14.6
- P.f.		0.38
- Closed	VA	6.5
- P.f.		0.40
• AC operation, 60 Hz		
- Closing	VA	14.4
- P.f.		0.30
- Closed	VA	6.0
- P.f.		0.44
• DC operation (closing = closed)	W	3
Permissible residual current of the electronic circuit[2] (with 0 signal)		
• AC operation	mA	≤ 3 x (230 V/U_s)
• DC operation	mA	≤ 1 x (230 V/U_s)
Operating times for 0.8 ... 1.1 x U_s[3] Total break time = Opening delay + Arcing time Values apply with coil in cold state and at operating temperature for operating range		
• AC operation		
- Closing delay	ms	5 ... 19
- Opening delay	ms	2 ... 22
- Dead interval		To use the 3TK20 AC-operated contactor in reversing an additional dead interval of 50 ms is required along with an NC contact interlock.
• DC operation		
- Closing delay	ms	16 ... 65
- Opening delay	ms	2 ... 5
• Arcing time	ms	10 ... 15
Operating times for 1.0 x U_s[3]		
• AC operation		
- Closing delay	ms	5 ... 18
- Opening delay	ms	3 ... 21
- Dead interval		To use the 3TK20 AC-operated contactor in reversing an additional dead interval of 50 ms is required along with an NC contact interlock.
• DC operation		
- Closing delay	ms	19 ... 31
- Opening delay	ms	3 ... 4
• Arcing time	ms	10 ... 15

1) Applies to 50/60 Hz coil:
At 50 Hz, 1.1 x U_s, side-by-side mounting and 100 % ON period the max. ambient temperature is +40 °C.

2) The 3TX4 490-1J additional load module is recommended for higher residual currents (see "Accessories for 3TF2 Contactors", Chapter 3).

3) The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 10 times; diode assembly 2 to 6 times, varistor +2 to 5 ms).

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3TK20 contactors, 4-pole, 4 kW

Contactors	Type		3TK20 ..-0...	3TK20 ..-3..., 3TK20 ..-6..., 3TK20 ..-7...
	Size		00	00
Main circuit				
AC capacity				
Utilization category AC-1, switching resistive loads				
• Rated operational current I_e (at 40 °C)	Up to 400/380 V	A	18	18
	690/660 V	A	18	--
• Rated operational current I_e (at 55 °C)	400/380 V	A	16	16
	690/660 V	A	16	--
• Rated power for AC loads with p.f. = 1	At 230/220 V	kW	6.0	6.0
	400/380 V	kW	10	10
	500 V	kW	13	13
	690/660 V	kW	17	--
• Minimum conductor cross-section for loads with I_e		mm^2	2.5	2.5
Utilization categories AC-2 and AC-3				
• Rated operational current I_e	Up to 220 V	A	9.0	9.0
	230 V	A	9.0	9.0
	380 V	A	9.0	9.0
	400 V	A	8.4	8.4
	500 V	A	6.5	6.5
	660 V	A	5.2	--
	690 V	A	5.2	--
• Rated power for motors with slipring or squirrel cage at 50 and 60 Hz	At 110 V	kW	1.2	1.2
	115 V	kW	1.2	1.2
	120 V	kW	1.3	1.3
	127 V	kW	1.4	1.4
	200 V	kW	2.2	2.2
	220 V	kW	2.4	2.4
	230 V	kW	2.5	2.5
	240 V	kW	2.6	2.6
	380 V	kW	4.0	4.0
	400 V	kW	4.0	4.0
	415 V	kW	4.0	4.0
	440 V	kW	4.0	4.0
	460 V	kW	4.0	4.0
	500 V	kW	4.0	4.0
	575 V	kW	4.0	--
	660 V	kW	4.0	--
	690 V	kW	4.0	--
Utilization category AC-4				
(contact endurance approx. 200 000 operating cycles at I_a = 6 x I_e)				
• Rated operational current I_e	Up to 400 V	A	2.6	2.6
	690 V	A	1.8	--
• Rated power for motors with squirrel cage at 50 and 60 Hz	At 110 V	kW	0.32	0.32
	115 V	kW	0.33	0.33
	120 V	kW	0.35	0.35
• Max. permissible rated operational current I_e/AC-4 ≙ I_e/AC-3 up to 500 V, for reduced contact endurance and reduced switching frequency	127 V	kW	0.37	0.37
	200 V	kW	0.58	0.58
	220 V	kW	0.64	0.64
	230 V	kW	0.67	0.67
	240 V	kW	0.70	0.70
	380 V	kW	1.10	1.10
	400 V	kW	1.15	1.15
	415 V	kW	1.20	1.20
	440 V	kW	1.27	1.27
	460 V	kW	1.33	1.33
	500 V	kW	1.45	1.45
	575 V	kW	1.30	--
	660 V	kW	1.10	--
	690 V	kW	1.15	--
Switching frequency				
Switching frequency *z* in operating cycles/hour				
• Contactors without overload relays	No-load switching frequency	h^{-1}	10000	
Dependence of the switching frequency z' on the operational current I' and operational voltage U': $z' = z \cdot (I_e/I') \cdot (400\ V/U')^{1.5} \cdot 1/h$	AC-1	h^{-1}	1000	
	AC-2	h^{-1}	500	
	AC-3	h^{-1}	1000	
• Contactors with overload relays (mean value)		h^{-1}	15	

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3TK20 contactors, 4-pole, 4 kW

Contactors		Type		3TK20
		Size		00
Conductor cross-sections				
Main and auxiliary conductors				**Screw terminals**
• Solid			mm^2	2 x (0.5 ... 2.5), 1 x 4 2 x (20 ... 14) AWG, 1 x 12 AWG
• Finely stranded with end sleeve			mm^2	2 x (0.5 ... 1.5), 1 x 2.5
• Pin-end connector (DIN 46231)			mm^2	1 x 1 ... 2.5
• Terminal screw				M3
• Prescribed tightening torque for terminal screws			Nm lb.in	0.8 ... 1.3 7 ... 11
				Flat connectors
• When using a plug-in sleeve 6.3 – 1			mm^2	0.5 ... 1
• Finely stranded with 6.3 – 2.5			mm^2	1 ... 2.5
				Solder pin connections (only for printed circuit boards)
• Solder pin cross-section	(does not apply to plug-in bases)		mm^2	0.8 x 1.2

Contactors		Type		3TK20
		Size		00
Auxiliary contacts				
Rated data according to IEC 60947-5-1				
Rated insulation voltage U_i (pollution degree 3)			V	690
Conventional thermal current I_{th} = **Rated operational current I_e/AC-12**			A	10
AC load **Rated operational current I_e/AC-15/AC-14**				
• For rated operational voltage U_e	24 ... 230 V		A	4
	380 ... 400 V		A	3
	500 V		A	2
	660 V		A	1
	690 V		A	1
DC load **Rated operational current I_e/DC-12**				
• For rated operational voltage U_e	24 V		A	4
	48 V		A	2.2
	110 V		A	1.1
	125 V		A	1.1
	220 V		A	0.5
	440 V		A	--
	600 V		A	--
Rated operational current I_e/DC-13				
• For rated operational voltage U_e	24 V		A	2.1
	48 V		A	1.1
	110 V		A	0.52
	125 V		A	0.52
	220 V		A	0.27
	440 V		A	--
	600 V		A	--

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3TK20 contactors, 4-pole, 4 kW

Contactors	Type		3TK20 ..-0...	3TK20 ..-3..., 3TK20 ..-6..., 3TK20 ..-7...
	Size		00	00
CSA and UL rated data of the 3TK20 contactors				
Rated insulation voltage U_i		V AC	600	300
Uninterrupted current, open and enclosed		A	16	16 (10 for solder pin connection)
Maximum horsepower ratings (CSA and UL approved values)				
• Rated power for induction motors at 60 Hz				
- Single-phase	At 115 V	hp	0.5	--
	200 V	hp	1	1
	230 V	hp	1.5	1
	460/575 V	hp	--	--
- 3-phase	At 115 V	hp	--	--
	200 V	hp	3	3 (1 for 3TK20..-6)
	230 V	hp	3	3 (1 for 3TK20..-6)
	460/575 V	hp	5	--
Overload relays	Type		3UA7	
• Setting range		A	8 ... 10	
CSA, UL and GL rated data of the auxiliary contacts				
Rated voltage, max.		V AC	600	
Auxiliary switch blocks, max.		V AC	300	
Switching capacity			A 600, Q 300	
Uninterrupted current at 240 V AC		A	10	

Selection and ordering data

Size 00
AC-1: operational current I_e = 16 A (at 55 °C)

Rated data Utilization categories AC-2 and AC-3					Main contacts		DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
Operational current I_e	Ratings of induction motors at 50 Hz and				Version			Order No.			
At 400/ 380 V	230/ 220 V	**400/ 380 V**	500 V	690/ 660 V	NO	NC		Price per PU			
A	kW	**kW**	kW	kW							
Terminal designations											
4 NO											
3 NO + 1 NC											
2 NO + 2 NC											
Contactors with screw terminals · for screw fixing and snap-on mounting onto TH 35 standard mounting rail											
AC operation											
9	2.4	**4**	4	4	4	--	C	**3TK20 40-0AP0**	1	1 unit	41B
					3	1	C	**3TK20 31-0AP0**	1	1 unit	41B
					2	2	C	**3TK20 22-0AP0**	1	1 unit	41B
DC operation · DC solenoid system											
9	2.4	**4**	4	4	4	--	C	**3TK20 40-0BB4**	1	1 unit	41B
					3	1	C	**3TK20 31-0BB4**	1	1 unit	41B
					2	2	C	**3TK20 22-0BB4**	1	1 unit	41B



3TK20..-0...

Accessories see "3TF2 Contactors", Chapter 3.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

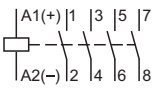
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3TK20 contactors, 4-pole, 4 kW

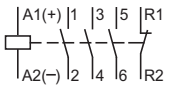
Rated data Utilization categories AC-2 and AC-3					Main contacts		DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Operational current I_e	Ratings of induction motors at 50 Hz and				Version							
At 400/ 380 V	230/ 220 V	**400/ 380 V**	500 V	690/ 660 V	NO	NC						
A	kW	**kW**	kW	kW								

Terminal designations

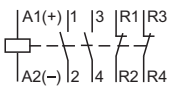
4 NO



3 NO + 1 NC



2 NO + 2 NC



Contactors with 6.3 mm x 0.8 mm flat connectors for screw fixing and snap-on mounting onto TH 35 standard mounting rail



3TK20..-3...

AC operation

9	2.4	**4**	4	--	4	--	C	**3TK20 40-3AP0**	Flat connectors	1	1 unit	41B
					3	1	C	**3TK20 31-3AP0**		1	1 unit	41B
					2	2	C	**3TK20 22-3AP0**		1	1 unit	41B

DC operation · DC solenoid system

9	2.4	**4**	4	--	4	--	C	**3TK20 40-3BB4**		1	1 unit	41B
					3	1	C	**3TK20 31-3BB4**		1	1 unit	41B
					2	2	C	**3TK20 22-3BB4**		1	1 unit	41B

Contactors with 6.3 mm x 0.8 mm flat connectors for screw fixing (diagonal)



3TK20..-7...

AC operation

9	2.4	**4**	4	--	4	--	C	**3TK20 40-7AP0**		1	1 unit	41B
					3	1	C	**3TK20 31-7AP0**		1	1 unit	41B
					2	2	C	**3TK20 22-7AP0**		1	1 unit	41B

DC operation · DC solenoid system

9	2.4	**4**	4	--	4	--	C	**3TK20 40-7BB4**		1	1 unit	41B
					3	1	C	**3TK20 31-7BB4**		1	1 unit	41B
					2	2	C	**3TK20 22-7BB4**		1	1 unit	41B

Contactors with solder pin connections for printed circuit boards[1] for screw fixing (diagonal)



3TK20..-6...

AC operation

9	2.4	**4**	4	--	4	--	C	**3TK20 40-6AP0**	Solder pin connections	1	1 unit	41B
					3	1	C	**3TK20 31-6AP0**		1	1 unit	41B
					2	2	C	**3TK20 22-6AP0**		1	1 unit	41B

DC operation · DC solenoid system

9	2.4	**4**	4	--	**4**	--	C	**3TK20 40-6BB4**		1	1 unit	41B
					3	1	C	**3TK20 31-6BB4**		1	1 unit	41B
					2	2	C	**3TK20 22-6BB4**		1	1 unit	41B

[1] Operating range at AC-1 and 220 V: 0.85 to 1.15 x U_s; lower operating range limit according to IEC 60947.

Accessories see "3TF2 Contactors", Chapter 3.

Rated control supply voltages (the 10th and 11th position of the order number must be changed)

	Contactor type	3TK20
Rated control supply voltage U_s	Size	00
AC operation		
Solenoid coils for AC 50 and 60 Hz		
50 Hz	**60 Hz**	
24 V AC	29 V AC	B0
110 V AC	132 V AC	F0
230/220 V AC	276 V AC	P0[1]
DC operation		
24 V DC		B4

[1] Operating range at 220 V: 0.85 to 1.15 x U_s; lower operating range limit according to IEC 60947.

Please inquire about further voltages.

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SIRIUS 3RT25 contactors, 4-pole, 2 NO + 2 NC, 4 ... 11 kW

Overview

Standards

IEC 60947-1, EN 60947-1,
IEC 60947-4-1, EN 60947-4-1

The contactors are suitable for use in any climate. They are finger-safe according to EN 50274.

The accessories for the 3-pole SIRIUS 3RT20 contactors can also be used for the 4-pole versions.

Size S0 contactors have 2 auxiliary contacts 1 NO and 1 NC integrated in the basic unit.

Mountable auxiliary contacts

Size S00 and S0

4 additional auxiliary contacts, including no more than 2 NC.

Application

The contactors are suitable for:

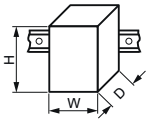
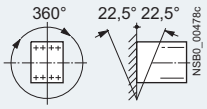
- For changing the polarity of hoisting gear motors
- For switching of two separate loads

Note:

Single device for pole reversal; not suitable for reversing duty. 3RT25 contactors are not suitable for switching a load between 2 current sources.

General descriptions of the sizes S00 and S0 see Chapter 3, "Power contactors for switching motors" → "SIRIUS 3RT20 contactors, 3-pole, 3 to 18.5 kW".

Technical specifications

Type			**3RT25 16**	**3RT25 17**	**3RT25 18**	**3RT25 26**
Size			**S00**	**S00**	**S00**	**S0**
Dimensions (W x H x D)[1]		mm	45 x 57.5 x 73 / 45 x 70 x 73			60 x 85 x 97 / 60 x 101.5 x 97
• With mounted auxiliary switch block		mm	45 x 57.5 x 116 / 45 x 70 x 121			60 x 85 x 141 / 60 x 101.5 x 144
General technical specifications						
Permissible mounting positions						
The contactors are designed for operation on a vertical mounting surface.						
Upright mounting position			Special version required			
Mechanical endurance		Operating cycles	30 million			10 million
Electrical endurance at I_e/AC-1		Operating cycles	Approx. 0.5 million			
Rated insulation voltage U_i (pollution degree 3)		V	690			
Permissible ambient temperature						
• During operation		°C	-25 ... +60			
• During storage		°C	-55 ... +80			
Degree of protection acc. to IEC 60947-1, Appendix C			IP20			IP20
• Terminal compartment			IP20			IP00
Touch protection acc. to EN 50274			Finger-safe			
Short-circuit protection of contactors without overload relays						
Main circuit						
Fuse links, operational class gG: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE according to IEC 60947-4-1/EN 60947-4-1						
• Type of coordination "1"		A	35			63
• Type of coordination "2"		A	20			35
• Weld-free		A	10			16
Control circuits						
Coil operating range						
• AC operation	At 50 Hz		0.8 ... 1.1 x U_s			--
	At 60 Hz		0.85 ... 1.1 x U_s			--
• DC operation	At 50 Hz		0.8 ... 1.1 x U_s			--
	At 60 Hz		0.85 ... 1.1 x U_s			--
• AC/DC operation			--			0.8 ... 1.1 x U_s
Power consumption of the solenoid coils (when coil is cold and 1.0 x U_s)			See 3RT23 16	See 3RT23 17		See 3RT23 26
Operating times for 0.8 ... 1.1 x U_s Total break time = Opening delay + Arcing time			See 3RT23 16	See 3RT23 17		See 3RT23 26

[1] Dimensions for devices with screw terminals or spring-type terminals. Size S0 for AC operation. DC operation: Depth +10 mm

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SIRIUS 3RT25 contactors, 4-pole, 2 NO + 2 NC, 4 ... 11 kW

Contactors	Type		3RT25 16	3RT25 17	3RT25 18	3RT25 26
	Size		S00	S00	S00	S0
Main circuit						
AC capacity						
Utilization category AC-1, switching resistive loads						
• Rated operational currents I_e	At 40 °C up to 690 V	A	18	22		40
	At 60 °C up to 690 V	A	16	20		35
• Rated power for AC loads	At 230 V	kW	6.5	7.5		15
P.f. = 0.95 (at 60 °C)	400 V	kW	11	13		26
• Minimum conductor cross-section for loads with I_e	At 40 °C	mm^2	2.5	2.5		10
Utilization categories AC-2 and AC-3						
• Rated operational currents I_e (at 60 °C)	Up to 400 V	A	9	12	16	25 / 20[1]
• Rated power for	At 230 V	kW	3	3	4	5.5
slipring or squirrel-cage motors	NO contacts at 400 V	kW	4	5.5	7.5	11
at 50 and 60 Hz	NC contacts at 400 V	kW	4	4	4	11
Load rating with DC						
Utilization category DC-1, switching resistive loads (*L/R* ≤ 1 ms)						
• Rated operational currents I_e (at 60 °C)						
- 1 conducting path	Up to 24 V	A	16	20		35
	60 V	A	16	20		20
	110 V	A	2.1	2.1		4.5
	220 V	A	0.8	0.8		1
	440 V	A	0.6	0.6		0.4
- 2 conducting paths in series	Up to 24 V	A	16	20		35
	60 V	A	16	20		35
	110 V	A	12	12		35
	220 V	A	1.6	1.6		5
	440 V	A	0.8	0.8		1
Utilization category DC-3/DC-5[2], shunt-wound and series-wound motors (*L/R* ≤ 15 ms)						
• Rated operational currents I_e (at 60 °C)						
- 1 conducting path	Up to 24 V	A	16	20		20
	60 V	A	0.5	0.5		5
	110 V	A	0.15	0.15		2.5
	220 V	A	0.75	0.75		1
	440 V	A	--	--		0.09
- 2 conducting paths in series	Up to 24 V	A	16	20		35
	60 V	A	5	5		35
	110 V	A	0.35	0.35		15
	220 V	A	--	--		3
	440 V	A	--	--		0.27

1) For AC operation: 25 A; for DC operation: 20 A.

2) For U_s >24 V the rated operational currents I_e for the NC contact conducting paths are 50 % of the values for the NO contact conducting paths.

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Selection and ordering data

AC operation,
2 NO + 2 NC [1]

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B



3RT25 1.-1A.00



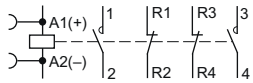
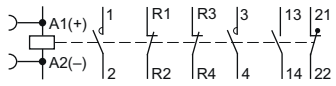
3RT25 1.-2A.00



3RT25 2.-1A.00



3RT25 2.-2A.00

Rated data			Auxiliary contacts			Rated control supply voltage U_s	DT	**Screw terminals**	DT	**Spring-type terminals**
AC-2/AC-3, T_u: up to 60 °C		AC-1, T_u: 40/60 °C	Ident. No.	Version				Order No. Price per PU		Order No. Price per PU
Operational current I_e At 400 V	Ratings of induction motors at 50 Hz and **400 V**	Operational current I_e		NO	NC					
A	**kW**	A				V AC				
For screw fixing and snap-on mounting onto TH 35 standard mounting rail										
Size S00 [2]										
										
9	**4**	18 / 16	**--**	--	--	24, 50/60 Hz	B	**3RT25 16-1AB00**	B	**3RT25 16-2AB00**
						110, 50/60 Hz	B	**3RT25 16-1AF00**	B	**3RT25 16-2AF00**
						230, 50/60 Hz	A	**3RT25 16-1AP00**	A	**3RT25 16-2AP00**
12	**5.5** [3]	22 / 20	**--**	--	--	24, 50/60 Hz	B	**3RT25 17-1AB00**	B	**3RT25 17-2AB00**
						110, 50/60 Hz	B	**3RT25 17-1AF00**	A	**3RT25 17-2AF00**
						230, 50/60 Hz	A	**3RT25 17-1AP00**	A	**3RT25 17-2AP00**
16	**7.5** [3]	22 / 20	**--**	--	--	24, 50/60 Hz	B	**3RT25 18-1AB00**	B	**3RT25 18-2AB00**
						110, 50/60 Hz	B	**3RT25 18-1AF00**	B	**3RT25 18-2AF00**
						230, 50/60 Hz	A	**3RT25 18-1AP00**	A	**3RT25 18-2AP00**
Size S0										
1 NO + 1 NC, Ident. No. **11**										
										
25	**11**	40 / 35	**11**	1	1	24, 50 Hz	B	**3RT25 26-1AB00**	B	**3RT25 26-2AB00**
						110, 50 Hz	B	**3RT25 26-1AF00**	B	**3RT25 26-2AF00**
						230, 50 Hz	A	**3RT25 26-1AP00**	A	**3RT25 26-2AP00**

1) Single device for pole reversal; not suitable for reversing duty.
2) For size S00: Coil operating range
at 50 Hz: 0.8 ... 1.1 x U_s
at 60 Hz: 0.85 ... 1.1 x U_s.
3) The NC contact can switch no more than 4 kW.

Other voltages according to page 4/38 on request.

Accessories and spare parts see "3RT20 Contactors", Chapter 3.

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SIRIUS 3RT25 contactors, 4-pole, 2 NO + 2 NC, 4 ... 11 kW

DC operation · DC solenoid system, 2 NO + 2 NC [1]

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B



3RT25 1.-1B.40



3RT25 1.-2B.40



3RT25 2.-1B.40



3RT25 2.-2B.40

Rated data			Auxiliary contacts			Rated control supply voltage U_s	DT	**Screw terminals**		DT	**Spring-type terminals**	
AC-2/AC-3, T_u: up to 60 °C		AC-1, T_u: 40/60 °C	Ident. No.	Version				Order No.	Price per PU		Order No.	Price per PU
Operational current I_e At 400 V	Ratings of induction motors at 50 Hz and **400 V**	Operational current I_e		NO	NC							
A	**kW**	A				V DC						
For screw fixing and snap-on mounting onto TH 35 standard mounting rail												
Size S00												
9	**4**	18 / 16	**--**	--	--	24	A	**3RT25 16-1BB40**		A	**3RT25 16-2BB40**	
						220	B	**3RT25 16-1BM40**		B	**3RT25 16-2BM40**	
12	**5.5**[2]	22 / 20	**--**	--	--	24	A	**3RT25 17-1BB40**		A	**3RT25 17-2BB40**	
						220	B	**3RT25 17-1BM40**		B	**3RT25 17-2BM40**	
16	**7.5**[2]	22 / 20	**--**	--	--	24	A	**3RT25 18-1BB40**		A	**3RT25 18-2BB40**	
						220	B	**3RT25 18-1BM40**		B	**3RT25 18-2BM40**	
Size S0												
1 NO + 1 NC, Ident. No. **11**												
20	**11**	40 / 35	**11**	1	1	24 DC	A	**3RT25 26-1BB40**		A	**3RT25 26-2BB40**	
						220 DC	B	**3RT25 26-1BM40**		B	**3RT25 26-2BM40**	

[1] Single device for pole reversal; not suitable for reversing duty.
[2] The NC contact can switch no more than 4 kW.

Other voltages according to page 4/38 on request.

Accessories and spare parts see "3RT20 Contactors", Chapter 3.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RT15 contactors, 4-pole, 2 NO + 2 NC, 18.5 kW

Overview

Standards

IEC 60947-1, EN 60947-1,
IEC 60947-4-1, EN 60947-4-1

The contactors are suitable for use in any climate. They are finger-safe according to EN 50274.

Note:

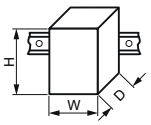
Single device for pole reversal; not suitable for reversing duty. 3RT15 contactors are not suitable for switching a load between 2 current sources.

The accessories for the 3-pole SIRIUS 3RT10 contactors can also be used for the 4-pole versions.

Mountable auxiliary contacts

Maximum 4 auxiliary contacts can be either laterally mounted or snapped onto the top (auxiliary switch blocks acc. to EN 50012 or EN 50005).

Technical specifications

Type			**3RT15 35**
Size			**S2**
Dimensions (W x H x D)		mm	73 x 112 x 110
• With mounted auxiliary switch block		mm	73 x 112 x 160
General technical specifications			
Permissible mounting position[1]			
Mechanical endurance		Operating cycles	10 million
Electrical endurance at I_e/AC-1		Operating cycles	Approx. 0.5 million
Rated insulation voltage U_i (pollution degree 3)		V	690
Permissible ambient temperature			
• During operation		°C	-25 ... +60
• During storage		°C	-55 ... +80
Degree of protection acc. to IEC 60947-1, Appendix C			IP20 (IP00 terminal compartment)
Touch protection acc. to EN 50274			Finger-safe
Short-circuit protection of contactors without overload relays			
Main circuit			
Fuse links, operational class gG: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE according to IEC 60947-4-1/EN 60947-4-1			
• Type of coordination "1"		A	160
• Type of coordination "2"		A	80
• Weld-free		A	50
Control circuits			
Coil operating range (AC/DC)			0.8 ... 1.1 x U_s
Power consumption of the solenoid coils (when coil is cold and 1.0 x U_s)			
• AC operation, 50 Hz			
- Closing		VA	145
- P.f.		VA	0.79
- Closed		VA	12.5
- P.f.		VA	0.36
• AC operation, 50/60 Hz			
- Closing		VA	170/155
- P.f.		VA	0.76/0.72
- Closed		VA	15/11.8
- P.f.		VA	0.35/0.38
• DC operation (closing = closed)		W	13.3
Operating times for 0.8 ... 1.1 x U_s[2] Total break time = Opening delay + Arcing time			
• AC operation			
- Closing delay		ms	4 ... 35
- Opening delay		ms	10 ... 30
• DC operation			
- Closing delay		ms	50 ... 110
- Opening delay		ms	15 ... 30
• Arcing time		ms	10 ... 15

[1] In accordance with the corresponding 3-pole 3RT1 contactors.

[2] With size S00, DC operation: Operating times for 0.85 ... 1.1 x U_s.

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SIRIUS 3RT15 contactors, 4-pole, 2 NO + 2 NC, 18.5 kW

Contactors		Type		3RT15 35
		Size		S2
Main circuit				
AC capacity				
Utilization category AC-1, switching resistive loads				
• Rated operational currents I_e	At 40 °C up to 690 V		A	60
	At 60 °C up to 690 V		A	55
• Rated power for AC loads P.f. = 0.95 (at 60 °C)	At 230 V		kW	20
	400 V		kW	36
• Minimum conductor cross-section for loads with I_e	At 40 °C		mm^2	16
Utilization categories AC-2 and AC-3				
• Rated operational currents I_e (at 60 °C)	Up to 400 V		A	40
• Rated power for slipring or squirrel-cage motors at 50 and 60 Hz	At 230 V		kW	9.5
	400 V		kW	18.5

4

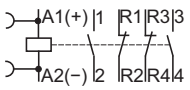
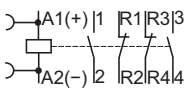
Selection and ordering data

AC and DC operation, 2 NO contacts + 2 NC contacts[1)]

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B



3RT15 35-1. . . .

Rated data			Rated control supply voltage U_s	DT	Screw terminals		DT	Spring-type terminals	
AC-2/AC-3, T_u: Up to 60 °C		AC-1, T_u: 40/60 °C			Order No.	Price per PU		Order No.	Price per PU
Operational current I_e At 400 V	Ratings of induction motors at 50 Hz and 400 V	Operational current I_e							
A	kW	A	V						
For screw fixing and snap-on mounting onto TH 35 standard mounting rail									
AC operation									
Size S2									
									
40	**18.5**	55 / 50	24, 50 Hz	B	**3RT15 35-1AB00**			--	
			110, 50 Hz	B	**3RT15 35-1AF00**			--	
			230, 50 Hz	▶	**3RT15 35-1AP00**			--	
DC operation · DC solenoid system									
Size S2									
									
40	**18.5**	55 / 50	24 DC	▶	**3RT15 35-1BB40**			--	
			220 DC	B	**3RT15 35-1BM40**			--	

1) Single device for pole reversal; not suitable for reversing duty.

Other voltages according to page 4/38 on request.

Accessories and spare parts see "3RT10 Contactors", Chapter 3.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RT16 capacitor contactors, 12.5 ... 50 kvar

Overview

Standards

IEC 60947-1, EN 60947-1,
IEC 60947-4-1, EN 60947-4-1,
IEC 60947-5-1, EN 60947-5-1 (auxiliary switches)

The contactors are suitable for use in any climate. They are finger-safe according to EN 50274.

Function

The 3RT16 capacitor contactors are special versions of the 3RT10 contactors size S00 to S3. The capacitors are precharged by means of the mounted leading NO contacts and resistors; only then do the main contacts close.

This prevents disturbances in the network and welding of the contactors.

Only discharged capacitors are permitted to be switched on with capacitor contactors.

For the capacitor switching capacity of the basic 3RT10 contactor version.

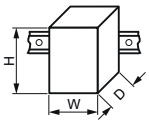
Auxiliary switches

The auxiliary switch block which is snapped onto the capacitor contactor contains the three leading NO contacts and in the case of S00 one standard NC contact and in the case of S0 and S3 one standard NO contact, which is unassigned. Size S00 also contains another unassigned NO contact in the basic unit.

In addition, a 2-pole auxiliary switch block can be mounted laterally on the 3RT16 47 capacitor contactors (2 NO, 2 NC or 1 NO + 1 NC versions); type 3RH19 21-1EA... The fitting of auxiliary switches for 3RT16 17 and 3RT16 27 is not expandable.

Technical specifications

All technical specifications not mentioned in the table below are identical to those of the 3RT10 17 contactors for size S00, to those of the 3RT10 26 contactors for size S0 and to those of the 3RT10 45 contactors for size S3 (see Chapter 3).

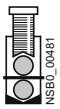
Type			**3RT16 17-.A..3**	**3RT16 27-.A..1**	**3RT16 47-.A..1**
Size			**S00**	**S0**	**S3**
Dimensions (W x H x D) including auxiliary switches and connecting cables		mm	45 x 101 x 105	45 x 100 x 130	70 x 167 x 183
General technical specifications					
Capacitor rating at rated power (utilization category AC-6b)	230 V, 50/60 Hz	kvar	3 ... 7.5	3.5 ... 15	3.5 ... 30
	400 V, 50/60 Hz	**kvar**	**5 ... 12.5**	**6 ... 25**	**5 ... 50**
	525 V, 50/60 Hz	kvar	7.5 ... 15	7.8 ... 30	7.5 ... 60
	690 V, 50/60 Hz	kvar	10 ... 21	10 ... 42	10 ... 84
Auxiliary contacts mounted (unassigned)			1 NO + 1 NC	1 NO	
Auxiliary contacts mountable (lateral), not for sizes S00 and S0			--		2 NC + 2 NO or 1 NO + 1 NC
Max. switching frequency		h^{-1}	180	100	
Electrical endurance		Operating cycles	> 250000	> 150000	> 100000
Ambient temperature		°C	60		
Short-circuit protection			1.6 ... 2.2 x I_e		
Coil operating range			0.8 ... 1.1 x U_s		
Conductor cross-sections (1 or 2 conductors connectable)					
Main conductors			**Screw terminals**		
• Solid		mm^2	2 x (0.5 ... 1.5)[2], 2 x (0.75 ... 2.5)[2] according to IEC 60947; max. 2 x (1 ... 4)[2]	2 x (1 ... 2.5)[2], 2 x (2.5 ... 6)[2] according to IEC 60947; max. 1 x 10 [1][2]	--
• Finely stranded with end sleeve		mm^2	2 x (0.5 ... 1.5)[2], 2 x (0.75 ... 2.5)[2]	2 x (1 ... 2.5)[2], 2 x (2.5 ... 6) [1][2]	--
• AWG cables					
- Solid		AWG	2 x (20 ... 16)	2 x (16 ... 12)	--
- Solid or stranded		AWG	2 x (18 ... 14)	2 x (14 ... 10)	--
- Stranded		AWG	1 x 12	1 x 8	--
• Terminal screws			M3	M4 (Pozidriv size 2)	--
- Tightening torque		Nm	0.8 ... 1.2	2 ... 2.5	--
		lb.in	7 ... 10.3	18 ... 22	--

[1] 3RV19 25-5AB feeder terminal for 16 mm^2.

[2] If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

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SIRIUS 3RT16 capacitor contactors, 12.5 ... 50 kvar

Contactors	Type		3RT16 17-.A..3	3RT16 27-.A..1	3RT16 47-.A..1
	Size		S00	S0	S3
Conductor cross-sections (1 or 2 conductors connectable)					
	Main conductors: With box terminal		**Screw terminals**		
Front clamping point connected 	• Finely stranded with end sleeve	mm²	--		2.5 ... 35
	• Finely stranded without end sleeve	mm²	--		4 ... 50
	• Solid	mm²	--		2.5 ... 16
	• Stranded	mm²	--		4 ... 70
	• Ribbon cable conductors (Number x Width x Thickness)	mm	--		6 x 9 x 0.8
	• AWG cables, solid or stranded	AWG	--		10 ... 2/0
Rear clamping point connected 	• Finely stranded with end sleeve	mm²	--		2.5 ... 50
	• Finely stranded without end sleeve	mm²	--		10 ... 50
	• Solid	mm²	--		2.5 ... 16
	• Stranded	mm²	--		10 ... 70
	• Ribbon cable conductors (Number x Width x Thickness)	mm	--		6 x 9 x 0.8
	• AWG cables, solid or stranded	AWG	--		10 ... 2/0
Both clamping points connected 	• Finely stranded with end sleeve	mm²	--		max. 2 x 35
	• Finely stranded without end sleeve	mm²	--		max. 2 x 35
	• Solid	mm²	--		max. 2 x 16
	• Stranded	mm²	--		max. 2 x 50
	• Ribbon cable conductors (Number x Width x Thickness)	mm			2 x (6 x 9 x 0.8)
	• AWG cables, solid or stranded	AWG	--		2 x (10 ... 1/0)
	• Terminal screw		--		M6 (hexagon socket, A/F 4)
	- Tightening torque	Nm lb.in	--		4 ... 6 36 ... 53
	Auxiliary conductors:				
	• Solid	mm²	2 x (0.5 ... 1.5)[1]; 2 x (0.75 ... 2.5)[1] according to IEC 60947; max. 2 x (1 ... 4)	2 x (0.5 ... 1.5)[1]; 2 x (0.75 ... 2.5)[1] according to IEC 60947; max. 2 x (0.75 ... 4)	
	• Finely stranded with end sleeve	mm²	2 x (0.5 ... 1.5)[1]; 2 x (0.75 ... 2.5)[1]		
	• AWG cables, solid or stranded	AWG	2 x (20 ... 16)[1]; 2 x (18 ... 14)[1]; 1 x 12		
	• Terminal screw		M3		
	- Tightening torque	Nm lb.in	0.8 ... 1.2 7 ... 10.3		

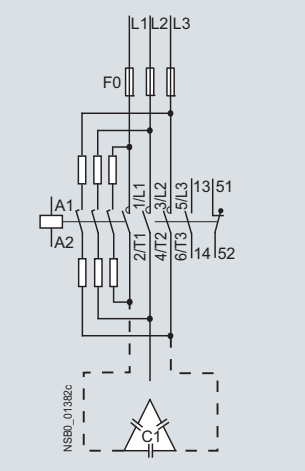
[1] If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

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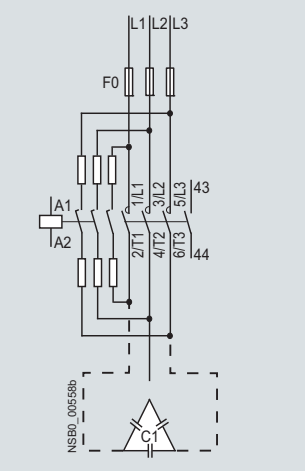
SIRIUS 3RT16 capacitor contactors, 12.5 ... 50 kvar

Circuit diagrams

Size S00



Sizes S0 and S3



Selection and ordering data

AC operation
Screw terminals



3RT16 17-1A.03



3RT16 27-1A.01



3RT16 47-1A.01

Utilization category AC-6b Switching of AC capacitors for an ambient temperature of 60 °C[1]				Auxiliary contacts, unassigned		Rated control supply voltage U_s[2]		DT	**Screw terminals**		PU (UNIT, SET, M)	PS*	PG
Capacitor rating at operational voltage 50/60 Hz				Version					Order No.	Price per PU			
At 230 V	At 400 V	At 525 V	At 690 V	NO	NC	V AC	Hz						
kvar	kvar	kvar	kvar										
For screw fixing and snap-on mounting onto TH 35 standard mounting rail													
Size S00													
3 ... 7.5	5 ... 12.5	7.5 ... 15	10 ... 21	1	1	24	50 / 60	B	**3RT16 17-1AB03**		1	1 unit	41B
						110		B	**3RT16 17-1AF03**		1	1 unit	41B
						230		▶	**3RT16 17-1AP03**		1	1 unit	41B
Size S0 [3]													
3.5 ... 15	6 ... 25	7.8 ... 30	10 ... 42	1	--	24	50	B	**3RT16 27-1AB01**		1	1 unit	41B
						110		B	**3RT16 27-1AF01**		1	1 unit	41B
						230		▶	**3RT16 27-1AP01**		1	1 unit	41B
Size S3													
3.5 ... 30	5 ... 50	7.5 ... 60	10 ... 84	1	--	24	50	B	**3RT16 47-1AB01**		1	1 unit	41B
						110		B	**3RT16 47-1AF01**		1	1 unit	41B
						230		▶	**3RT16 47-1AP01**		1	1 unit	41B

1) For size S3: 55 °C.
2) Operating range: 0.85 ... 1.1 x U_s.
3) For conductor cross-sections > 6 mm^2 use 3RV19 25-5AB terminals (2 units).

Other voltages according to page 4/38 on request.

Accessories and spare parts see "3RT10 Contactors", Chapter 3.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 3RT2, 3RT1 contactors

Options

Rated control supply voltages, possible on request (the 10th and 11th position of the order number must be changed)

Rated control supply voltage U_s	Contactor type	3RT23 1, 3RT25 1	3RT23 2, 3RT25 2	3RT13 3, 3RT13 4, 3RT15 3	3RT14 4	3RT16 17, 3RT16 27, 3RT16 47
	Size	S00	S0	S2, S3	S3	S00, S0, S3
Sizes S00 to S3						
AC operation						
Solenoid coils for 50 Hz (exception: Size S00: 50 and 60 Hz[1])						
24 V AC		B0	B0	B0	B0	B0
42 V AC		D0	D0	--	D0	--
48 V AC		H0	H0	--	H0	--
110 V AC		F0	F0	F0	F0	F0
230 V AC		P0	P0	P0	P0	P0
240 V AC				U0	U0	U0
400 V AC		V0	V0	V0	V0	V0
Solenoid coils for 50 and 60 Hz[1]						
24 V AC		B0	C2	C2	C2	C2
42 V AC		D0	D2	D2	D2	--
48 V AC		H0	H2	H2	H2	--
110 V AC		F0	G2	G2	G2	G2
220 V AC		N2	N2	N2	N2	N2
230 V AC		P0	L2	L2	L2	L2
240 V AC		P2	P2	P2	P2	P2
Solenoid coils (for USA and Canada[2])						
50 Hz	**60 Hz**					
110 V AC	120 V AC	K6	K6	K6	K6	K6
220 V AC	240 V AC	P6	P6	P6	P6	P6
Solenoid coils (for Japan)						
50/60 Hz[3]	**60 Hz**[4]					
100 V AC	110 V AC	G6	G6	G6	G6	G6
200 V AC	220 V AC	N6	N6	N6	N6	N6
400 V AC	440 V AC	R6	R6	R6	R6	R6
DC operation						
12 V DC		A4	--	--	--	--
24 V AC		B4	B4	B4	D4	--
42 V AC		D4	D4	D4	W4	--
48 V AC		W4	--	W4	E4	--
60 V DC		--	--	--	F4	--
110 V DC		F4	F4	F4	G4	--
125 V DC		G4	G4	G4	M4	--
220 V DC		M4	M4	M4	P4	--
230 V DC		P4	--	P4		

Examples

AC operation	3RT23 25-1A**P0**0	Contactor with screw terminals; with solenoid coil for 50 Hz for rated control supply voltage 230 V AC.
	3RT23 25-1A**G2**0	Contactor with screw terminals; with solenoid coil for 50/60 Hz for rated control supply voltage 110 V AC.
DC operation	3RT25 26-2B**B4**0	Contactor with spring-type terminals; for rated control supply voltage 24 V DC.
	3RT25 26-2B**G4**0	Contactor with spring-type terminals; for rated control supply voltage 125 V DC.

Rated control supply voltage	Contactor type	3RT14 56-6A…, 3RT14 66-6A…, 3RT14 76-6A…	Rated control supply voltage	Contactor type	3RT14 56-6N…, 3RT14 66-6N…, 3RT14 76-6N…	3RT14 56-6P/Q…, 3RT14 66-6P/Q…, 3RT14 76-6P/Q…
$U_{s\,min}$ … $U_{s\,max}$[5]	Size	S6, S10, S12	$U_{s\,min}$ … $U_{s\,max}$[5]	Size	S6, S10, S12	S6, S10, S12
Size S6 to S12						
UC operation (AC 50 to 60 Hz, DC)						
23 … 26 V AC/DC		B3	21 … 27.3 V AC/DC		B3	--
42 … 48 V AC/DC		D3	96 … 127 V AC/DC		F3	F3
110 … 127 V AC/DC		F3	200 … 277 V AC/DC		P3	P3
200 … 220 V AC/DC		M3				
220 … 240 V AC/DC		P3				
240 … 277 V AC/DC		U3				
380 … 420 V AC/DC		V3				
440 … 480 V AC/DC		R3				
500 … 550 V AC/DC		S3				
575 … 600 V AC/DC		T3				

1) Coil operating range
at 50 Hz: 0.8 … 1.1 x U_s
at 60 Hz: 0.85 … 1.1 x U_s

2) Coil operating range
Size S00: at 50 Hz: 0.85.... 1.1 x U_s
at 60 Hz: 0.8 … 1.1 x U_s
Size S0 to S3: at 50 Hz and 60 Hz: 0.8 … 1.1 x U_s

3) Coil operating range
Size S00: at 50/60 Hz: 0.85 … 1.1 x U_s
Size S0 to S3: at 50 Hz: 0.8 … 1.1 x U_s
at 60 Hz: 0.85 … 1.1 x U_s

4) Coil operating range
at 60 Hz: 0.8 … 1.1 x U_s

5) Coil operating range: 0.7 x $U_{s\,min}$ … 1.3 x $U_{s\,max}$

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Overview

Standards

IEC 60947-4-1, EN 60947-4-1,
for requirements acc. to IEC 60077-1 and IEC 60077-2

The contactors are finger-safe according to EN 50274. These size S00 and S0 contactors have spring-type connections for all terminals.

Ambient temperature

The permissible ambient temperature for operation of the contactors (across the full coil operating range) is -40 to +70 °C.

Uninterrupted duty at temperatures > +60 °C reduces the mechanical endurance, the current carrying capacity of the conducting paths and the switching frequency.

Control and auxiliary circuits

The solenoid coils of the contactors have an extended coil operating range from 0.7 to 1.25 x U_S and are fitted as standard with surge suppressors. The opening delay is consequently 2 to 5 ms longer than for standard contactors.

Application

For operation in installations which are subject both to considerable variations in the control voltage and to high ambient temperatures, e.g. railway applications under extreme climatic conditions, rolling mills, etc.

Also for control supply voltages with battery buffering to extend the operating time in the event of battery charge failure.

Contactors with conventional coil

Control and auxiliary circuits

These contactors have an extended operating range from 0.7 to 1.25 x U_S; on size S00 the coils are fitted with suppressor diodes, on size S0 with varistors. An additional series resistor is not required.

Note:

An additional auxiliary switch block cannot be mounted.

Side-by-side mounting

A clearance of 10 mm is required for side-by-side mounting at ambient temperatures > 60 °C ≤ 70 °C.

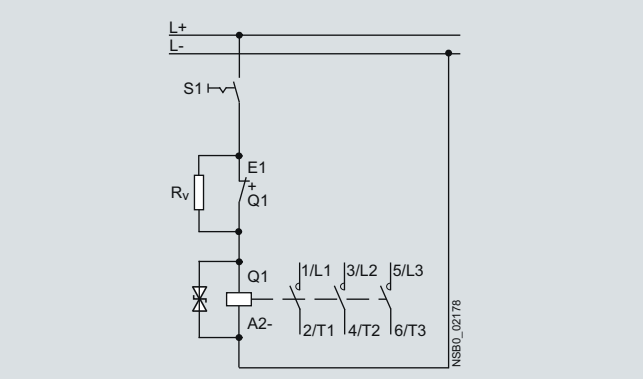
3RT20 1. contactors with coil with series resistor

Control and auxiliary circuits

The solenoid coils of the contactors have an extended coil operating range from 0.7 to 1.25 x U_S and are fitted as standard with a surge suppressor (suppressor diode or varistor as preferred).

A surge suppressor (a suppressor diode or varistor as preferred) is integrated.

The DC solenoid systems of the contactors are modified (to holding excitation) by means of a series resistor.



Circuit diagram (version with suppressor diode)

The size S00 contactors are supplied prewired with a plug-on module containing the series resistor. The suppressor diode is integrated. A 4-pole auxiliary switch block (according to EN 50005) can be fitted additionally.

A circuit diagram showing the terminals is stuck onto each contactor. One NC of the auxiliary contacts is required for the series resistor function. The selection and ordering data shows the number of additional, unassigned auxiliary contacts. With size S00 it is possible to extend the number of auxiliary contacts.

Side-by-side mounting

At ambient temperatures up to 70 °C, the size S00 contactors are allowed to be mounted side by side.

3RT20 2. contactors with solid-state operating mechanism, extended operating range

Control and auxiliary circuits

The solenoid coils of the contactors have an extended coil operating range from 0.7 to 1.25 x U_S and are fitted as standard with varistors to provide protection against overvoltage.

The contactors are energized via upstream control electronics which ensure the coil operating range of 0.7 to 1.25 x U_S at an ambient temperature of 70 °C. They are supplied as complete units with integrated coil electronics. A varistor is integrated for damping opening surges in the coil.

The possibility of mounting auxiliary switches is the same as that for equivalent standard contactors for switching motors in the matching size (see exploded drawings of the 3RT2 contactors in Chapter 3).

Side-by-side mounting

At ambient temperatures up to 70 °C, size S0 of these contactor versions are allowed to be mounted side by side.

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Contactors with Extended Operating Range 0.7 ... 1.25 x U_s for Railway Applications

SIRIUS 3RT20 motor contactors, 5.5 ... 18.5 kW

Technical specifications

Contactors	Type			3RT20 17	3RT20 2.	3RT20 2.-2XB40-0LA2	3RT20 2.-2XF40-0LA2
General technical specifications							
Upright mounting position							
• Contactors with coil with series resistor				Special version (on request)			
• Contactors with conventional coil				Special version (on request)			
Ambient temperature							
• During operation			°C	-40 ... +70			
• During storage			°C	-55 ... +80			
Control circuits							
Coil operating range	DC			0.7 ... 1.25 x U_s		0.7 ... 1.3 x U_s	
Power consumption of the solenoid coils				For cold coil and 1.0 x U_s			
• Contactors with series resistor		- Closing	W	13	--	--	--
		- Closed	W	4	--	--	--
• Contactors with conventional operating mechanism		- Closing	W	2.8	4.5	--	--
		- Closed	W	2.8	4.5	--	--
• Contactors with solid-state operating mechanism		- Closing	W	--	--	6.7	13.2
		- Closed	W	--	--	0.8	1.56

All details and technical specifications not mentioned here are identical to those of the 3RT20 basic versions; see Chapter 3.

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Selection and ordering data

DC operation · DC solenoid system
Spring-type terminals
For screw fixing and snap-on mounting onto standard mounting rails
Solenoid coil with surge suppressor (S00)



3RT20 1.-2K.4.



3RT20 1.-2K.42-0LA0

Rated data AC-2 and AC-3 T_u: 70 °C					Auxiliary contacts		Rated control supply voltage U_s	DT	Spring-type terminals	PU (UNIT, SET, M)	PS*	PG
Operational current I_e at	Ratings of induction motors at				Ident. No.	Version			Configurator			
400 V	230 V	**400 V**	500 V	690 V					Order No.		Price per PU	
A	kW	**kW**	kW	kW		NO NC	V DC					
3RT20 contactors for switching motors												
Size S00												
With conventional coil, fitted with suppressor diode												
• 1 NO, Ident. No. **10**					• 1 NC, Ident. No. **01**							
12	3	**5.5**	5.5	5.5	**10**[1]	1 --	24	▶	**3RT20 17-2KB41**	1	1 unit	41B
							110	B	**3RT20 17-2KF41**	1	1 unit	41B
12	3	**5.5**	5.5	5.5	**01**[1]	-- 1	24	▶	**3RT20 17-2KB42**	1	1 unit	41B
							110	B	**3RT20 17-2KF42**	1	1 unit	41B
With conventional coil, fitted with varistor												
• 1 NO, Ident. No. **10**					• 1 NC, Ident. No. **01**							
12	3	**5.5**	5.5	5.5	**10**[1]	1 --	24	B	**3RT20 17-2LB41**	1	1 unit	41B
							110	B	**3RT20 17-2LF41**	1	1 unit	41B
12	3	**5.5**	5.5	5.5	**01**[1]	-- 1	24	B	**3RT20 17-2LB42**	1	1 unit	41B
							110	B	**3RT20 17-2LF42**	1	1 unit	41B
With coil with series resistor, fitted with suppressor diode												
12	3	**5.5**	5.5	5.5	**--**[2]	-- 1[3]	24	B	**3RT20 17-2KB42-0LA0**	1	1 unit	41B
							110	B	**3RT20 17-2KF42-0LA0**	1	1 unit	41B
16	4	**7.5**	10	11	**--**[2]	-- 1[3]	24	B	**3RT20 18-2KB42-0LA0**	1	1 unit	41B
							110	B	**3RT20 18-2KF42-0LA0**	1	1 unit	41B
With coil with series resistor, fitted with varistor												
12	3	**5.5**	5.5	5.5	**--**[2]	-- 1[3]	24	B	**3RT20 17-2LB42-0LA0**	1	1 unit	41B
							110	B	**3RT20 17-2LF42-0LA0**	1	1 unit	41B
16	4	**7.5**	10	11	**--**[2]	-- 1[3]	24	B	**3RT20 18-2LB42-0LA0**	1	1 unit	41B
							110	B	**3RT20 18-2LF42-0LA0**	1	1 unit	41B

For online configurator see www.siemens.com/sirius/configurators.

Accessories see "3RT20 Contactors", Chapter 3.

1) It is not possible to mount an auxiliary switch block. A clearance of 10 mm is required for side-by-side mounting at ambient temperatures > 60 °C.

2) One 4-pole auxiliary switch block according to EN 50005 can be mounted; no distance required up to 70 °C.

3) NC contact cannot be used because it is used for switching of the series resistor.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

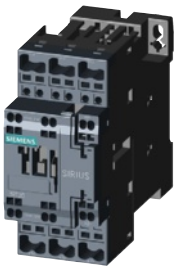
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Contactors for Special Applications

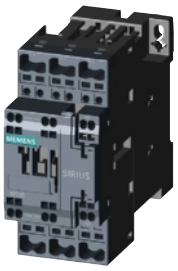
Contactors with Extended Operating Range 0.7 ... 1.25 x U_s for Railway Applications

SIRIUS 3RT20 motor contactors, 5.5 ... 18.5 kW

DC operation · DC solenoid system
Spring-type terminals
For screw fixing and snap-on mounting onto standard mounting rails
Solenoid coil fitted with varistor (S0)



3RT20 2.-2K.40



3RT20 2.-2X.40-0LA2

Rated data AC-2 and AC-3 T_u: 70 °C					Auxiliary contacts			Rated control supply voltage U_s	DT	Spring-type terminals	PU (UNIT, SET, M)	PS*	PG
Operational current I_e at	Ratings of induction motors at				Ident. No.	Version				Configurator			
400 V	230 V	**400 V**	500 V	690 V		NO	NC			Order No.	Price per PU		
A	kW	**kW**	kW	kW				V DC					
3RT20 contactors for switching motors													
Size S0													
With conventional operating mechanism[1]													
1 NO + 1 NC, Ident. No. **11**													
17	4	**7.5**	10	11	**11**	1	1	24	B	**3RT20 25-2KB40**	1	1 unit	41B
								110	B	**3RT20 25-2KF40**	1	1 unit	41B
25	5.5	**11**	11	11	**11**	1	1	24	B	**3RT20 26-2KB40**	1	1 unit	41B
								110	B	**3RT20 26-2KF40**	1	1 unit	41B
32	7.5	**15**	18.5	18.5	**11**	1	1	24	B	**3RT20 27-2KB40**	1	1 unit	41B
								110	B	**3RT20 27-2KF40**	1	1 unit	41B
With solid-state operating mechanism													
1 NO + 1 NC, Ident. No. **11**													
17	4	**7.5**	10	11	**11**	1	1	24	B	**3RT20 25-2XB40-0LA2**	1	1 unit	41B
								110	B	**3RT20 25-2XF40-0LA2**	1	1 unit	41B
25	5.5	**11**	11	11	**11**	1	1	24	B	**3RT20 26-2XB40-0LA2**	1	1 unit	41B
								110	B	**3RT20 26-2XF40-0LA2**	1	1 unit	41B
32	7.5	**15**	18.5	18.5	**11**	1	1	24	B	**3RT20 27-2XB40-0LA2**	1	1 unit	41B
								110	B	**3RT20 27-2XF40-0LA2**	1	1 unit	41B
38	7.5	**18.5**	18.5	18.5	**11**	1	1	24	B	**3RT20 28-2XB40-0LA2**	1	1 unit	41B
								110	B	**3RT20 28-2XF40-0LA2**	1	1 unit	41B

For online configurator see www.siemens.com/sirius/configurators.

[1] It is not possible to mount an auxiliary switch block. A clearance of 10 mm is required for side-by-side mounting at ambient temperatures > 60 °C.

Accessories see "3RT20 Contactors", Chapter 3.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Standards

IEC 60947-4-1, EN 60947-4-1,
for requirements acc. to IEC 60077-1 and IEC 60077-2

The contactors are finger-safe according to EN 50274 (exception: series resistor S2 and S3). The auxiliary conductor and coil terminals of sizes S2 to S3 are all spring-type terminals.

Control and auxiliary circuits

Contactors are available with:

- Coils with series resistor
- Coils with solid-state control unit

The solenoid coils of the contactors have an extended coil operating range from 0.7 to 1.25 x U_S and are fitted as standard with varistors to provide protection against overvoltage. The opening delay is consequently 2 to 5 ms longer than for standard contactors.

Ambient temperature

The permissible ambient temperature for operation of the contactors (across the full coil operating range) is -40 °C to +70 °C.

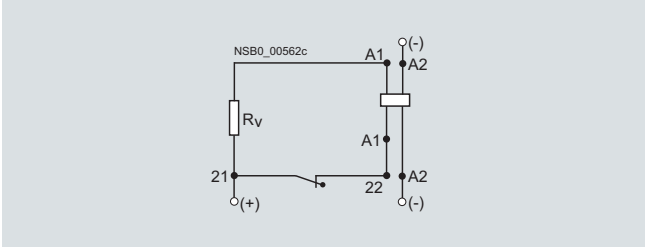
Uninterrupted duty at temperatures > +60 °C reduces the mechanical endurance, the current carrying capacity of the conducting paths and the switching frequency.

Application

For operation in installations which are subject both to considerable variations in the control voltage and to high ambient temperatures, e.g. railway applications under extreme climatic conditions, rolling mills, etc.

3RT10 contactors with series resistor

The DC solenoid systems of the contactors are modified to holding excitation by means of a series resistor.



Circuit diagram with series resistor

Auxiliary switches

The size S2 to S3 contactors are equipped on the front with an auxiliary switch block with 2 NO + 2 NC contacts. The separate series resistor, which is attached laterally next to the contactor on the 35 mm standard mounting rail, is fitted with connecting cables for mounting onto contactors. A circuit diagram showing the terminals is stuck onto each contactor. The NC contact 21-22 of the auxiliary contacts is required for the series resistor function. The selection and ordering data shows the number of additional, unassigned auxiliary contacts.

Mounting

The resistor module of the sizes S2 to S3 contactors must be mounted to the left of the contactor owing to the prefabricated connecting cables.

Dimensions

Attaching the series resistor increases the width of contactor sizes S2 and S3.

3RT10 contactors with contactor control unit, extended operating range

They are supplied as complete units with a built-on contactor control unit.

Control and auxiliary circuits

The contactors are energized via upstream control electronics which ensure the coil operating range of 0.7 to 1.25 x U_S at an ambient temperature of 70 °C.

A varistor is integrated for damping opening surges in the coil. The opening delay is consequently 2 to 5 ms longer than for standard contactors.

The possibility of mounting auxiliary switches is the same as that for equivalent standard contactors.

Mounting

At ambient temperatures up to 70 °C, sizes S2 and S3 of these contactor versions are allowed to be mounted side by side.

Dimensions

Because of the built-on contactor control unit, the height of the size S2 and S3 contactors increases by up to 34 mm.

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SIRIUS 3RT10 motor contactors, 18.5 ... 45 kW

Technical specifications

Contactors	Type		3RT10 3.	3RT10 4.
3RT10 contactors with series resistor				
General technical specifications				
Ambient temperature				
• During operation		°C	-40 ... +70	
Control circuits				
Coil operating range	AC/DC		0.7 ... 1.25 x U_s	
Power consumption of the solenoid coils			For cold coil and 1.0 x U_s	
• Closing		W	46	78
• Closed		W	14	23
Upright mounting position			--	--
3RT10 contactors with contactor control unit				
Control circuits				
Coil operating range			0.7 ... 1.25 x U_s	
Power consumption			For cold coil and 1.0 x U_s	
• Closing		W	15	19
• Closed		W	11	12
Upright mounting position			--	--

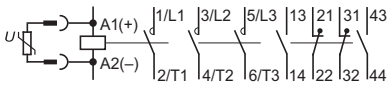
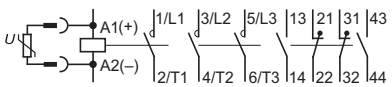
All details and technical specifications not mentioned here are identical to those of the 3RT10 basic versions (see Chapter 3).

Selection and ordering data

DC operation · DC solenoid system
Spring-type terminals for auxiliary/control circuits
For screw fixing and snap-on mounting onto standard mounting rails
Solenoid coil fitted with varistor



3RT10 3.-3K.44-0LA0

Rated data AC-2 and AC-3 T_u: 70 °C					Auxiliary contacts		Rated control supply voltage U_s	DT	**Spring-type terminals**		PU (UNIT, SET, M)	PS*	PG
Operational current I_e at	Ratings of induction motors at				Version				Order No.	Price per PU			
400 V	230 V	**400 V**	500 V	690 V									
A	kW	**kW**	kW	kW	NO	NC	V DC						
For screw fixing and snap-on mounting onto TH 35 standard mounting rail													
Size S2													
With series resistor													
													
40	11	**18.5**	22	22	2	1 [1]	24	B	**3RT10 35-3KB44-0LA0**		1	1 unit	41B
							110	B	**3RT10 35-3KF44-0LA0**		1	1 unit	41B
50	15	**22**	30	22	2	1 [1]	24	B	**3RT10 36-3KB44-0LA0**		1	1 unit	41B
							110	B	**3RT10 36-3KF44-0LA0**		1	1 unit	41B
Size S3													
With series resistor													
													
65	18.5	**30**	37	43	2	1 [1]	24	B	**3RT10 44-3KB44-0LA0**		1	1 unit	41B
							110	B	**3RT10 44-3KF44-0LA0**		1	1 unit	41B
80	22	**37**	45	55	2	1 [1]	24	B	**3RT10 45-3KB44-0LA0**		1	1 unit	41B
							110	B	**3RT10 45-3KF44-0LA0**		1	1 unit	41B
95	22	**45**	55	55	2	1 [1]	24	B	**3RT10 46-3KB44-0LA0**		1	1 unit	41B
							110	B	**3RT10 46-3KF44-0LA0**		1	1 unit	41B

[1] The auxiliary contacts are not expandable.

Spare parts see "3RT10 Contactors", Chapter 3.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Contactors with Extended Operating Range 0.7 ... 1.25 x U_s for Railway Applications

SIRIUS 3RT10 motor contactors, 18.5 ... 45 kW

DC operation · DC solenoid system
For screw fixing and snap-on mounting onto standard mounting rails
Contactor control unit
Solenoid coil fitted with varistor

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41B



3RT10 ..-3X.40-0LA2

Rated data AC-2 and AC-3 T_u: up to 70 °C		Auxiliary contacts[1]		Rated control supply voltage U_s	DT	Screw terminals		DT	Spring-type terminals for coil terminals	
Rated operational current I_e up to 400 V	Ratings of induction motors at 50 Hz 400 V	Version NO	NC			Order No.	Price per PU		Order No.	Price per PU
A	kW	NO	NC	V DC						
For screw fixing and snap-on mounting onto TH 35 standard mounting rail										
Size S2										
40	**18.5**	--	--	24	B	**3RT10 35-1XB40-0LA2**		C	**3RT10 35-3XB40-0LA2**	
		--	--	110	B	**3RT10 35-1XF40-0LA2**		B	**3RT10 35-3XF40-0LA2**	
50	**22**	--	--	24	B	**3RT10 36-1XB40-0LA2**		B	**3RT10 36-3XB40-0LA2**	
		--	--	110	B	**3RT10 36-1XF40-0LA2**		B	**3RT10 36-3XF40-0LA2**	
For screw fixing and snap-on mounting onto TH 35 and TH 75 standard mounting rail										
Size S3										
65	**30**	--	--	24	B	**3RT10 44-1XB40-0LA2**		B	**3RT10 44-3XB40-0LA2**	
		--	--	110	B	**3RT10 44-1XF40-0LA2**		B	**3RT10 44-3XF40-0LA2**	
80	**37**	--	--	24	B	**3RT10 45-1XB40-0LA2**		B	**3RT10 45-3XB40-0LA2**	
		--	--	110	B	**3RT10 45-1XF40-0LA2**		B	**3RT10 45-3XF40-0LA2**	
95	**45**	--	--	24	B	**3RT10 46-1XB40-0LA2**		B	**3RT10 46-3XB40-0LA2**	
		--	--	110	B	**3RT10 46-1XF40-0LA2**		B	**3RT10 46-3XF40-0LA2**	

[1] Auxiliary switch blocks mountable as standard contactors.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Contactors with Extended Operating Range 0.7 ... 1.25 x U_s for Railway Applications

3TB5 motor contactors, 55 ... 200 kW

Overview

Standards

IEC 60947-4-1, EN 60947-4-1

For requirements according to IEC 60077-1 and IEC 60077-2

The contactors are finger-safe according to EN 50274. Terminal covers may have to be fitted onto the connecting bars, depending on the configuration with other devices.

All specifications and technical specifications not mentioned here are identical to those of the standard 3TB contactors.

Ambient temperature

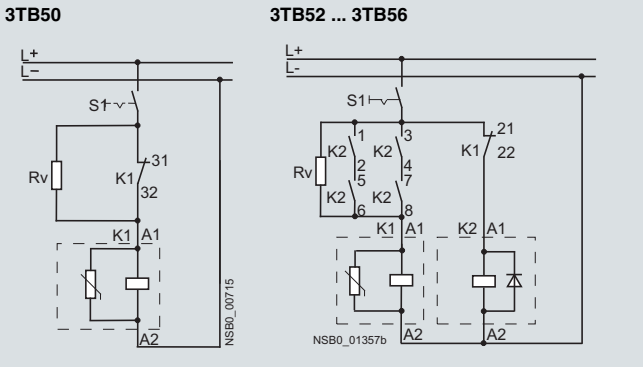
The permissible ambient temperature for operation of the contactors (across the full coil operating range) is -50 to +70 °C. Uninterrupted duty at temperatures < -25 °C and > +55 °C reduces the mechanical endurance, the current-carrying capacity of the conducting paths and the switching frequency.

Series resistor

The DC solenoid systems of the 3TB contactors must be modified (to hold-in coil) by means of a series resistor. This series resistor is supplied separately packed with the contactors.

With types 3TB50, the series resistor must be attached onto the right-hand side of the auxiliary switch block by means of the enclosed mounting parts and sets of links provided. With types 3TB52 to 3TB56, the series resistor must be attached separately next to the contactors.

One NC of the auxiliary contacts is required for the series resistor function. The selection and ordering data show the number of additional, unassigned auxiliary contacts. It is not possible to extend the number of auxiliary contacts.



Circuit diagrams with series resistor

Reversing contactors

With the 3TB52 to 3TB56 contactors, the series resistor must be connected using an additional K2 reversing contactor (3RT13 17-1F.40). This contactor is automatically included in the scope of supply in the same packaging as the contactor.

Dimensions

Attaching resistors and varistors increases the width of the contactors.

Application

For operation in plants which are subject both to considerable variations in the control voltage and to high ambient temperatures, e.g. in railway applications.

Control and auxiliary circuits

The solenoid coils of the contactors have an extended coil operating range from 0.7 to 1.25 x U_s and are fitted as standard with varistors to provide protection against overvoltage. The opening delay is consequently 2 to 5 ms longer than for standard contactors.

Technical specifications

Contactors	Type	3TB50	3TB52	3TB54	3TB56
	Size	6	8	10	12
General technical specifications					
Ambient temperature					
• During operation	°C	-40 ... +70			
Control circuits					
Coil operating range		0.7 ... 1.25 x U_s			
Power consumption of the solenoid coils		For cold coil and 1.0 x U_s			
• Closing	W	38	40	190	295
• Closed	W	20	21	43	59

All details and technical specifications not mentioned here are identical to those of the basic versions of the 3TB5 contactors; see Chapter 3.

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Selection and ordering data

3TB50 to 3TB56 contactors
for screw fixing
Solenoid coil fitted with varistor

Size	Rated data AC-2 and AC-3 at 55 °C					Auxiliary contacts[1]		Rated control supply voltage U_s	DT	Screw terminals		PU (UNIT, SET, M)	PS*	PG
	Operational current I_e at	Ratings of induction motors at				Version				Order No.	Price per PU			
	400 V	230 V	**400 V**	500 V	690 V	NO	NC							
	A	kW	**kW**	kW	kW			V DC						
Contactors for switching AC voltage DC operation · DC solenoid system														
Terminal designations acc. to EN 50012 or EN 50005														
6	110	37	**55**	75	90	2	1[2]	24	B	**3TB50 17-0LB4**		1	1 unit	41B
								110	▶	**3TB50 17-0LF4**		1	1 unit	41B
8	170	55	**90**	110	132	2	1[2]	24	C	**3TB52 17-0LB4**		1	1 unit	41B
								110	D	**3TB52 17-0LF4**		1	1 unit	41B
10	250	75	**132**	160	200	2	1[2]	24	C	**3TB54 17-0LB4**		1	1 unit	41B
								110	A	**3TB54 17-0LF4**		1	1 unit	41B
12	400	115	**200**	255	355	2	1[2]	110	▶	**3TB56 17-0LF4**		1	1 unit	41B

[1] The number of auxiliary contacts cannot be increased.
[2] One NC contact used for series resistor.

Accessories

Spare parts

For contactors		Remarks	Rated control supply voltage U_s	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Size	Type		V DC						
Solenoid coils									
For contactors with extended operating range									
6	3TB50	With series resistor, without varistor	24	C	**3TY6 503-0LB4**		1	1 unit	41B
			110	D	**3TY6 503-0LF4**		1	1 unit	41B
8	3TB52 and 3TC52		24	D	**3TY6 523-0LB4**		1	1 unit	41B
			110	D	**3TY6 523-0LF4**		1	1 unit	41B
10	3TB54		24	C	**3TY6 543-0LB4**		1	1 unit	41B
			110	C	**3TY6 543-0LF4**		1	1 unit	41B
12	3TB56 and 3TC56		24	C	**3TY6 563-0LB4**		1	1 unit	41B
			110	C	**3TY6 563-0LF4**		1	1 unit	41B

All spare parts not mentioned here are identical to those of the basic versions of the 3TB5 contactors; see Chapter 3.

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Contactors with Extended Operating Range 0.7 ... 1.25 x U_s for Railway Applications

3TC contactors for switching DC voltage, 2-pole

Overview

Standards

IEC 60947-4-1, EN 60947-4-1

For requirements according to IEC 60077-1 and IEC 60077-2

The contactors are finger-safe according to EN 50274 (exception: series resistor). Terminal covers may have to be fitted onto the connecting bars, depending on the configuration with other devices.

All specifications and technical specifications not mentioned here are identical to those of the standard 3TC contactors.

Ambient temperature

The permissible ambient temperature for operation of the contactors (across the full coil operating range) is -50 to +70 °C. Uninterrupted duty at temperatures < -25 °C and > +55 °C reduces the mechanical endurance, the current-carrying capacity of the conducting paths and the switching frequency.

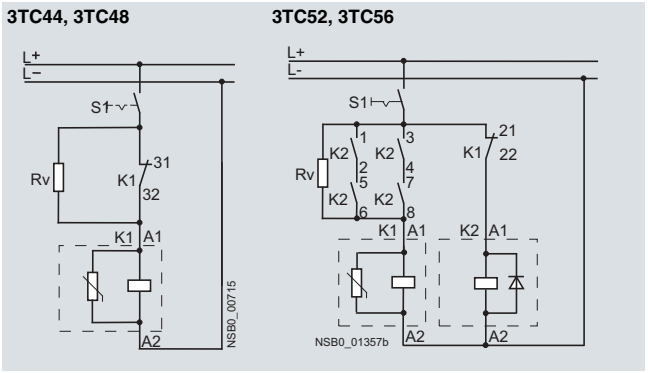
At ambient temperatures > 55 °C, a clearance of 10 mm is required for side-by-side mounting of size 2 contactors. There is no need to reduce the technical specifications.

Series resistor

The DC solenoid systems of the 3TC contactors must be modified (to hold-in coil) by means of a series resistor. This series resistor is supplied separately packed with the contactors.

With types 3TC48, the series resistor must be attached onto the right-hand side of the auxiliary switch block by means of the enclosed mounting parts and sets of links provided, while in the case of the 3TC44 it must be mounted and wired between the contactor poles. With types 3TC52 and 3TC56, the series resistor must be attached separately next to the contactors.

One NC of the auxiliary contacts is required for the series resistor function. The selection and ordering data show the number of additional, unassigned auxiliary contacts. It is not possible to extend the number of auxiliary contacts.



Circuit diagrams with series resistor

Reversing contactors

With the 3TC52 and 3TC56 contactors, the series resistor must be connected using an additional K2 reversing contactor (3RT13 17-1F.40). This contactor is automatically included in the scope of supply in the same packaging as the contactor.

Dimensions

Attaching resistors and varistors increases the width of the contactors.

Application

For operation in plants which are subject both to considerable variations in the control voltage and to high ambient temperatures, e.g. in railway applications.

Control and auxiliary circuits

The solenoid coils of the contactors have an extended coil operating range from 0.7 to 1.25 x U_s and are fitted as standard with varistors to provide protection against overvoltage. The opening delay is consequently 2 to 5 ms longer than for standard contactors.

Technical specifications

Contactors	Type	3TC44	3TC48	3TC52	3TC56
	Size	2	4	8	12
General technical specifications					
Ambient temperature					
• During operation	°C	-40 ... +70			
Control circuits					
Coil operating range		0.7 ... 1.25 x U_s			
Power consumption of the solenoid coils		For cold coil and 1.0 x U_s			
• Closing	W	48	26	40	295
• Closed	W	13	14	21	59

All details and technical specifications not mentioned here are identical to those of the basic versions of the 3TC contactors; see page 4/50.

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Selection and ordering data

3TC44: for screw fixing and snap-on mounting onto 35 mm standard mounting rail
3TC48 to 3TC56: Screw fixing
Solenoid coil fitted with varistor



3TC48

Size	Utilization categories	Rated operational current I_e at 750 V	Rated power of loads at 220 V	440 V	600 V	750 V	Auxiliary contacts[1] Version NO	NC	Rated control supply voltage U_s	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		A	kW	kW	kW	kW			V DC						
Contactors for switching DC voltage DC operation · DC solenoid system															
Terminal designations according to EN 50012 and EN 50005															
2	DC-1	32	7	14	19.2	24	2	1[2]	24	B	**3TC44 17-0LB4**		1	1 unit	41B
	DC-3/DC-5	7.5	5	9	9	4			110	C	**3TC44 17-0LF4**		1	1 unit	41B
4	DC-1	75	16.5	33	45	56	2	1[2]	24	C	**3TC48 17-0LB4**		1	1 unit	41B
	DC-3/DC-5	75	13	27	38	45			110	C	**3TC48 17-0LF4**		1	1 unit	41B
8	DC-1	170	48	97	132	165	2	1[2]	24	C	**3TC52 17-0LB4**		1	1 unit	41B
	DC-3/DC-5	170	41	82	110	110			110	C	**3TC52 17-0LF4**		1	1 unit	41B
12	DC-1	400	88	176	240	300	2	1[2]	24	C	**3TC56 17-0LB4**		1	1 unit	41B
	DC-3/DC-5	400	70	140	200	250			110	D	**3TC56 17-0LF4**		1	1 unit	41B

[1] The number of auxiliary contacts cannot be increased.
[2] One NC contact used for series resistor.

Accessories

Spare parts

For contactors Size	Type	Remarks	Rated control supply voltage U_s V DC	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Arc chutes									
For contactors with extended operating range									
2	3TC44 17-0L. .	With cutout for resistor mounting		B	**3TY2 442-0B**		1	1 unit	41B
Solenoid coils									
For contactors with extended operating range									
2	3TC44	With series resistor, without varistor	24	C	**3TY6 443-0LB4**		1	1 unit	41B
			110	C	**3TY6 443-0LF4**		1	1 unit	41B
4	3TC48		24	C	**3TY6 483-0LB4**		1	1 unit	41B
			110	C	**3TY6 483-0LF4**		1	1 unit	41B

All spare parts not mentioned here are identical to those of the basic versions of the 3TC contactors; see Chapter 3.

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3TC contactors, 1- and 2-pole, 32 ... 400 A

Overview

3TC4 and 3TC5

IEC 60947-1, EN 60947-1,
IEC 60947-4-1, EN 60947-4-1

The contactors are finger-safe according to EN 50274. Terminal covers may have to be fitted onto the connecting bars, depending on the configuration with other devices.

The DC motor ratings given in the tables are applicable to the DC-3 and DC-5 utilization categories with two-pole switching of the load or with the two conducting paths of the contactor connected in series.

One contactor conducting path can switch full power up to 220 V. The ratings for higher voltages are available on request.

3TC7

IEC 60947-4-1, EN 60947-4-1.

The contactors are suitable for use in any climate. They are suitable for switching and controlling DC motors as well as all other DC circuits.

The solenoid excitation is configured for a particularly large operating range. It is between 0.7 or 0.8 to 1.2 × U_S.

3TC74 contactors can be used at up to 750 V/400 A and 50 Hz in AC-1 operation.

Application

The contactors are suitable for switching and controlling DC motors as well as all other DC circuits.

A version with an especially large coil operating range is available for operation in electrically driven vehicles and in switchgears with significant fluctuations in the actuating voltage (see page 4/49).

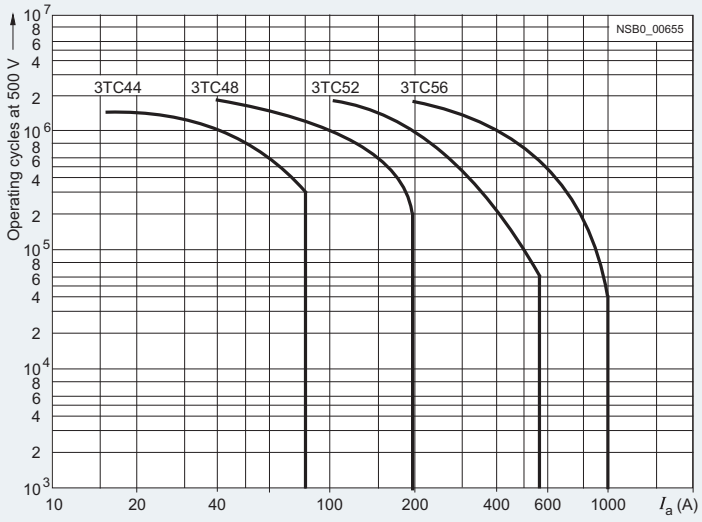
Technical specifications

Contactors	Type		3TC4 and 3TC7	3TC5
Rated data of the auxiliary contacts				
Rated insulation voltage U_i (pollution degree 3)		V	690	
Conventional thermal current I_{th} = Rated operational current I_e/AC-12		A	10	10
AC load				
Rated operational current I_e/AC-15/AC-14				
• For rated operational voltage U_e				
	24 V	A	10	10
	110 V	A	10	10
	125 V	A	10	10
	220 V	A	6	6
	230 V	A	5.6	5.6
	380 V	A	4	4
	400 V	A	3.6	3.6
	500 V	A	2.5	2.5
	660 V	A	2.5	2.5
	690 V	A	--	--
DC load				
Rated operational current I_e/DC-12				
• For rated operational voltage U_e				
	24 V	A	10	10
	60 V	A	10	10
	110 V	A	3.2	8
	125 V	A	2.5	6
	220 V	A	0.9	2
	440 V	A	0.33	0.6
	600 V	A	0.22	0.4
Rated operational current I_e/DC-13				
• For rated operational voltage U_e				
	24 V	A	10	10
	60 V	A	5	5
	110 V	A	1.14	2.4
	125 V	A	0.98	2.1
	220 V	A	0.48	1.1
	440 V	A	0.13	0.32
	600 V	A	0.07	0.21

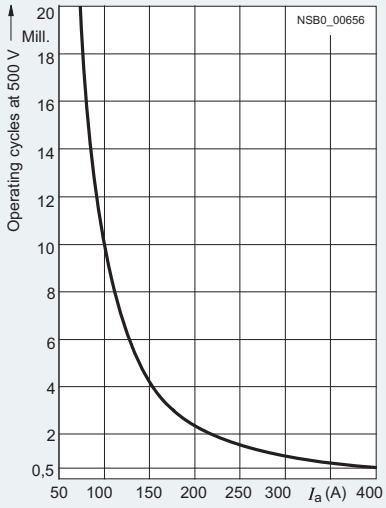
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Contactors	Type	3TC44 ... 3TC56
CSA and UL rated data of the auxiliary contacts		
Rated voltage, max.	V AC	600
Switching capacity		A 600, P 600

Contactors	Type	3TC44 ... 3TC78
Contact endurance of the main contacts		

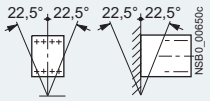


3TC44 to 3TC56 contactors



3TC74 and 3TC78 contactors

Legend for the diagrams:
I_a = Breaking current

Contactors	Type / Size	3TC44 2	3TC48 4	3TC52 8	3TC56 12
General technical specifications					
Permissible mounting positions The contactors are designed for operation on a vertical mounting surface.					
Mechanical endurance	Operating cycles	10 million			
Electrical endurance	Operating cycles	1)			
Rated insulation voltage U_i (pollution degree 3)	V	800		1000	
Protective separation between the coil and the main contacts acc. to IEC 60947-1, Appendix N	V	Up to 300		Up to 660	
Mirror contacts[2)] A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with a NO main contact.		Yes, acc. to IEC 60947-4-1, Appendix F			
Permissible ambient temperature					
• During operation	°C	-25 ... +55			
• During storage	°C	-50 ... +80			
Degree of protection acc. to IEC 60947-1, Appendix C		IP00/open, for AC operation, coil assembly IP40			
Shock resistance Rectangular pulse	g/ms	7.5/5 and 3.4/10	10/5 and 5/10	12/5 and 5.5/10	12/5 and 5.6/10
Short-circuit protection					
Main circuit Fuse links, operational class gG: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE					
• Type of coordination "1"	A	50	160	250	400
• Type of coordination "2"	A	35	63	80	250
Auxiliary circuit					
• Short-circuit test with fuse links of gG operational class: DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current I_k = 1 kA acc. to IEC 60947-5-1	A	16			
• Test with miniature circuit breaker up to 230 V with C characteristic: Short-circuit current I_k = 400 A acc. to IEC 60947-5-1	A	10			

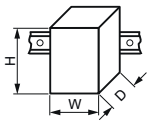
1) See the endurance diagram above.

2) For 3TC44, one NC contact each must be connected in series for the right and left auxiliary switch block respectively.

Rated data of the auxiliary contacts see page 4/50.

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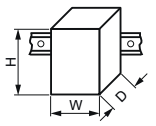
3TC contactors, 1- and 2-pole, 32 ... 400 A

Type			3TC44	3TC48	3TC52	3TC56
Size			2	4	8	12
Dimensions (W x H x D)						
• DC operation		mm	70 x 85 x 141	100 x 183 x 180	135 x 238 x 232	160 x 279 x 310
• AC operation		mm	70 x 85 x 100	100 x 183 x 154	135 x 238 x 200	160 x 279 x 251
Control circuits						
Coil operating range			0.8 ... 1.1 x U_s			
Power consumption of the solenoid coils (for cold coil and 1.0 x U_s)						
• DC operation	- Closing = Closed	W	10	19	30	86
• AC operation, 50 Hz coil	- Closing	VA/p.f.	68/0.86	300/0.5	640/0.48	1780/0.3
	- Closed	VA/p.f.	10/0.29	26/0.24	46/0.23	121/0.22
• AC operation, 60 Hz coil	- Closing	VA/p.f.	95/0.79	365/0.45	730/0.38	2140/0.3
	- Closed	VA/p.f.	12/0.3	35/0.26	56/0.24	140/0.29
• AC operation, 50/60 Hz coil	- Closing at 50 Hz/60 Hz	VA/p.f.	79/73/0.83/0.78	--	--	--
	- Closed at 50 Hz/60 Hz	VA/p.f.	11/9/0.28/0.27	--	--	--
Operating times (for 0.8 ... 1.1 x U_s) Total break time = Opening delay + Arcing time			(The values apply up to and including 20 % undervoltage, 10 % overvoltage, as well as when the coil is cold and warm)			
• DC operation	- Closing delay	ms	35 ... 190	90 ... 380	120 ... 400	110 ... 400
	- Opening delay[1]	ms	10 ... 25	17 ... 28	22 ... 35	40 ... 110
• AC operation	- Closing delay	ms	10 ... 40	20 ... 50	20 ... 50	20 ... 50
	- Opening delay[1]	ms	5 ... 25	5 ... 30	10 ... 30	10 ... 30
• Arcing time	- DC-1	ms	20			
	- DC-3/DC-5	ms	30			
Main circuit						
Load rating with DC						
Utilization category DC-1, switching resistive loads (L/R ≤ 1 ms)						
• Rated operational currents I_e (at 55 °C)	Up to U_e 750 V	A	32	75	220	400
• Minimum conductor cross-section		mm^2	6	25	95	240
• Rated power at U_e	At 220 V	kW	7	16.5	48	88
	440 V	kW	14	33	97	176
	600 V	kW	19.2	45	132	240
	750 V	kW	24	56	165	300
Utilization category DC-3 and DC-5 Shunt-wound and series-wound motors (L/R ≤ 15 ms)						
• Rated operational currents I_e (at 55 °C)	Up to 220 V	A	32	75	220	400
	440 V	A	29	75	220	400
	600 V	A	21	75	220	400
	750 V	A	7.5	75	170	400
• Rated power at U_e	At 110 V	kW	2.5	6.5	20	35
	220 V	kW	5	13	41	70
	440 V	kW	9	27	82	140
	600 V	kW	9	38	110	200
	750 V	kW	4	45	110	250
Switching frequency						
Switching frequency *z* in operating cycles/hour						
AC/DC operation						
• With resistive load DC-1		h^{-1}	1500	1000		
• For inductive load DC-3/DC-5		h^{-1}	750	600		
Conductor cross-sections (1 or 2 conductors connectable)						
Main conductors:			**Screw terminals**			
• Solid		mm^2	2 x (2.5 ... 10)	2 x (6 ... 16)	--	--
• Finely stranded with end sleeve		mm^2	2 x (1.5 ... 4)	--	--	--
• Stranded with cable lug		mm^2	2 x 16	2 x 35	2 x 120	2 x 150
• Pin-end connector acc. to DIN 46231		mm^2	2 x (1 ... 6)	--	--	--
• Busbars		mm	--	15 x 2.5	25 x 4	2 x (25 x 3)
• Terminal screw			M5	M6	M10	M10
Auxiliary conductors:						
• Solid		mm^2	2 x (1 ... 2.5)			
• Finely stranded with end sleeve		mm^2	2 x (0.75 ... 1.5)			

[1] The opening delay times can increase if the contactor coils are damped against voltage peaks. Only 3TC44 contactors are allowed to be fitted with diodes.

Rated data of the auxiliary contacts see page 4/50.

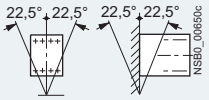
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Type			**3TC74**	**3TC78**
Design			**1-pole contactors**	**2-pole contactors**
Dimensions		mm	78 x 352 x 276	160 x 366 x 290

General technical specifications

Permissible mounting positions

The contactors are designed for operation on a vertical mounting surface.



Mechanical endurance	Operating cycles		30 million	
Electrical endurance	Operating cycles		[1]	
Rated insulation voltage U_i (pollution degree 3)		V	1500	
Rated impulse withstand voltage U_{imp}		kV	8	
Protective separation between the coil and the main contacts acc. to IEC 60947-1, Appendix N		V	630	
Permissible ambient temperature		°C	-25 ... +55	
Degree of protection acc. to IEC 60947-1, Appendix C			IP00/open	

Short-circuit protection

Main circuit Fuse links, operational class gG: LV HRC, type 3NA				
• Type of coordination "1"		A	630	
• Type of coordination "2"		A	500	
Auxiliary circuits				
• Short-circuit test with fuse links of gG operational class: DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current I_k = 1 kA acc. to IEC 60947-5-1		A	16	
• Test with miniature circuit breaker up to 230 V with C characteristic: Short-circuit current I_k = 400 A acc. to IEC 60947-5-1		A	10	

Control circuits

Coil operating range				
• DC operation	At U_c = 24 V		0.8 ... 1.2 x U_s	
	At U_c > 24 V		0.7 ... 1.2 x U_s	
• AC operation	At U_c = 24 V		0.7 ... 1.15 x U_s	
	At U_c > 24 V		0.7 ... 1.14 x U_s	
Power consumption of the solenoid coils (when coil is cold and 1.0 x U_s)				
• DC operation	Closing = Closed	W	46	92
• AC operation, 50 Hz	Closing,	VA	80	160
	Closed		0.95	0.95
Operating times (Total break time = Opening delay + Arcing time)			(The values apply up to and including 15 % undervoltage, 10 % overvoltage, as well as when the coil is cold and warm)	
• AC and DC operation	- Closing delay	ms	60 ... 100	
	- Opening delay	ms	20 ... 35	
• Arcing time at 0.06 ... 4 x I_e		ms	40 ... 70	

Main circuit

Load rating with DC

Utilization category DC-1, switching resistive loads ($L/R \leq$ 1 ms)				
• Rated operational current I_e/DC-1 (at 55 °C)		A	500	500
• Minimum conductor cross-section		mm^2	2 x 150	2 x 150
• Rated power	At 220 V	kW	110	110
	440 V	kW	220	220
	600 V	kW	300	300
	750 V	kW	375	375
	1200 V	kW	--	600
	1500 V	kW	--	750
• Critical currents, without arc extinction	At 440 V	A	≤ 7	--
	600 V	A	≤ 13	--
	750 V	A	≤ 15	--
	≤ 800 V	A	--	≤ 7
	1200 V	A	--	≤ 13
	1500 V	A	--	≤ 15
Utilization categories DC-3 and DC-5, switching DC motors			[2]	
Permissible rated current for regenerative braking At 110 ... 600 V		A	400	

Switching frequency

Switching frequency *z* in operating cycles/hour				
AC/DC operation				
• With resistive load DC-1		h^{-1}	750	1000
• For inductive load DC-3/DC-5		h^{-1}	500	500

[1] Endurance see page 4/51.

[2] See Selection and ordering data.

Rated data of the auxiliary contacts see page 4/50.

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3TC contactors, 1- and 2-pole, 32 ... 400 A

Contactors	Type		3TC74 1-pole contactors	3TC78 2-pole contactors
Conductor cross-sections				
Main conductors			Screw terminals	
• Stranded with cable lug		mm^2	2 x ... 150	
• Busbars		mm	2 x (30 x 4)	
Auxiliary conductors				
• Solid		mm^2	1 ... 2.5	
• Finely stranded with end sleeve		mm^2	0.75 ... 1.5	

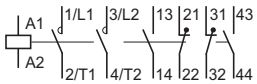
Selection and ordering data



3TC44



3TC48

Size	Utilization category[1]	Operational current I_e[3]	Ratings of DC motors at 110 V	220 V	440 V	600 V	750 V	Auxiliary contacts[2] Version NO	NC	Rated control supply voltage U_s	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		A	kW	kW	kW	kW	kW			V						
3TC44 to 3TC56 two-pole contactors																
Terminal designations acc. to EN 50012																
																
DC operation																
Screw fixing and snap-on mounting onto TH 35 standard mounting rail																
2	DC-3, DC-5	32	2.5	5	9	9	4	2	2	24 DC	►	**3TC44 17-0AB4**		1	1 unit	41B
										110 DC	►	**3TC44 17-0AF4**		1	1 unit	41B
										220 DC	►	**3TC44 17-0AM4**		1	1 unit	41B
Screw fixing																
4	DC-3, DC-5	75	6.5	13	27	38	45	2	2	24 DC	A	**3TC48 17-0AB4**		1	1 unit	41B
										110 DC	A	**3TC48 17-0AF4**		1	1 unit	41B
										220 DC	A	**3TC48 17-0AM4**		1	1 unit	41B
8	DC-3, DC-5	220[4]	20	41	82	110	110	2	2	24 DC	C	**3TC52 17-0AB4**		1	1 unit	41B
										110 DC	C	**3TC52 17-0AF4**		1	1 unit	41B
										220 DC	C	**3TC52 17-0AM4**		1	1 unit	41B
12	DC-3, DC-5	400	35	70	140	200	250	2	2	24 DC	C	**3TC56 17-0AB4**		1	1 unit	41B
										110 DC	C	**3TC56 17-0AF4**		1	1 unit	41B
										220 DC	C	**3TC56 17-0AM4**		1	1 unit	41B
AC operation, 50 Hz																
Screw fixing and snap-on mounting onto TH 35 standard mounting rail																
2	DC-3, DC-5	32	2.5	5	9	9	4	2	2	220/230 AC[5]	►	**3TC44 17-0BP0**		1	1 unit	41B
										110 / 110 AC	►	**3TC44 17-0BF0**		1	1 unit	41B
Screw fixing																
4	DC-3, DC-5	75	6.5	13	27	38	45	2	2	220/230 AC[5]	A	**3TC48 17-0BP0**		1	1 unit	41B
										110 AC	C	**3TC48 17-0BF0**		1	1 unit	41B
8	DC-3, DC-5	220[4]	20	41	82	110	110	2	2	220/230 AC[5]	A	**3TC52 17-0BP0**		1	1 unit	41B
										110 AC	C	**3TC52 17-0BF0**		1	1 unit	41B
12	DC-3, DC-5	400	35	70	140	200	250	2	2	220/230 AC[5]	C	**3TC56 17-0BP0**		1	1 unit	41B
										110 AC	C	**3TC56 17-0BF0**		1	1 unit	41B

Other rated control supply voltages according to page 4/56 on request.

1) Permissible load for DC-1 utilization category see detailed technical specifications in the reference manual "Contactors and Contactor Assemblies".

2) The fitting of auxiliary switches cannot be altered on DC-operated contactors.

3) The following rated operational currents are permitted for reversing duty with 3TC44 to 3TC56 contactors:

Contactor Type	Rated operational voltage 110 V, 220 V	440 V
3TC44	32 A	7 A
3TC48	75 A	75 A
3TC52	170 A	170 A
3TC56	400 A	400 A

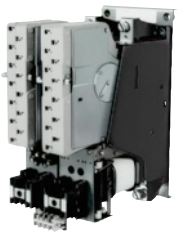
4) At > 600 V: I_e = 170 A.

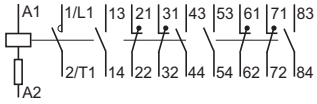
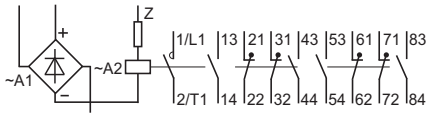
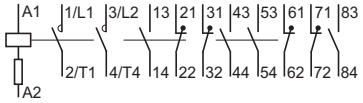
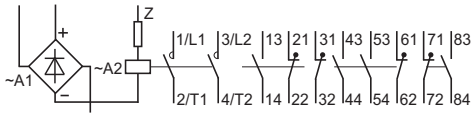
5) Operating range at 220 V: 0.85 to 1.15 x U_s

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3TC74


3TC78

Size	Utilization category[1]	Operational current I_e	Ratings of DC motors at 110 V	220 V	440 V	600 V	750 V	1200 V	1500 V	Auxiliary contacts[2] Version NO	NC	Rated control supply voltage U_s	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		A	kW	kW	kW	kW	kW	kW	kW			V						
3TC74 1-pole contactors · Operational voltage up to 750 V																		
DC operation																		
Terminal designations acc. to EN 50005																		
																		
12	DC-3, DC-5	400	35	70	140	200	250	--	--	4	4	24 DC	C	**3TC74 14-0EB**		1	1 unit	41B
												110 DC	C	**3TC74 14-0EF**		1	1 unit	41B
AC operation, 50 Hz																		
Terminal designations acc. to EN 50005																		
																		
12	DC-3, DC-5	400	35	70	140	200	250	--	--	4	4	230/220 AC[3]	C	**3TC74 14-1CM**		1	1 unit	41B
3TC78 2-pole contactors · Operational voltage up to 1500 V																		
DC operation																		
Terminal designations acc. to EN 50005																		
																		
12	DC-3, DC-5	400	35	70	140	200	250	400	500	4	4	24 DC	C	**3TC78 14-0EB**		1	1 unit	41B
												110 DC	C	**3TC78 14-0EF**		1	1 unit	41B
AC operation, 50 Hz																		
Terminal designations acc. to EN 50005																		
																		
12	DC-3, DC-5	400	35	70	140	200	250	400	500	4	4	230/220 AC[3]	C	**3TC78 14-1CM**		1	1 unit	41B

[1] Permissible load for DC-1 utilization category see detailed technical specifications in the reference manual "Contactors and Contactor Assemblies".

[2] The fitting of auxiliary switches cannot be altered on DC-operated contactors.

[3] Upper operating range limit at 230 V: 1.14 x U_s.

Other rated control supply voltages according to page 4/56 on request.

Spare parts see page 4/58.

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Options

Rated control supply voltages (the 10th and 11th position of the order number must be changed)

Contactor type / Rated control supply voltage U_s	3TC44	3TC48	3TC52/56	3TC74/78
AC operation				
Solenoid coils for 50 Hz				
24 V AC	B0	B0	--	--
110 V AC	F0	F0	F0	--
230/220 V AC	P0[1]	P0[1]	P0[1]	M[2]
240 V AC	U0	U0	--	--
AC operation				
Solenoid coils for 50/60 Hz				
24 V AC	C2	--	--	--
110 V AC	G2	--	--	--
120 V AC	K2	--	--	--
220 V AC	N2	--	--	--
230 V AC	L2	--	--	--
DC operation				
24 V DC	B4	B4	B4	B
48 V DC	W4	W4	--	--
60 V DC	E4	E4	--	--
110 V DC	F4	F4	F4	F
125 V DC	G4	G4	--	--
220 V DC	M4	M4	M4	M
230 V DC	P4	P4	--	--

[1] Operating range at 220 V or 380 V: 0.85 to 1.15 × U_s; lower operating range limit according to IEC 60947.

[2] Upper operating range limit at 230 V: 1.14 × U_s.

Accessories

For contactors Size	Type	Version		DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Solid-state compatible auxiliary switch blocks with screw terminals									
 5TY7 561-1.	**2 and 4**	3TC44, 3TC48	For operation in dusty atmospheres and in solid-state circuits with rated operational currents I_e AC-14 and DC-13 of 1 ... 300 mA at 3 ... 60 V For lateral mounting onto contactors. With 1 changeover contact. 2nd auxiliary switch block, left or right (replacement for 3TY6 561-1U, 3TY6 561-1V) Mounting on the left: 51, 52, 54 — Mounting on the right: 61, 62, 64		►	**3TY7 561-1UA00**		1	1 unit	41B
Terminal covers									
 3TX6 526-3B	**6**	3TC48	For protection against inadvertent contact with exposed busbar connections Can be screwed on free screw end. Covers one busbar connection (1 set = 6 units).	M6	B	**3TX6 506-3B**		1	1 unit	41B
	8 and 12	3TC52, 3TC56		M10	B	**3TX6 546-3B**		1	1 unit	41B

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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For contactors Size	Type	Version	Rated control supply voltage U_s V AC	V DC	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Surge suppressors · Varistors										
 3TX7 402-3.										
2	3TC44[1]	**Varistors**[2] with line spacer, for mounting onto the coil terminal	24 ... 48	24 ... 70	A	**3TX7 402-3G**		1	1 unit	41B
			48 ... 127	70 ... 150	A	**3TX7 402-3H**		1	1 unit	41B
			127 ... 240	150 ... 250	A	**3TX7 402-3J**		1	1 unit	41B
			240 ... 400	--	C	**3TX7 402-3K**		1	1 unit	41B
			400 ... 600	--	C	**3TX7 402-3L**		1	1 unit	41B
4	3TC48	**Varistors**[2] for sticking onto the contactor base or for mounting separately	24 ... 48	24 ... 70	D	**3TX7 462-3G**		1	1 unit	41B
			48 ... 127	70 ... 150	C	**3TX7 462-3H**		1	1 unit	41B
			127 ... 240	150 ... 250	B	**3TX7 462-3J**		1	1 unit	41B
			240 ... 400	--	A	**3TX7 462-3K**		1	1 unit	41B
			400 ... 600	--	C	**3TX7 462-3L**		1	1 unit	41B
 3TX7 462-3.										
8 and 12	3TC52, 3TC56	**Varistor** for sticking onto the contactor base or for mounting separately	24 ... 48	--	D	**3TX7 462-3G**		1	1 unit	41B
			48 ... 127	--	C	**3TX7 462-3H**		1	1 unit	41B
			127 ... 240	--	B	**3TX7 462-3J**		1	1 unit	41B
			240 ... 400	--	A	**3TX7 462-3K**		1	1 unit	41B
			400 ... 600	--	C	**3TX7 462-3L**		1	1 unit	41B
8 and 12	3TC52, 3TC56	**Varistors**[2] for separate screw connection or snapping onto TH 35 standard mounting rail	--	24 ... 70	B	**3TX7 522-3G**		1	1 unit	41B
			--	70 ... 150	B	**3TX7 522-3H**		1	1 unit	41B
			--	150 ... 250	B	**3TX7 522-3J**		1	1 unit	41B
 3TX7 522-3.										
Surge suppressors · RC elements										
 3TX7 462-3., 3TX7 522-3.										
4	3TC48	**RC elements** For lateral snapping onto auxiliary switch or TH 35 standard mounting rail	24 ... 48	--	C	**3TX7 462-3R**		1	1 unit	41B
			--	24 ... 70	B	**3TX7 522-3R**		1	1 unit	41B
			48 ... 127	--	A	**3TX7 462-3S**		1	1 unit	41B
			--	70 ... 150	B	**3TX7 522-3S**		1	1 unit	41B
			127 ... 240	--	A	**3TX7 462-3T**		1	1 unit	41B
			--	150 ... 250	B	**3TX7 522-3T**		1	1 unit	41B
			240 ... 400	--	A	**3TX7 462-3U**		1	1 unit	41B
			400 ... 600	--	C	**3TX7 462-3V**		1	1 unit	41B
8 and 12	3TC52, 3TC56	**RC elements** For lateral snapping onto auxiliary switch or TH 35 standard mounting rail	24 ... 48	--	B	**3TX7 522-3R**		1	1 unit	41B
			48 ... 127	--	B	**3TX7 522-3S**		1	1 unit	41B
			127 ... 240	--	B	**3TX7 522-3T**		1	1 unit	41B
			240 ... 400	--	B	**3TX7 522-3U**		1	1 unit	41B
			400 ... 600	--	B	**3TX7 522-3V**		1	1 unit	41B
Surge suppressors · Diodes										
 3TX7 462-3.										
4 to 12	3TC48, 3TC52, . 3TC56	**Diode assemblies**[3] (diode and Zener diode) for DC solenoid system, for sticking onto the contactor base or for mounting separately	--	24 ... 250	D	**3TX7 462-3D**		1	1 unit	41B

[1] The connection piece for mounting the surge suppressor must be bent slightly.

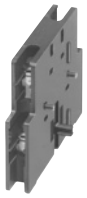
[2] Includes the peak value of the alternating voltage on the DC side.

[3] Not for DC economy circuit.

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Spare parts

For contactors Size	Type	Version Auxiliary contacts NO	NC	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Auxiliary switch blocks									
For mounting on the side		Left	Right						
2 and 4	3TC44, 3TC48	Auxiliary switch block (replacement for 3TY6 501-1A/-1B)		►	**3TY6 501-1AA00**		1	1 unit	41B
		1	1						
4	3TC48	2nd auxiliary switch block, left[1]		►	**3TY6 501-1K**		1	1 unit	41B
		1	1						
		2nd auxiliary switch block, right[1]		D	**3TY6 501-1L**		1	1 unit	41B
		1	1						
8 and 12	3TC52, 3TC56	Auxiliary switch block, left		►	**3TY6 561-1A**		1	1 unit	41B
		1	1						
		Auxiliary switch block, right		►	**3TY6 561-1B**		1	1 unit	41B
		1	1						
		2nd auxiliary switch block, left[1]		C	**3TY6 561-1K**		1	1 unit	41B
		1	1						
		2nd auxiliary switch block, right[1]		C	**3TY6 561-1L**		1	1 unit	41B
		1	1						


3TY6 561-1A

[1] Can only be mounted on AC-operated contactors.

For contactors Size	Type	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Contacts with fixing parts								
		In order to ensure reliable operation of the contactors, only **original replacement contacts** should be used.						
2	3TC44	(1 set = 2 moving and 4 fixed switching elements)	B	**3TY2 440-0A**		1	1 unit	41B
4	3TC48		B	**3TY2 480-0A**		1	1 unit	41B
8	3TC52		B	**3TY2 520-0A**		1	1 unit	41B
12	3TC56		C	**3TY2 560-0A**		1	1 unit	41B
Arc chutes								
2	3TC44	Arc chutes, 2-pole	C	**3TY2 442-0A**		1	1 unit	41B
4	3TC48		C	**3TY2 482-0A**		1	1 unit	41B
8	3TC52		C	**3TY2 522-0A**		1	1 unit	41B
12	3TC56		C	**3TY2 562-0A**		1	1 unit	41B
Solenoid coils								
		DC operation[1]						
2	3TC44			**3TY6 443-0B..**				
4	3TC48			**3TY6 483-0B..**				
8	3TC52			**3TY6 523-0B..**				
12	3TC56			**3TY6 563-0B..**				
		AC operation[1]						
2	3TC44			**3TY7 403-0A..**				
4	3TC48			**3TY6 483-0A..**				
8	3TC52			**3TY6 523-0A..**				
12	3TC56			**3TY6 566-0A..**				


3TY2 520-0A


3TY2 482-0A

[1] Rated control supply voltages see table, page 4/56. The 10th and 11th digit of the Order No. must be supplemented accordingly.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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For contactors	Version	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
Type			Order No. Price per PU			
Auxiliary switch blocks						
3TC74	4 NO + 4 NC	►	**3TY2 741-2J**	1	1 unit	41B
3TC78	Auxiliary switch block left, with 2 NO + 2 NC	►	**3TY2 781-2C**	1	1 unit	41B
	Auxiliary switch block right, with 2 NO + 2 NC	C	**3TY2 781-2D**	1	1 unit	41B

For contactors	Version	Rated control supply voltage U_s	DT	Order No. Price per PU	PU (UNIT, SET, M)	PS*	PG
Type		V AC/DC					
Surge suppressors · Varistors							
3TC7	For sticking onto the contactor base	24	C	**3TX2 746-2F**	1	1 unit	41B
		110	C	**3TX2 746-2G**	1	1 unit	41B
Contacts with fixing parts							
3TC7	Main contacts (1 set) 2 units required per contactor	--	C	**3TY2 740-0E**	1	1 unit	41B
Arc chutes							
3TC7	For 3TC78: 2 units required per contactor	--	C	**3TY2 742-0C**	1	1 unit	41B

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3TG10 contactors 4-pole, 4 kW

Overview

Version

The 3TG10 power relays/miniature contactors with 4 main contacts are available with screw terminals or 6.3 mm × 0.8 mm flat connectors. The versions with screw terminals are climate-proof and finger-safe according to IEC 61140.

The 3TG10 miniature contactors are characterized by their width of only 36 mm.

Surge suppression

The 3TG10 power relays/miniature contactors have an integrated protective circuit against opening surges.

Application

Because they are hum-free they are suitable for use in household appliances and distribution boards in office and residential areas. They can also be used for applications where there is little space such as air conditioners, heating systems, pumps and fans, i.e. for simple electrical controls.

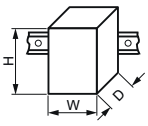
Standards

IEC 60947-1, IEC 60947-4-1, IEC 60947-5-1

Overload and short-circuit protection

The 3UA7 overload relay can be used for overload protection. This applies to mounting onto contactors and to stand-alone installation.

Technical specifications

Type				**3TG10**
Dimensions (W x H x D)			mm	36 x 56 x 56
• With 3UA7 overload relay mounted below			mm	45 x 100 x 62
General technical specifications				
Endurance				
• Mechanical	Operating cycles			3 million
• Electrical				
- AC-1 at I_e	Operating cycles			0.1 million
- AC-3 at I_e	Operating cycles			0.4 million
Rated insulation voltage U_i (pollution degree 3)			V	400
Rated impulse withstand voltage U_{imp}			kV	4
Protective separation between coil and contacts acc. to IEC 60947-1, Appendix N			V	Up to 300
Permissible ambient temperature				
• During operation[1]			°C	-25 ... + 55
• During storage			°C	-50 ... + 80
Degree of protection according to IEC 60947-1 and IEC 60529				IP00, drive system IP20
Short-circuit protection				
Fuse links, operational class gG: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE according to IEC 60947-4-1				
• Type of coordination "1"			A	25
• Type of coordination "2"			A	10
Miniature circuit breakers, C characteristic			A	10
Control circuits				
Coil operating range				0.85 ... 1.1 x U_s
Power consumption of the solenoid coils (when coil is cold and 1.0 x U_s)				
• AC operation, 45 ... 450 Hz			VA	4.4
- P.f.				0.9 (hum-free)
• DC operation			W	4
AC capacity				
Utilization category AC-1, switching resistive loads				
Rated operational current I_e up to 400 V at 55 °C[1]			A	20 for screw terminals, 16 for flat connector
Rated power U_e for AC loads with p.f. = 1, 230/220 V				
• For screw terminals			kW	7.5 (13 at 400 V)
• For flat connector			kW	6 (10 at 400 V)
Minimum conductor cross-section for load with I_e			mm^2	2.5
Utilization categories AC-2 and AC-3 **Operational current for AC-3 at 400 V rated value**			A	8.4
Rated power for slipring or squirrel-cage motors with 50 and 60 Hz and at 400 V			kW	4
Utilization category AC-5a (permissible nominal impedance: ≥ 0.5 Ω) **Switching of gas discharge lamps** Per main current path at 230 V, 50 Hz Rated power/rated operational current per lamp				
• Uncorrected	18 W	0.37 A		43
	36 W	0.43 A		37
	58 W	0.67 A		24
• DUO switching	18 W	2 x 0.11 A		2 x 81
	36 W	2 x 0.21 A		2 x 42
	58 W	2 x 0.32 A		2 x 28

[1] If the three main current paths carry a load of 20 A, the following applies if I > 10 A in the fourth conducting path: Permissible ambient temperature 40 °C.

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3TG10 contactors 4-pole, 4 kW

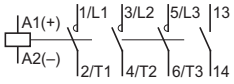
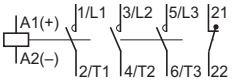
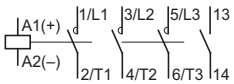
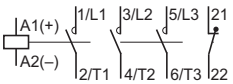
Type						3TG10
AC capacity						
Switching gas discharge lamps with correction, ECG Per main current path 230 V, 50 Hz Rated power per lamp/capacitance/ rated operational current per lamp						
• Shunt compensation	L18 W	4.5 µF	0.11 A		Unit(s)	15
	L36 W	4.5 µF	0.21 A		Unit(s)	15
	L58 W	7 µF	0.32 A		Unit(s)	10
• With ECG (single lamp)	L18 W	6.8 µF	0.10 A		Unit(s)	39
	L36 W	6.8 µF	0.18 A		Unit(s)	39
	L58 W	10 µF	0.27 A		Unit(s)	26
• With ECG (two lamps)	L18 W	10 µF	0.18 A		Unit(s)	2 x 26
	L36 W	10 µF	0.35 A		Unit(s)	2 x 26
	L58 W	22 µF	0.52 A		Unit(s)	2 x 12
Utilization category AC-5b, switching incandescent lamps Per main current path at 230 V, 50 Hz					kW	1.6
Load rating with DC						
Utilization category DC-1, switching resistive loads (*L/R* ≤ 15 ms) • Rated operational currents I_e						
- 1 conducting path				Up to 24 V	A	16
				60 V	A	6
				110 V	A	2
				220 V / 240 V	A	0.8
- 2 conducting paths in series				Up to 24 V	A	16
				60 V	A	16
				110 V	A	6
				220 V / 240 V	A	1.6
- 3 conducting paths in series				Up to 24 V	A	18
				60 V	A	18
				110 V	A	16
				220 V / 240 V	A	6
- 4 conducting paths in series				Up to 24 V	A	20
				60 V	A	20
				110 V	A	20
				220 V / 240 V	A	20
Utilization category DC-3 and DC-5 **Shunt-wound and series-wound motors (*L/R* ≤ 15 ms)** • Rated operational currents I_e						
- 1 conducting path				Up to 24 V	A	10
				60 V	A	0.5
				110 V	A	0.15
				220 V / 240 V	A	0
- 2 conducting paths in series				Up to 24 V	A	16
				60 V	A	5
				110 V	A	0.35
				220 V / 240 V	A	0
- 3 conducting paths in series				Up to 24 V	A	16
				60 V	A	16
				110 V	A	10
				220 V / 240 V	A	1.75
- 4 conducting paths in series				Up to 24 V	A	18
				60 V	A	16
				110 V	A	10
				220 V / 240 V	A	2
Conductor cross-sections						
						Screw terminals
Terminal screws						M3
• Finely stranded with end sleeve (DIN 46228 Form A/D/C)					mm^2	2 x (0.75 ... 2.5)
• Solid					mm^2	2 x (1 ... 2.5), 1 x 4
Permissible opening tool (screwdriver)						3.0 mm x 0.5 mm (3RA29 08-1A) or Pozidriv 2
						Flat connectors
• Finely stranded 6.3 mm plug-in sleeve acc. to DIN 46245/46247						
- 6.3 ... 1					mm^2	0.5 ... 1
- 6.3 ... 2.5					mm^2	1 ... 2.5
CSA and UL rating (screw terminals)						
Rated insulation voltage				AC	V	600
Uninterrupted current	Open and enclosed				A	20
Maximum horsepower ratings (CSA and UL approved values), rated power for induction motors with 60 Hz						Single-phase/Three-phase
				At 115 V	hp	0.5/ --
				200 V	hp	1/ 3
				230 V	hp	1.5/ 3
				460 ... 600 V	hp	0/ 5

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3TG10 contactors 4-pole, 4 kW

Selection and ordering data

For screw fixing and snap-on mounting onto TH 35 standard mounting rail

Rated data Utilization category AC-1 Switching of resistive loads at 55 °C: Operational current I_e up to 400 V	AC-1: Power of AC loads at 50 Hz and 400 V	AC-2 and AC-3: Operational current I_e up to 400 V [1]	AC-2 and AC-3: Power of AC loads at 50 Hz and 400 V	Main contacts: Version NO	Main contacts: Version NC	Rated control supply voltage U_s	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	kW	A	kW	NO	NC	V						
4-pole · Hum-free · With screw terminals												
1 NO, Ident. No. **10** 												
1 NC, Ident. No. **01E** 												
AC operation, 45 ... 450 Hz								**Screw terminals**				
20	13	8.4	4	4	--	24 AC	▶	**3TG10 10-0AC2**		1	1 unit	41H
						110 AC	▶	**3TG10 10-0AG2**		1	1 unit	41H
						230 AC	▶	**3TG10 10-0AL2**		1	1 unit	41H
				3	1	24 AC	▶	**3TG10 01-0AC2**		1	1 unit	41H
						110 AC	▶	**3TG10 01-0AG2**		1	1 unit	41H
						230 AC	▶	**3TG10 01-0AL2**		1	1 unit	41H
DC operation												
20	13	8.4	4	4	--	24 DC	▶	**3TG10 10-0BB4**		1	1 unit	41H
				3	1	24 DC	▶	**3TG10 01-0BB4**		1	1 unit	41H
4-pole · Hum-free · With flat connectors 6.3 mm x 0.8 mm												
1 NO, Ident. No. **10** 												
1 NC, Ident. No. **01E** 												
AC operation, 45 ... 450 Hz								**Flat connectors**				
16	10	8.4	4	4	--	24 AC	▶	**3TG10 10-1AC2**		1	1 unit	41H
						110 AC	D	**3TG10 10-1AG2**		1	1 unit	41H
						230 AC	▶	**3TG10 10-1AL2**		1	1 unit	41H
				3	1	24 AC	D	**3TG10 01-1AC2**		1	1 unit	41H
						110 AC	D	**3TG10 01-1AG2**		1	1 unit	41H
						230 AC	▶	**3TG10 01-1AL2**		1	1 unit	41H
DC operation												
16	10	8.4	4	4	--	24 DC	C	**3TG10 10-1BB4**		1	1 unit	41H
		8.4	4	3	1	24 DC	D	**3TG10 01-1BB4**		1	1 unit	41H



3TG10 ..-0...



3TG10 ..-1...

Accessories

Max. rated operational currents I_e/AC-1 (at 55 °C) of the contactors: Type	Max. conductor cross-sections mm²	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Links for paralleling (star jumpers)							
3-pole, without connection terminals [1)2)]							
16	--	▶	**3RT19 16-4BA31**		1	1 unit	41B
3-pole, with connection terminals [1)3)]							
40	25	▶	**3RT19 16-4BB31**		1	1 unit	41B
4-pole, with connection terminals [1)4)]							
40	25	C	**3RT19 16-4BB41**		1	1 unit	41B

1) The links for paralleling can be reduced by one pole. The rated operational currents apply to each pole. The links for paralleling are insulated.

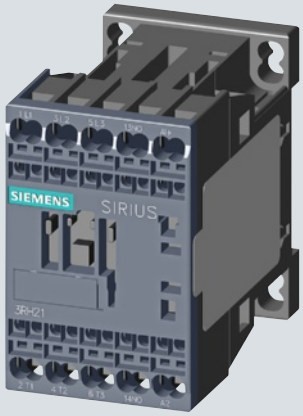
2) Replacement for 3TX4 490-2C.

3) Replacement for 3TX4 490-2A.

4) Replacement for 3TX4 490-2B.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Price groups
PG 41A, 41B, 41H

5/2 **Introduction**

Contactor relays

5/4 SIRIUS 3RH2 contactor relays, 4- and 8-pole

5/15 SIRIUS 3RH24 latched contactor relays, 4-pole

5/16 3TH4 contactor relays, 8- and 10-pole

5/24 3TH2 contactor relays, 4- and 8-pole

Coupling relays

5/32 SIRIUS 3RH21 coupling relays for switching auxiliary circuits, 4-pole

Contactors with extended operating range 0.7 ... 1.25 × U_s for railway applications

5/35 SIRIUS 3RH21 contactor relays

5/37 3TH4 contactor relays

Coupling relays

3TX7 coupling relays, narrow design

5/39 Relay couplers

5/44 Relay couplers with plug-in connection

5/47 Semiconductor couplers

SIRIUS 3RS18 coupling relays with industrial housing

5/51 Relay couplers

Coupling relays with LZS/LZX plug-in relays

5/53 Plug-in relay couplers

Power relays/Miniature contactors

Ch.4 3TG10 contactors, 4-pole, 4 kW

More information can be found on the Internet: see opening information, page 13

Note:

3RH1 contactor relays can be found

- in the Catalog Add-On IC 10 AO · 2012 in the CD/DVD box
- in the Catalog Add-On IC 10 AO · 2012 at the Information and Download Center
- in the interactive catalog CA 01
- in the Industry Mall

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Introduction

Overview

The advantages at a glance







Size	**S00**	**S00**			
Type	3RH21	3RH22	3TH42	3TH43	3TH2
				Order No.	Page
3RH2 contactor relays					
4-pole	• Screw terminals, spring-type terminals and ring terminal lug connections			3RH21	5/10, 5/11
8-pole				3RH22	5/10, 5/11
4-pole, latched				3RH24	5/15
Coupling relays	• Coils for control by PLC			3RH21	5/25
Contactor relays for railway applications	• Coils with extended voltage range			3RH21	5/35
3TH4 contactor relays					
8-pole	• Screw terminals			3TH42	5/20
10-pole				3TH43	5/21
Contactor relays for railway applications	• Coils with extended voltage range			3TH42	5/37
3TH2 contactor relays					
4-pole	• Screw terminals, flat connectors and solder pin connections			3TH20	5/28
8-pole	• Screw terminals			3TH22	5/28
4-pole, latched	• Screw terminals			3TH27	5/28
Accessories for 3RH2 contactor relays					
Auxiliary switch blocks	• On front			3RH29 11	5/12
	• Lateral			3RH29 11	Chapter 3
Timing relay blocks	• On front			3RA28 1.	Chapter 3
Surge suppressors	• On front			3RT29 16	5/13
Additional load module	• On front			3RT29 16	5/13

Note:

Safety characteristics for contactors see Chapter 16, "Appendix" → "Standards and Approvals" → "Overview".

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The advantages at a glance






Type	3TX7	3RS18	LZS/LZX	3TG10

		Order No.	Page
Coupling relays, narrow design			
Relay couplers	• Width 6.2 mm (1 NO, 1 CO), 12.5 mm and 17.5 mm • Output coupling links • Input coupling links with hard gold-plating	3TX7 002, 3TX7 003, 3TX7 004, 3TX7 005	5/39
Plug-in base couplers, complete with relay	• Width 6.2 mm (1 NO, 1 CO) • Relays, replaceable	3TX7 014-1..00	5/44
Plug-in base couplers, complete with relay and hard gold-plating	• Width 6.2 mm (1 CO)	3TX7 014-1..02	5/44
Semiconductor couplers	• Output 1 semiconductor, triac or transistor	3TX7 002, 3TX7 004, 3TX7 005	5/47
Coupling relays in industrial housing			
Relay couplers	• Protective separation up to 300 V between contacts and relay circuits • 1, 2 and 3 changeover contacts • Hard gold-plated contacts in combination and wide voltage range versions	3RS18	5/51
Coupling relays with plug-in relays			
Plug-in relay couplers with 2, 3 and 4 changeover contacts	• Switching capacity 12 A/10 A/6 A • Width 27 mm • Base optionally with or without logical isolation	LZS/LZX:PT	5/53
Plug-in relay couplers with 3 changeover contacts and circular base	• Switching capacity 6 A • 11-pole circular base • Width 38 mm	LZS/LZX:MT	5/59
Plug-in relay couplers with 1 or 2 changeover contacts	• Switching capacity 16 A/8 A • Width 15.5 mm • Base optionally with or without logical isolation	LZS/LZX:RT	5/60
Miniature contactors (power relays)			
With screw and flat connectors	• Switching capacity 20 A (AC-1) and 8.4 A (AC-2, AC-3) • 4-pole, hum-free • Width 36 mm	3TG10	Ch. 4

Connection methods

The contactor relays and the relays are available with screw terminals (box terminals) or with spring-type terminals.

Devices of the 3TH2 series are also available for connection with flat connectors and solder pin connectors.

The plug-in bases for LZS/LZX coupling relays are also available with plug-in terminals.

As an option the devices of the 3RH2 series are also available for connection with ring terminal lugs, particularly versions for North America and Japan.

- Screw terminals
- Spring-type terminals
- Flat connectors
- Solder pin connections
- Plug-in terminals
- Ring terminal lug connections

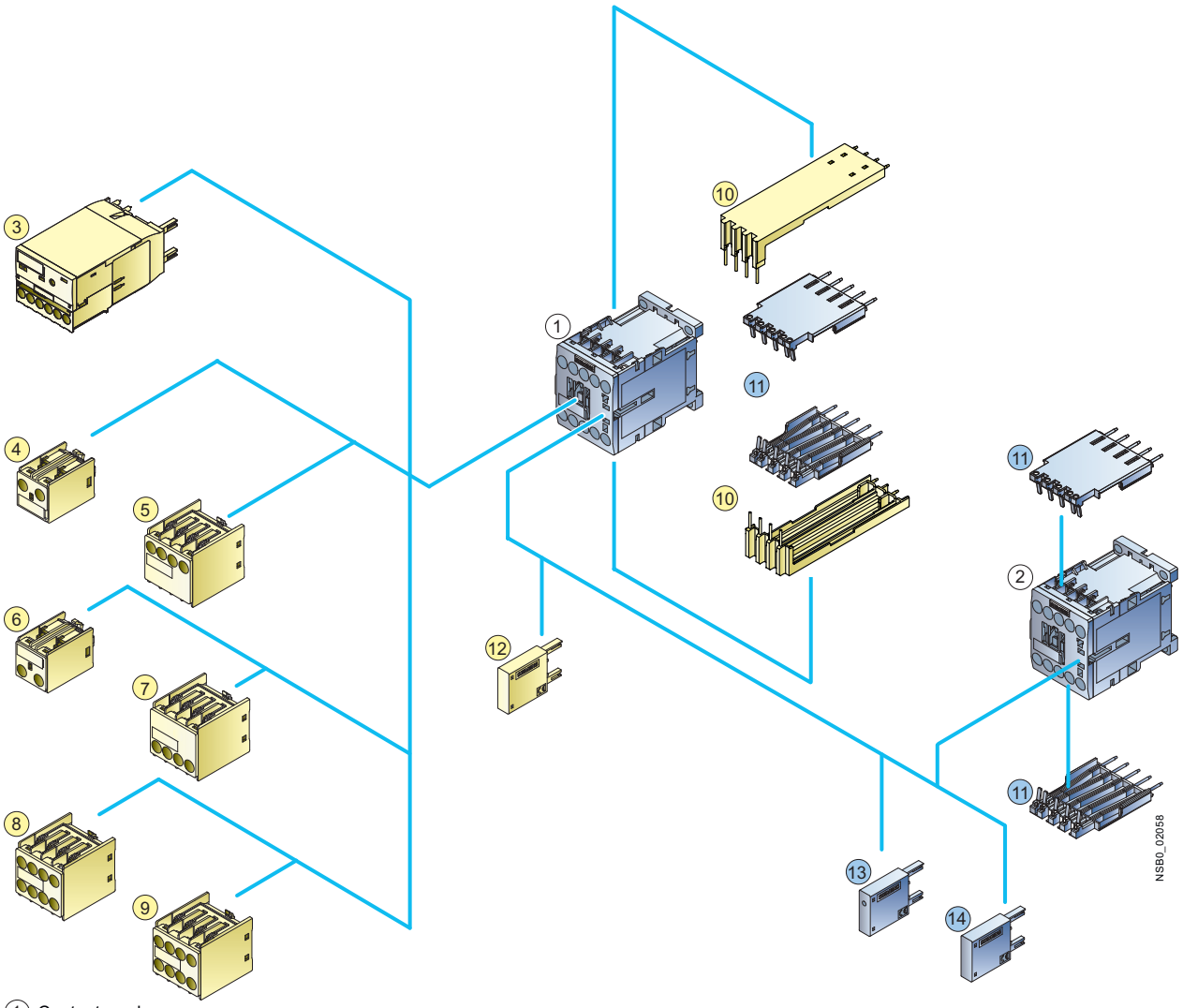
The terminals are indicated in the corresponding tables by the symbols shown on orange backgrounds.

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SIRIUS 3RH2 contactor relays, 4- and 8-pole

Overview

Contactor relays and coupling relays
Size S00 with accessories



1 Contactor relay
2 Coupling relay for auxiliary circuits
3 Solid-state timing relay block
4 1-pole auxiliary switch block, cable entry from the top
5 2-pole auxiliary switch block, cable entry from the top
6 1-pole auxiliary switch block, cable entry from the bottom
7 2-pole auxiliary switch block, cable entry from the bottom
8 4-pole auxiliary switch block
(terminal designations according to EN 50011 or EN 50005)
9 2-pole auxiliary switch block, solid-state compatible version
(terminal designations according to EN 50005)
10 Solder pin adapter for contactor relays with 4-pole auxiliary switch block
11 Solder pin adapter for contactor and coupling relays
12 Additional load module for increasing the permissible residual current
13 Surge suppressor with LED
14 Surge suppressor without LED

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SIRIUS 3RH2 contactor relays, 4- and 8-pole

Standards

IEC 60947-1, EN 60947-1,
IEC 60947-5-1, EN 60947-5-1

The 3RH2 contactor relays have screw, ring terminal lug or spring-type terminals. Four contacts are available in the basic unit.

The 3RH2 contactor relays are suitable for use in any climate. They are finger-safe according to EN 50274. The devices with ring terminal lug connection comply with degree of protection IP20 when fitted with the related terminal cover.

Contact reliability

High contact stability at low voltages and currents, suitable for solid-state circuits with currents ≥ 1 mA at a voltage of ≥ 17 V.

Surge suppression

RC elements, varistors, diodes or diode assemblies (combination of a diode and a Zener diode) can be plugged onto all contactor relays from the front for damping opening surges in the coil. The plug-in direction is determined by a coding device.

Note:

The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 10 times; diode assembly 2 to 6 times, varistor +2 to 5 ms).

Auxiliary switch blocks

The 3RH2 contactor relays can be expanded by up to four contacts by the addition of snap-on auxiliary switch blocks.

The auxiliary switch block can easily be snapped onto the front of the contactors. The auxiliary switch block has a centrally positioned release lever for disassembly.

3RH29 11–1GA .. auxiliary switch blocks cannot be combined with contactor relays with identification numbers 31E and 22E; they are coded.

All contactor relays with identification numbers 40E, 31E and 22E can be extended with auxiliary switch blocks to obtain contactor relays with 5 to 8 contacts. The permissible combinations and the resulting identification numbers can be found in the selection tables in Chapter 3, pages 3/45 to 3/49.

In addition, fully mounted 3RH22 8-pole contactor relays are available; the mounted 4-pole auxiliary switch block in the 2nd tier is not removable. The terminal designations are according to EN 50011 and IEC 60947-5-1.

These versions are built according to special Swiss regulations SUVA and are distinguished externally by a red labeling plate.

Of the auxiliary contacts (integrated plus mountable) possible on the device, no more than 4 NC contacts are permitted.

Order No. scheme

Digit of the Order No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th		13th	14th	15th	16th
	□□□	□	□	□	□	–	□	□	□	□	□	–	□	□	□	□
SIRIUS contactor relays	**3 R H**															
2nd generation		**2**														
Device type (e.g. 1 = 4-pole contactor relay, 2 = 8-pole contactor relay)			□													
Number of NO contacts (e.g. 2 = 2 NO)				□												
Number of NC contacts (e.g. 2 = 2 NC)					□											
Connection type (1 = screw, 2 = spring-type terminal)							□									
Operating range / solenoid coil circuit (e.g. A = AC standard / without)								□								
Rated control supply voltage (e.g. P0 = 230 V, 50 Hz)									□	□						
No significance											□					
Special version													□	□	□	□
Example	**3 R H**	**2**	**1**	**2**	**2**	**–**	**1**	**A**	**P**	**0**	**0**					

Note:

The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quoted in the catalog in the Selection and ordering data.

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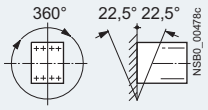
SIRIUS 3RH2 contactor relays, 4- and 8-pole

Technical specifications

Contactor relays	Type	3RH2
	Size	S00

Permissible mounting positions

The contactor relays are designed for operation on a vertical mounting surface.



Upright mounting position



Special version required

(3RH21 22-2K.40 coupling relays and contactor relays with extended operating range on request)

Positively-driven operation of contacts in contactor relays

3RH2:
Yes, in the basic unit and the auxiliary switch block as well as between the basic unit and the front-mounted auxiliary switch block (removable) acc. to:
- ZH 1/457
- IEC 60947-5-1, Appendix L

3RH22:
Yes, in the basic unit and the auxiliary switch block as well as between the basic unit and the snap-on auxiliary switch block (permanently mounted) acc. to:
- ZH 1/457
- IEC 60947-5-1, Appendix L

Note:

3RH29 11-.NF. solid-state compatible auxiliary switch blocks have no positively-driven contacts.

Explanations:
There is positively-driven operation if it is ensured that the NC and NO contacts cannot be closed at the same time.

ZH1/457
Safety Rules for Controls on Power-Operated Metalworking Presses.

IEC 60947-5-1, Appendix L
Low-Voltage Controlgear, Controls and Contact Blocks. Special requirements for positively-driven contacts

Contact reliability

Contact reliability at 17 V, 1 mA acc. to IEC 60947-5-4

Frequency of contact faults $<10^{-8}$ i.e. < 1 fault per 100 million operating cycles

Contact endurance for AC-15/AC-14 and DC-13 utilization categories

The contact endurance is mainly dependent on the breaking current. It is assumed that the operating mechanisms are switched randomly, i.e. not synchronized with the phase angle of the supply system.

If magnetic circuits other than the contactor coil systems or solenoid valves are present, e.g. magnetic brakes, protective measures for the load circuits are necessary, e.g. in the form of RC elements and free-wheel diodes.

The characteristic curves apply to:

- 3RH21/3RH22 contactor relays
- 3RH24 latched contactor relays
- 3RH29 11 auxiliary switch blocks[1)]
- Auxiliary switch blocks for snapping onto the front, max. 4-pole and for mounting onto the side in size S00

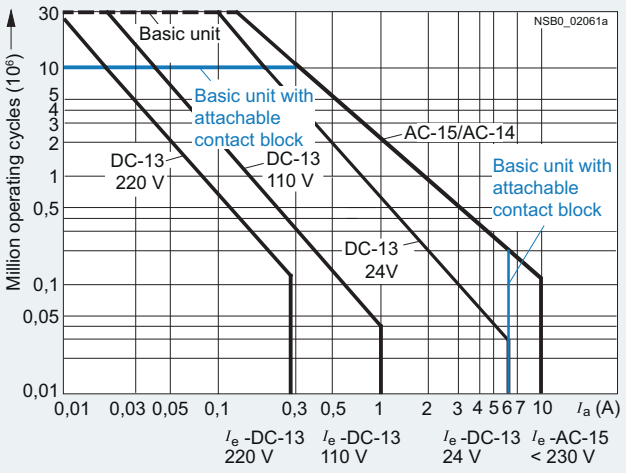
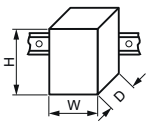
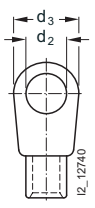


Diagram legend:
I_a = Breaking current
I_e = Rated operational current

[1)] I_e = 6 A for AC-15/AC-14.

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Type			**3RH21**	**3RH22**	**3RH24**
Size			**S00**	**S00**	**S00**
Dimensions (W x H x D) with screw terminals		mm	45 x 57.5 x 73	--	90 x 57.5 x 73
• With mounted auxiliary switch block		mm	45 x 57.5 x 116	45 x 57.5 x 116	--
General technical specifications					
Mechanical endurance					
• Basic units		Operating cycles	30 million		5 million
• Basic unit with snap-on auxiliary switch block		Operating cycles	10 million		
• Solid-state compatible auxiliary switch block		Operating cycles	5 million		
Rated insulation voltage U_i (pollution degree 3)		V	690		
Rated impulse withstand voltage U_{imp}		kV	6		
Protective separation between the coil and the contacts in the basic unit acc. to IEC 60947-1, Appendix N		V	400		
Permissible ambient temperature					
• During operation		°C	-25 ... +60		
• During storage		°C	-55 ... +80		
Degree of protection acc. to IEC 60947-1, Appendix C			IP20, coil assembly IP40		
Touch protection acc. to EN 50274			Finger-safe		
Shock resistance					
• Rectangular pulse	- AC operation	g/ms	7.3/5 and 4.7/10		
	- DC operation	g/ms	>10/5 and >5/10		
• Sine pulse	- AC operation	g/ms	11.4/5 and 7.3/10		
	- DC operation	g/ms	>15/5 and >8/10		
Short-circuit protection					
• Short-circuit test with fuse links of gG operational class: DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current I_k = 1 kA acc. to IEC 60947-5-1		A	10		
• Test with miniature circuit breaker up to 230 V with C characteristic: Short-circuit current I_k = 400 A acc. to IEC 60947-5-1		A	6		
Conductor cross-sections					
Auxiliary conductors and coil terminals (1 or 2 conductors can be connected)			**Screw terminals**		
• Solid		mm^2	2 x (0.5 ... 1.5)[1]; 2 x (0.75 ... 2.5)[1] according to IEC 60947; max. 2 x (0.5 ... 4)		
• Finely stranded with end sleeve		mm^2	2 x (0.5 ... 1.5)[1]; 2 x (0.75 ... 2.5)[1]		
• AWG cables, solid or stranded		AWG	2 x (20 ... 16)[1]; 2 x (18 ... 14)[1]		
• Terminal screw			M3 (for standard screwdriver size 2 or Pozidriv 2)		
- Tightening torque		Nm	0.8 ... 1.2 (7 ... 10.3 lb.in)		
Auxiliary conductors and coil terminals (1 or 2 conductors can be connected)			**Spring-type terminals**		
• Operating devices		mm	3.0 x 0.5; 3.5 x 0.5		
• Solid		mm^2	2 x (0.5 ... 4)		
• Finely stranded with end sleeve		mm^2	2 x (0.5 ... 2.5)		
• Finely stranded without end sleeve		mm^2	2 x (0.5 ... 2.5)		
• AWG cables, solid or stranded		AWG	2 x (20 ... 12)		
Auxiliary conductors for front and laterally mounted auxiliary switches					
• Operating devices		mm	3.0 x 0.5; 3.5 x 0.5		
• Solid		mm^2	2 x (0.5 ... 2.5)		
• Finely stranded with end sleeve		mm^2	2 x (0.5 ... 1.5)		
• Finely stranded without end sleeve		mm^2	2 x (0.5 ... 2.5)		
• AWG cables, solid or stranded		AWG	2 x (20 ... 14)		
Auxiliary conductor and coil terminals			**Ring terminal lug connection**		
• Terminal screw		mm	M3, Pozidriv size 2		
• Operating devices		Nm	Ø 5 ... 6		
• Tightening torque		mm	0.8 ... 1.2		
• Usable ring terminal lugs		mm	d_2 = min. 3.2		
- DIN 46234 without insulation sleeve		mm	d_3 = max. 7.5		
- DIN 46225 without insulation sleeve					
- DIN 46237 with insulation sleeve					
- JIS C2805 Type R without insulation sleeve					
- JIS C2805 Type RAV with insulation sleeve					
- JIS C2805 Type RAP with insulation sleeve					

[1] If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

Note:

Max. external diameter of the cable insulation: 3.6 mm.

Tool for opening the spring-type terminals see Accessories, page 5/14.

An insulation stop must be used for conductor cross-sections ≤ 1 mm^2, see "Accessories", page 5/14.

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SIRIUS 3RH2 contactor relays, 4- and 8-pole

Contactor relays		Type		3RH2.
		Size		S00
Control circuits				
Coil operating range				
• AC operation		At 50 Hz		0.8 ... 1.1 x U_s
		At 60 Hz		0.85 ... 1.1 x U_s
• DC operation		At +50 °C		0.8 ... 1.1 x U_s
		At +60 °C		0.85 ... 1.1 x U_s
Power consumption of the solenoid coils (when coil is cold and 1.0 x U_s)				
• AC operation, 50 Hz				
- Closing			VA/p.f.	37/0.8
- Closed			VA/p.f.	5.7/0.25
• AC operation, 60 Hz				
- Closing			VA/p.f.	33/0.75
- Closed			VA/p.f.	4.4/0.25
• DC operation (closing = closed)			W	4.0
Permissible residual current of the electronics (with 0 signal)				
• For AC operation[1]				< 4 mA x (230 V/U_s)
• For DC operation				< 10 mA x (24 V/U_s)
Operating times[2]				
Total break time = OFF-delay + Arcing time				
Values apply with coil in cold state and at operating temperature for operating range				
AC operation				
• Closing				
- ON-delay of NO contact	With 0.8 ... 1.1 x U_s		ms	8 ... 33
	With 1.0 x U_s		ms	9 ... 22
	3RH24 minimum operating time		ms	≥ 35
- OFF-delay of NC contact	With 0.8 ... 1.1 x U_s		ms	6 ... 25
	With 1.0 x U_s		ms	6.5 ... 19
• Opening				
- OFF-delay of NO contact	With 0.8 ... 1.1 x U_s		ms	4 ... 15
	With 1.0 x U_s		ms	4.5 ... 15
	3RH24 minimum operating time		ms	≥ 30
- ON-delay of NC contact	With 0.8 ... 1.1 x U_s		ms	5 ... 15
	With 1.0 x U_s		ms	5 ... 15
DC operation				
• Closing				
- ON-delay of NO contact	With 0.8 ... 1.1 x U_s		ms	30 ... 100
	With 1.0 x U_s		ms	35 ... 50
	3RH24 minimum operating time		ms	≥ 100
- OFF-delay of NC contact	With 0.8 ... 1.1 x U_s		ms	25 ... 90
	With 1.0 x U_s		ms	30 ... 45
• Opening				
- OFF-delay of NO contact	With 0.8 ... 1.1 x U_s		ms	7 ... 13
	With 1.0 x U_s		ms	7 ... 12
	3RH24 minimum operating time		ms	≥ 30
- ON-delay of NC contact	With 0.8 ... 1.1 x U_s		ms	13 ... 19
	With 1.0 x U_s		ms	13 ... 18
• Arcing time			ms	10 ... 15

Dependence of the switching frequency z' on the operational current I' and operational voltage U':

$z' = z \cdot I_e/I' \cdot (U_e/U')^{1.5} \cdot$ 1/h

1) The 3RT29 16-1GA00 additional load module is recommended for higher residual currents (see page 5/13).

2) The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 10 times; diode assembly 2 to 6 times, varistor +2 to 5 ms).

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Contactor relays	Type		3RH2.
	Size		S00
Load side			
AC capacity			
Rated operational currents I_e			
AC-12		A	10
AC-15/AC-14 for rated operational voltage U_s			
	Up to 230 V	A	6
	400 V	A	3
	500 V	A	2
	690 V	A	1
Load rating with DC			
Rated operational currents I_e			
DC-12 for rated operational voltage U_s			
• 1 conducting path	24 V	A	6
	60 V	A	6
	110 V	A	3
	220 V	A	1
	440 V	A	0.3
	600 V	A	0.15
• 2 conducting paths in series	24 V	A	10
	60 V	A	10
	110 V	A	4
	220 V	A	2
	440 V	A	1.3
	600 V	A	0.65
• 3 conducting paths in series	24 V	A	10
	60 V	A	10
	110 V	A	10
	220 V	A	3.6
	440 V	A	2.5
	600 V	A	1.8
DC-13 for rated operational voltage U_s			
• 1 conducting path	24 V	A	6
	60 V	A	2
	110 V	A	1
	220 V	A	0.3
	440 V	A	0.14
	600 V	A	0.1
• 2 conducting paths in series	24 V	A	10
	60 V	A	3.5
	110 V	A	1.3
	220 V	A	0.9
	440 V	A	0.2
	600 V	A	0.1
• 3 conducting paths in series	24 V	A	10
	60 V	A	4.7
	110 V	A	3
	220 V	A	1.2
	440 V	A	0.5
	600 V	A	0.26
Switching frequency			
Switching frequency *z* in operating cycles/hour			
• For rated operation	AC-12/DC-12	h^{-1}	1000
For utilization category	AC-15/AC-14	h^{-1}	1000
	DC-13	h^{-1}	1000
• No-load switching frequency		h^{-1}	10000
Dependence of the switching frequency z' on the operational current I' and operational voltage U': $z' = z \cdot I_e/I' \cdot (U_e/U')^{1.5} \cdot$ 1/h			
SIRIUS and UL rated data			
Basic units and auxiliary switch blocks			
• Rated control supply voltage		V AC	max. 600
• Rated voltage		V AC	600
• Switching capacity			A 600, Q 600
• Uninterrupted current at 240 V AC		A	10

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SIRIUS 3RH2 contactor relays, 4- and 8-pole

Selection and ordering data

AC operation

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41A

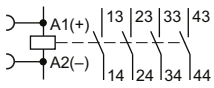
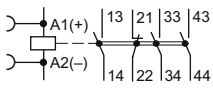
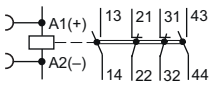
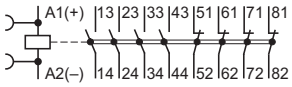
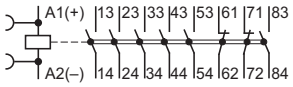
Size S00


3RH21 22-1A..0


3RH21 22-2A..0


3RH22 44-1A..0


3RH22 44-2A..0

Rated operational current I_e/AC-15/AC-14 at **230 V**	Contacts Ident. No.	Version		Rated control supply voltage U_s at 50/60 Hz[2]	DT	**Screw terminals**[1] Order No.	Price per PU	DT	**Spring-type terminals** Order No.	Price per PU
A		NO	NC	V AC						
For screw fixing and snap-on mounting onto TH 35 standard mounting rail										
Terminal designations according to EN 50011										
4 NO, Ident. No. **40E** 										
10	**40E**	4	--	24	▶	**3RH21 40-1AB00**		B	**3RH21 40-2AB00**	
				110	▶	**3RH21 40-1AF00**		B	**3RH21 40-2AF00**	
				230	▶	**3RH21 40-1AP00**		▶	**3RH21 40-2AP00**	
3 NO + 1 NC, Ident. No. **31E** 										
	31E	3	1	24	▶	**3RH21 31-1AB00**		B	**3RH21 31-2AB00**	
				110	▶	**3RH21 31-1AF00**		▶	**3RH21 31-2AF00**	
				230	▶	**3RH21 31-1AP00**		▶	**3RH21 31-2AP00**	
2 NO + 2 NC, Ident. No. **22E** 										
	22E	2	2	24	▶	**3RH21 22-1AB00**		B	**3RH21 22-2AB00**	
				110	▶	**3RH21 22-1AF00**		▶	**3RH21 22-2AF00**	
				230	▶	**3RH21 22-1AP00**		▶	**3RH21 22-2AP00**	
• **With permanently mounted auxiliary switch block**										
4 NO + 4 NC, Ident. No. **44E** 										
10[3]	**44E**	4	4	230	A	**3RH22 44-1AP00**		A	**3RH22 44-2AP00**	
6 NO + 2 NC, Ident. No. **62E** 										
	62E	6	2	230	A	**3RH22 62-1AP00**		A	**3RH22 62-2AP00**	

[1] The 3RH21 contactor relays are also available with ring terminal lug connection. Please contact your local Siemens representative for information about the special contactor versions with ring terminal lug connection.

[2] Coil operating range
at 50 Hz: 0.8 to 1.1 x U_s
at 60 Hz: 0.85 to 1.1 x U_s.

[3] The following applies for mounted auxiliary switches: I_e = 6 A for AC-15/AC-14

Other voltages according to page 5/12 on request.

Accessories see pages 5/12 to 5/14 and "Accessories for 3RT2 Contactors", Chapter 3.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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DC operation · DC solenoid system

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41A

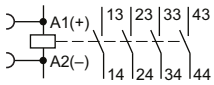
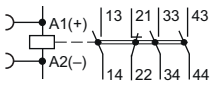
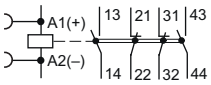
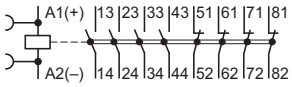
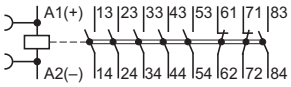
Size S00


3RH21 22-1B..0


3RH21 22-2B..0


3RH22 44-1B..0


3RH22 44-2B..0

Rated operational current I_e/AC-15/AC-14 at **230 V**	Contacts Ident. No.	Version NO	Version NC	Rated control supply voltage U_s	DT	**Screw terminals**[1] Order No.	**Screw terminals**[1] Price per PU	DT	**Spring-type terminals** Order No.	**Spring-type terminals** Price per PU
A				V DC						
For screw fixing and snap-on mounting onto TH 35 standard mounting rail										
Terminal designations according to EN 50011										
4 NO, Ident. No. **40E**										
										
10	**40E**	4	--	24	▶	**3RH21 40-1BB40**		▶	**3RH21 40-2BB40**	
				220	▶	**3RH21 40-1BM40**		B	**3RH21 40-2BM40**	
	31E	3	1	24	▶	**3RH21 31-1BB40**		▶	**3RH21 31-2BB40**	
				220	▶	**3RH21 31-1BM40**		B	**3RH21 31-2BM40**	
	22E	2	2	24	▶	**3RH21 22-1BB40**		▶	**3RH21 22-2BB40**	
				220	▶	**3RH21 22-1BM40**		B	**3RH21 22-2BM40**	
3 NO + 1 NC, Ident. No. **31E**										
										
2 NO + 2 NC, Ident. No. **22E**										
										
• **With permanently mounted auxiliary switch block**										
4 NO + 4 NC, Ident. No. **44E**										
										
10[2]	**44E**	4	4	24	▶	**3RH22 44-1BB40**		A	**3RH22 44-2BB40**	
	62E	6	2	24	▶	**3RH22 62-1BB40**		A	**3RH22 62-2BB40**	
6 NO + 2 NC, Ident. No. **62E**										
										

[1] The 3RH21 contactor relays are also available with ring terminal lug connection. Please contact your local Siemens representative for information about the special contactor versions with ring terminal lug connection.

[2] The following applies for mounted auxiliary switches: I_e = 6 A for AC-15/AC-14.

Other voltages according to page 5/12 on request.

Accessories see pages 5/12 to 5/14 and "Accessories for 3RT2 Contactors", Chapter 3.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 3RH2 contactor relays, 4- and 8-pole

Options

Rated control supply voltages
(the 10th and 11th position of the order number must be changed)

Rated control supply voltage U_s	Contactor type: Control supply voltage at	3RH21
AC operation		
Solenoid coils for 50/60 Hz and 60 Hz		
50/60 Hz[1]	**60 Hz**	
24 V AC	--	B0
42 V AC	--	D0
48 V AC	--	H0
110 V AC	--	F0
220 V AC	--	N2
230 V AC	--	P0
400 V AC	--	V0
Solenoid coils for USA and Canada[2]		
50 Hz	**60 Hz**	
110 V AC	120 V AC	K6
220 V AC	240 V AC	P6
Solenoid coils for Japan[3]		
50/60 Hz	**60 Hz**	
100 V AC	110 V AC	G6
200 V AC	220 V AC	N6
400 V AC	440 V AC	R6

Rated control supply voltage U_s	Contactor type: Control supply voltage at	3RH21
DC operation		
12 V DC		A4
24 V DC		B4
42 V DC		D4
48 V DC		W4
60 V DC		E4
110 V DC		F4
125 V DC		G4
220 V DC		M4
230 V DC		P4

1) Coil operating range
at 50 Hz: 0.8 to 1.1 x U_s
at 60 Hz: 0.85 to 1.1 x U_s

2) Coil operating range
at 50 Hz: 0.85 to 1.1 x U_s
at 60 Hz: 0.8 to 1.1 x U_s

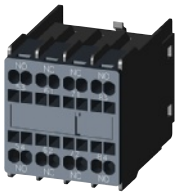
3) Coil operating range
at 50/60 Hz: 0.85 to 1.1 x U_s
at 60 Hz: 0.8 to 1.1 x U_s

Accessories

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41A



3RH29 11-1GA22



3RH29 11-2GA22

For contactor relays	Contactor relays with AS block	Auxiliary contacts		DT	Screw terminals		DT	Spring-type terminals	
	Ident. No.	Version			Order No.	Price per PU		Order No.	Price per PU
Type		NO	NC						
Auxiliary switch blocks for snapping onto the front according to EN 50011									
Size S00[1]									
For assembling contactor relays with 8 contacts									
3RH21 40, 3RH24 40, Ident. No. 40E	**80E**	4	--		**3RH29 11-1GA40**			**3RH29 11-2GA40**	
	71E	3	1		**3RH29 11-1GA31**			**3RH29 11-2GA31**	
	62E	2	2		**3RH29 11-1GA22**			**3RH29 11-2GA22**	
	53E	1	3		**3RH29 11-1GA13**			**3RH29 11-2GA13**	
	44E	--	4[2]		**3RH29 11-1GA04**			**3RH29 11-2GA04**	

1) The 3RH29 11-.GA.. auxiliary switches are also available with ring terminal lug connection. In the 8th position of the Order No. the **"1"** must be replaced with **"4"**, e.g. 3RH29 11-1GA22 ➞ 3RH29 11-**4**GA22.

Auxiliary switch blocks and solid-state compatible auxiliary switch blocks according to EN 50005 see "Accessories for 3RT2 Contactors", Chapter 3.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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For contactors	Version	Rated control supply voltage U_s[1] AC operation	DC operation	DT	Order No.[2]	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type		V AC	V DC						
Surge suppressors without LED (also for spring-type terminals)									
Size S00									
	For plugging onto the front side of the contactors (with and without auxiliary switch block)								
3RH2., 3RT2.1.	**Varistor**	24 ... 48	24 ... 70	▶	**3RT29 16-1BB00**		1	1 unit	41B
		48 ... 127	70 ... 150	▶	**3RT29 16-1BC00**		1	1 unit	41B
		127 ... 240	150 ... 250	▶	**3RT29 16-1BD00**		1	1 unit	41B
		240 ... 400	--	▶	**3RT29 16-1BE00**		1	1 unit	41B
		400 ... 600	--	A	**3RT29 16-1BF00**		1	1 unit	41B
3RH2., 3RT2.1.	**RC elements**	24 ... 48	24 ... 70	▶	**3RT29 16-1CB00**		1	1 unit	41B
		48 ... 127	70 ... 150	▶	**3RT29 16-1CC00**		1	1 unit	41B
		127 ... 240	150 ... 250	▶	**3RT29 16-1CD00**		1	1 unit	41B
		240 ... 400	--	A	**3RT29 16-1CE00**		1	1 unit	41B
		400 ... 600	--	A	**3RT29 16-1CF00**		1	1 unit	41B
3RH2., 3RT2.1.	**Noise suppression diodes**	--	12 ... 250	▶	**3RT29 16-1DG00**		1	1 unit	41B
3RH2., 3RT2.1.	**Diode assemblies** (diode and Zener diode) for DC operation	--	12 ... 250	▶	**3RT29 16-1EH00**		1	1 unit	41B



3RT29 16-1B.00

1) Can be used for AC operation for 50/60 Hz. Please inquire about further voltages.

2) For packs of 10 or 5 units **"-Z"** and order code **"X90"** must be added to the Order No.

For contactors	Version	Rated control supply voltage U_s[1] AC operation	DC operation	Power consumption P of the LED at U_s	DT	Order No.[2]	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type		V AC	V DC	mW						
Surge suppressors with LED (also for spring-type terminals)										
Size S00										
	For plugging onto the front side of the contactors (with and without auxiliary switch block)									
3RH2., 3RT2.1.	**Varistor**	24 ... 48	12 ... 24	10 ... 120	▶	**3RT29 16-1JJ00**		1	1 unit	41B
		48 ... 127	24 ... 70	20 ... 470	▶	**3RT29 16-1JK00**		1	1 unit	41B
		127 ... 240	70 ... 150	50 ... 700	▶	**3RT29 16-1JL00**		1	1 unit	41B
		--	150 ... 250	160 ... 950	A	**3RT29 16-1JP00**		1	1 unit	41B
3RH2., 3RT2.1.	**Noise suppression diodes**	--	24 ... 70	20 ... 470	▶	**3RT29 16-1LM00**		1	1 unit	41B
		--	50 ... 150	50 ... 700	A	**3RT29 16-1LN00**		1	1 unit	41B
		--	150 ... 250	160 ... 950	▶	**3RT29 16-1LP00**		1	1 unit	41B



3RT29 16-1J.00

1) Can be used for AC operation for 50/60 Hz. Please inquire about further voltages.

2) For packs of 10 or 5 units **"-Z"** and order code **"X90"** must be added to the Order No.

For contactors	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type							
Additional load modules							
Size S00							
3RH2., 3RT2.1.	**For plugging onto the front side of the contactors with or without auxiliary switch block**[1] For increasing the permissible residual current and for limiting the residual voltage. It ensures the safe opening of contactors with direct control via 230 V AC semiconductor outputs of SIMATIC controllers. It acts simultaneously as a surge suppressor. Rated voltage: AC 50/60 Hz, 180 to 255 V. Operating range: 0.8 to 1.1 x U_s	▶	**3RT29 16-1GA00**		1	1 unit	41B



3RT29 16-1GA00

1) For packs of 10 units, the Order No. must be supplemented with **"-Z"** and the order code "**X90**".

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SIRIUS 3RH2 contactor relays, 4- and 8-pole

	For contactors Type	Rated control supply voltage U_s V	Time setting range t s	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
OFF-delay devices									
	Sizes S00 and S0								
	For contactors and contactor relays with DC operation								
	Non-adjustable delay time								
 3RT29 16-2B.01	3RH2. . .-1BF40, 3RT2. 1., 3RT2. 2.	110 AC/DC	S00: > 0.1 S0:> 0.08	D	**3RT29 16-2BK01**		1	1 unit	41B
	3RH2. . .-1BM40, 3RT2. 1., 3RT2. 2.	220/230 AC/DC	S00: > 0.5 S0: > 0.3	D	**3RT29 16-2BL01**		1	1 unit	41B
	3RH2. . .-1BB40, 3RT2. 1., 3RT2. 2.	24 DC	S00: > 0.2 S0: > 0.1	A	**3RT29 16-2BE01**		1	1 unit	41B

Technical specifications see "Accessories for 3RT20 Contactors", Chapter 3.

	For contactors Type	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Control kit								
	Size S00							
 3RT29 16-4MC00	3RH2., 3RT2.1.	For manual operation of the contactor contacts for start-up and service	A	**3RT29 16-4MC00**		1	5 units	41B
Sealable covers								
	Sizes S00 and S0							
 3RT29 16-4MA10	3RH2. [1], 3RT2. 1., 3RT2. 2.	Sealable covers for preventing manual operation	A	**3RT29 16-4MA10**		1	5 units	41B

[1] Exception: contactors and contactor relays auxiliary switch block mounted onto the front.

	Version	DT	Spring-type terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Insulation stop for securely holding back the conductor insulation on conductors up to 1 mm²							
 3RT19 16-4JA02	**Insulation stop strip** can be inserted in cable entry of the spring-type terminal (2 strips per contactor required)						
	• For basic devices S00 (3RT20 1. or 3RH2.), removable individually	B	**3RT29 16-4JA02**		1	20 units	41B
	• For auxiliary and control current on basic devices size S0 (3RT20 2.) and for mountable 3RH29 auxiliary switches, removable in pairs	B	**3RT19 16-4JA02**		1	20 units	41B
Tools for opening spring-type terminals							
 3RA29 08-1A	**Screwdrivers** for all SIRIUS devices with spring-type terminals Length: approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray/black, partially insulated	A	**3RA29 08-1A**		1	1 unit	41B
System manuals for Industrial Controls – SIRIUS Innovations							
	• German	C	**3ZX1012-0RA01-1AB1**		1	1 unit	401
	• English	C	**3ZX1012-0RA01-1AC1**		1	1 unit	401
	• French	C	**3ZX1012-0RA01-1AD1**		1	1 unit	401
	• Spanish	C	**3ZX1012-0RA01-1AE1**		1	1 unit	401

More accessories see "Accessories for 3RT2 Contactors", Chapter 3.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RH24 latched contactor relays, 4-pole

Overview

Standards

IEC 60947-1, EN 60947-1,
IEC 60947-5-1, EN 60947-5-1

The terminal designations comply with EN 50011.

Auxiliary switches

The number of auxiliary contacts can be extended by means of front auxiliary switch blocks (max. 4 contacts).

Control circuits

The contactor coil and the coil of the release solenoid are both designed for uninterrupted duty.

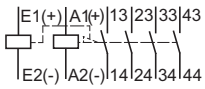
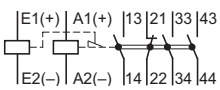
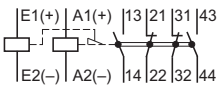
RC elements, varistors diodes or diode assemblies can be fitted to both coils from the front for damping opening surges in the coil.

The contactor relay can also be switched on and released manually. Minimum actuating times see "Technical Specifications", page 5/8.

Selection and ordering data



3RH24 22-1A..0

Rated operational current I_e/AC-15/AC-14 at **230 V**	Contacts Ident. No. acc. to EN 50011	Version NO	Version NC	Rated control supply voltage U_s	DT	**Screw terminals** Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A				V						
For screw fixing and snap-on mounting onto TH 35 standard mounting rail										
Terminal designations according to EN 50011										
4 NO, Ident. No. **40E** 										
3 NO + 1 NC, Ident. No. **31E** 										
2 NO + 2 NC, Ident. No. **22E** 										
AC operation										
				AC 50/60 Hz[1]						
10	**40 E**	4	--	24	B	**3RH24 40-1AB00**		1	1 unit	41A
				110	B	**3RH24 40-1AF00**		1	1 unit	41A
				230	B	**3RH24 40-1AP00**		1	1 unit	41A
	31 E	3	1	24	B	**3RH24 31-1AB00**		1	1 unit	41A
				110	B	**3RH24 31-1AF00**		1	1 unit	41A
				230	B	**3RH24 31-1AP00**		1	1 unit	41A
	22 E	2	2	24	B	**3RH24 22-1AB00**		1	1 unit	41A
				110	B	**3RH24 22-1AF00**		1	1 unit	41A
				230	B	**3RH24 22-1AP00**		1	1 unit	41A
DC operation · DC solenoid system										
				DC						
10	**40 E**	4	--	24	B	**3RH24 40-1BB40**		1	1 unit	41A
				110	B	**3RH24 40-1BF40**		1	1 unit	41A
				220	B	**3RH24 40-1BM40**		1	1 unit	41A
	31 E	3	1	24	B	**3RH24 31-1BB40**		1	1 unit	41A
				110	B	**3RH24 31-1BF40**		1	1 unit	41A
				220	B	**3RH24 31-1BM40**		1	1 unit	41A
	22 E	2	2	24	B	**3RH24 22-1BB40**		1	1 unit	41A
				110	B	**3RH24 22-1BF40**		1	1 unit	41A
				220	B	**3RH24 22-1BM40**		1	1 unit	41A

[1] Coil operating range
at 50 Hz: 0.8 to 1.1 x U_s
at 60 Hz: 0.85 to 1.1 × U_s

Accessories see pages 5/12 and 5/13.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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3TH4 contactor relays, 8- and 10-pole

Overview

Standards

IEC 60947-1, EN 60947-1,
IEC 60947-5-1, EN 60947-5-1

The 3TH42 and 3TH43 contactor relays are suitable for use in any climate. They are finger-safe according to EN 50274.

Terminal designations acc. to EN 50011

In terms of their terminal designations, identification numbers and identification letters, the 3TH42/3TH43 contactor relays conform to standard EN 50011 for Specific Contactor Relays.

Contact reliability

High contact stability at low voltages and currents thanks to the use of moving double-break contacts, suitable for solid-state circuits with currents ≥ 1 mA at a voltage of ≥ 17 V.

Surge suppression

The 3TH42 and 3TH43 contactor relays can be equipped with RC elements, varistors, diodes or diode assemblies (combination of a diode and a Zener diode) for damping opening surges. The surge suppressors can be mounted directly on the coil (see "Accessories", page 5/22).

Note:

The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 10 times; diode assembly 2 to 6 times, varistor +2 to 5 ms).

Technical specifications

Contactor relays	Type	3TH42, 3TH43

Contact endurance for AC-15/AC-14 and DC-13 utilization categories

The contact endurance is mainly dependent on the breaking current. It is assumed that the operating mechanisms are switched randomly, i.e. not synchronized with the phase angle of the supply system.

If magnetic circuits other than the contactor coil systems or solenoid valves are present, e.g. magnetic brakes, protective measures for the load circuits are necessary.

RC elements or freewheel diodes are suitable as protective measures for the circuits.

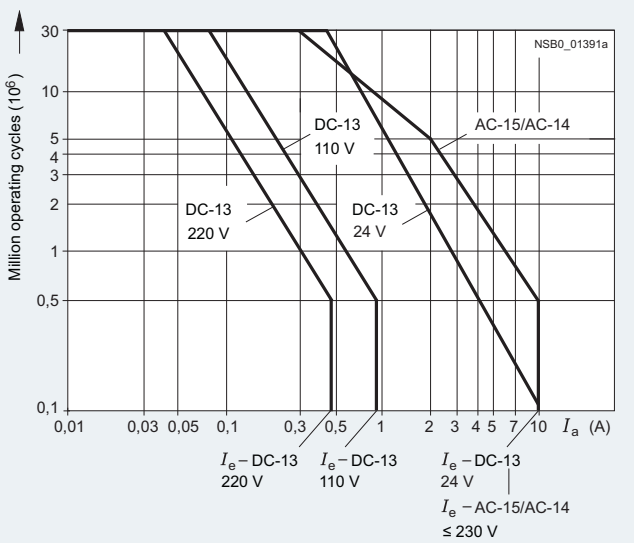
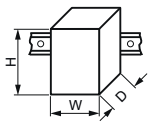
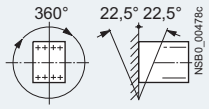
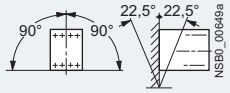


Diagram legend:
P_{rated} = Rated power for squirrel-cage motors at 400 V
I_a = Breaking current
I_e = Rated operational current

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Type			**3TH42**	**3TH43**
Dimensions (W x H x D)				
• AC operation		mm	45 x 78 x 97	55 x 78 x 97
• DC operation		mm	45 x 78 x 130	55 x 78 x 130
General technical specifications				
Permissible mounting positions				
The contactor relays are designed for operation on a vertical mounting surface.				
• AC operation				
• DC operation				
Upright mounting position AC and DC operation			 Special version required	
Mechanical endurance	Basic units	Operating cycles	30 million	
Rated insulation voltage U_i (pollution degree 3)		V	690	
Rated impulse withstand voltage U_{imp}		kV	8	
Protective separation between the coil and the main contacts acc. to IEC 60947-1, Appendix N		V	Up to 500	
Permissible ambient temperature				
• During operation		°C	-25 ... +55	
• During storage		°C	-55 ... +80	
Degree of protection acc. to IEC 60947-1, Appendix C			IP20	
Shock resistance				
• Rectangular pulse				
- AC operation		*g*/ms	7.7/5 and 4.4/10	
- DC operation		*g*/ms	9.3/5 and 5.4/10	
• Sine pulse				
- AC operation		*g*/ms	12/5 and 6.8/10	
- DC operation		*g*/ms	14.7/5 and 8.5/10	
Short-circuit protection				
• Short-circuit test with fuse links of gG operational class: Short-circuit current I_k = 1 kA acc. to IEC 60947-5-1				
- LV HRC, type 3NA		A	16	
- DIAZED, type 5SB		A	16	
- NEOZED Type 5SE, quick		A	20	
• Short-circuit test with miniature circuit breaker up to 230 V: Short-circuit current I_k = 400 A acc. to IEC 60947-5-1				
- C Characteristic		A	16	
- B Characteristic		A	16	
cULus and cULus rated data				
Basic units				
Rated control supply voltage U_s			Max. 600 V AC, 230 V DC (acc. to UL 240 V DC)	
Rated voltage			600 V AC, 600 V DC	
Switching capacity			A 600, P 600	
Conductor cross-sections				
			Screw terminals	
• Solid		mm^2	2 x (0.5 ... 1)[1]; 2 x (1 ... 2.5)[1]; 1 x 4	
• Finely stranded with end sleeve		mm^2	2 x (0.75 ... 2.5)	
• Terminal screw			M3.5	

[1] If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

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3TH4 contactor relays, 8- and 10-pole

Contactor relays	Type	3TH42, 3TH43
Control circuits		
Coil operating range		
AC operation		0.8 ... 1.1 x U_s [1]
DC operation (except 24 V)		0.8 ... 1.1 x U_s
• At 24 V DC		0.8 ... 1.2 x U_s
Power consumption of the solenoid coils (when coil is cold and 1.0 x U_s)		
• AC operation, 50 Hz, standard version		
- Closing	VA/p.f.	68/0.82
- Closed	VA/p.f.	10/0.29
• AC operation, 50/60 Hz, standard version		
- Closing, 50 Hz	VA/p.f.	77/0.81
- Closed, 50 Hz	VA/p.f.	11/0.28
- Closing, 60 Hz	VA/p.f.	71/0.75
- Closed, 60 Hz	VA/p.f.	9/0.27
• AC operation, 50 Hz, USA/Canada		
- Closing	VA/p.f.	68/0.82
- Closed	VA/p.f.	10/0.29
• AC operation, 60 Hz, USA/Canada		
- Closing	VA/p.f.	75/0.76
- Closed	VA/p.f.	9.4/0.29 ... 0.3
• AC operation, 50 Hz, Japan		
- Closing	VA/p.f.	80/0.8
- Closed	VA/p.f.	10.7/0.29
• AC operation, 60 Hz, Japan		
- Closing	VA/p.f.	75 ... 90/0.73
- Closed	VA/p.f.	8.5 ... 10.7/0.29 ... 0.3
• DC operation up to 250 V Closing = Closed	W	6.2
Permissible residual current of the electronics (with 0 signal)		
• For AC operation		≤8 mA x (220 V/U_s)
• For DC operation		≤1.25 mA x (220 V/U_s)
Operating times [2] Total break time = OFF-delay + arcing time (the values apply up to and including 20 % undervoltage, 10 % overvoltage, and with the coil in the cold state and at operating temperature)		
AC operation		
• Closing		
- ON-delay NO	ms	8 ... 35
- OFF-delay NC	ms	6 ... 20
• Opening		
- OFF-delay NO	ms	4 ... 18
- ON-delay NC	ms	5 ... 30
• Arcing time	ms	10
DC operation		
• Closing		
- ON-delay NO	ms	20 ... 170
- OFF-delay NC	ms	18 ... 110
• Opening		
- OFF-delay NO	ms	10 ... 25
- ON-delay NC	ms	15 ... 30
Arcing time	ms	10
Operating times [2] **for 1.0 x U_s**		
AC operation		
• Closing		
- ON-delay NO	ms	10 ... 25
- OFF-delay NC	ms	7 ... 20
• Opening		
- OFF-delay NO	ms	5 ... 18
- ON-delay NC	ms	7 ... 20
DC operation		
• Closing		
- ON-delay NO	ms	30 ... 70
- OFF-delay NC	ms	28 ... 65
• Opening		
- OFF-delay NO	ms	10 ... 20
- ON-delay NC	ms	15 ... 25

[1] Coils for USA, Canada and Japan: 0.85 ... 1.1 U_s at 60 Hz.

[2] The OFF-delay of the NO contacts and the ON-delay of the NC contacts are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 9 times; diode assembly 2 to 6 times, varistor +2 to 5 ms).

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Contactor relays	Type		3TH42, 3TH43
Load side			
AC capacity			
Rated operational currents I_e			
AC-12		A	16
AC-15/AC-14 for rated operational voltage U_e			
	230 V	A	10
	400 V	A	6
	500 V	A	4
	690 V	A	2
Rated power of induction motors Acc. to utilization categories AC-2 and AC-3, 50 Hz			
	230/220 V	kW	2.4
	400/380 V	kW	4
	500 V	kW	4
	690/660 V	kW	4
Load rating with DC			
Rated operational currents I_e			
DC-12, for rated operational voltage U_e			
• 1 conducting path			
	Up to 48 V	A	10
	110 V	A	2.1
	220 V	A	0.8
	440 V	A	0.6
• 2 conducting paths in series			
	Up to 48 V	A	10
	110 V	A	10
	220 V	A	1.6
	440 V	A	0.8
• 3 conducting paths in series			
	Up to 48 V	A	10
	110 V	A	10
	220 V	A	10
	440 V	A	1.3
DC-13, for rated operational voltage U_e			
• 1 conducting path			
	Up to 24 V	A	10
	48 V	A	5
	110 V	A	1
	220 V	A	0.45
	440 V	A	0.25
	600 V	A	0.2
• 2 conducting paths in series			
	Up to 24 V	A	10
	48 V	A	10
	110 V	A	2.5
	220 V	A	0.75
	440 V	A	0.5
	600 V	A	0.4
• 3 conducting paths in series			
	Up to 24 V	A	10
	48 V	A	10
	110 V	A	10
	220 V	A	2
	440 V	A	0.9
	600 V	A	0.8
Switching frequency			
Switching frequency z[1] in operating cycles/hour			
For rated operation	AC-12/DC-12	h^{-1}	1000
For utilization category	AC-2	h^{-1}	500
	AC-3	h^{-1}	1000
	AC-15/AC-14	h^{-1}	3600
	DC-13	h^{-1}	3600
	No-load switching frequency	h^{-1}	10000

[1] Dependence of the switching frequency z' on the operational current I' and operational voltage U': $z' = z \cdot I_e/I' \cdot (U_e/U')^{1.5} \cdot$ 1/h.

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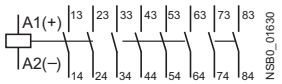
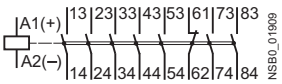
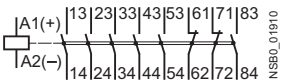
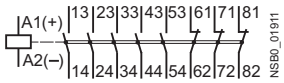
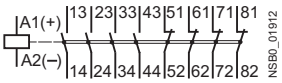
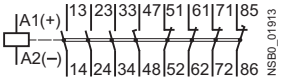
3TH4 contactor relays, 8- and 10-pole

Selection and ordering data

8-pole contactor relays



3TH42 . .-0. . .

Contacts	Rated operational current I_e/AC-15/AC-14 at				Contacts				DT	Screw terminals		PU (UNIT, SET, M)	PS*	PG
	230/ 220 V	400/ 380 V	500 V	690/ 660 V	Ident. No. acc. to EN 50011	Version				Order No.	Price per PU			
						NO	NC	NO	NC					
Number	**A**	A	A	A										
For screw fixing and snap-on mounting onto TH 35 standard mounting rail														
Terminal designations according to EN 50011														
8 NO, Ident. No. **80E** 														
7 NO + 1 NC, Ident. No. **71E** 														
6 NO + 2 NC, Ident. No. **62E** 														
5 NO + 3 NC, Ident. No. **53E** 														
4 NO + 4 NC, Ident. No. **44E** 														
3 NO + 3 NC and 1 NO + 1 NC make-before-break, Ident. No. **44E, U** 														
AC operation, rated control supply voltage U_S = 50 Hz 230/220 V AC[1]														
8	**10**	6	4	2	**80 E**	8	--	--	--	▶	**3TH42 80-0AP0**	1	1 unit	41A
					71 E	7	1	--	--	▶	**3TH42 71-0AP0**	1	1 unit	41A
					62 E	6	2	--	--	D	**3TH42 62-0AP0**	1	1 unit	41A
					53 E	5	3	--	--	▶	**3TH42 53-0AP0**	1	1 unit	41A
					44 E	4	4	--	--	▶	**3TH42 44-0AP0**	1	1 unit	41A
					44 E, U	3	3	1	1	▶	**3TH42 93-0AP0**	1	1 unit	41A
DC operation · DC solenoid system, rated control supply voltage U_S = 24 V DC														
8	**10**	6	4	2	**80 E**	8	--	--	--	▶	**3TH42 80-0BB4**	1	1 unit	41A
					71 E	7	1	--	--	▶	**3TH42 71-0BB4**	1	1 unit	41A
					62 E	6	2	--	--	▶	**3TH42 62-0BB4**	1	1 unit	41A
					53 E	5	3	--	--	▶	**3TH42 53-0BB4**	1	1 unit	41A
					44 E	4	4	--	--	▶	**3TH42 44-0BB4**	1	1 unit	41A
					44 E, U	3	3	1	1	▶	**3TH42 93-0BB4**	1	1 unit	41A

[1] Operating range at 220 V: 0.85 to 1.1 x U_S; lower operating range limit according to IEC 60947.

Other voltages according to page 5/22 on request.

Accessories see pages 5/22 and 5/23.

Note:

The solenoid coils of the 3TH42 contactor relays are available in various voltages as spare parts (on request).

- AC operation: 3TY7 403-0A..
- DC operation: 3TY4 803-0B..

The contacts cannot be replaced on 3TH42 contactor relays.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3TH4 contactor relays, 8- and 10-pole

10-pole contactor relays



3TH43 . .-0A. .

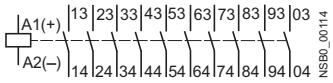


3TH43 . .-0B. .

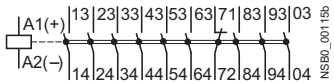
Contacts	Rated operational current I_e/AC-15/AC-14 at				Contacts				DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
	230 V	400 V	500 V	690 V	Ident. No. acc. to EN 50011	Version				Order No. Price per PU			
Number	A	A	A	A		NO	NC	NO	NC				
For screw fixing and snap-on mounting onto TH 35 standard mounting rail													

Terminal designations according to EN 50011

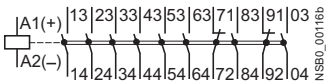
10 NO, Ident. No. **100E**



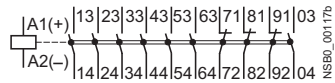
9 NO + 1 NC, Ident. No. **91E**



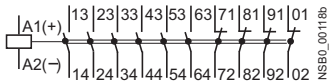
8 NO + 2 NC, Ident. No. **82E**



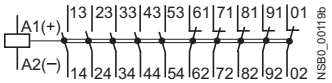
7 NO + 3 NC, Ident. No. **73E**



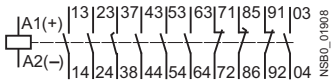
6 NO + 4 NC, Ident. No. **64E**



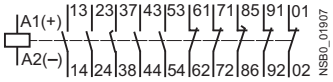
5 NO + 5 NC, Ident. No. **55E**



6 NO + 2 NC and 1 NO + 1 NC make-before-break, Ident. No. **63E, 11U**



4 NO + 4 NC and 1 NO + 1 NC make-before-break, Ident. No. **44E, 11U**



AC operation, rated control supply voltage U_s = 50 Hz 230/220 V AC[1)]

10	**10**	6	4	2	**100 E**	10	--	--	--	▶	**3TH43 10-0AP0**	1	1 unit	41A
					91 E	9	1	--	--	▶	**3TH43 91-0AP0**	1	1 unit	41A
					82 E	8	2	--	--	▶	**3TH43 82-0AP0**	1	1 unit	41A
					73 E	7	3	--	--	▶	**3TH43 73-0AP0**	1	1 unit	41A
					73 E, U	6	2	1	1	▶	**3TH43 46-0AP0**	1	1 unit	41A
					64 E	6	4	--	--	▶	**3TH43 64-0AP0**	1	1 unit	41A
					55 E	5	5	--	--	▶	**3TH43 55-0AP0**	1	1 unit	41A
					55 E, U	4	4	1	1	▶	**3TH43 94-0AP0**	1	1 unit	41A

DC operation · DC solenoid system, rated control supply voltage U_s = 24 V DC[1)]

10	**10**	6	4	2	**100 E**	10	--	--	--	▶	**3TH43 10-0BB4**	1	1 unit	41A
					91 E	9	1	--	--	▶	**3TH43 91-0BB4**	1	1 unit	41A
					82 E	8	2	--	--	▶	**3TH43 82-0BB4**	1	1 unit	41A
					73 E	7	3	--	--	▶	**3TH43 73-0BB4**	1	1 unit	41A
					73 E, U	6	2	1	1	▶	**3TH43 46-0BB4**	1	1 unit	41A
					64 E	6	4	--	--	▶	**3TH43 64-0BB4**	1	1 unit	41A
					55 E	5	5	--	--	▶	**3TH43 55-0BB4**	1	1 unit	41A
					55 E, U	4	4	1	1	▶	**3TH43 94-0BB4**	1	1 unit	41A

[1)] Operating range at 220 V: 0.85 to 1.1 x U_s; lower operating range limit according to IEC 60947.

Other voltages according to page 5/22 on request.

Accessories see pages 5/22 and 5/23.

Note:

The solenoid coils of the 3TH42 contactor relays are available in various voltages as spare parts (on request).

- AC operation: 3TY7 403-0A..
- DC operation: 3TY4 803-0B..

The contacts cannot be replaced on 3TH42 contactor relays.

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3TH4 contactor relays, 8- and 10-pole

Options

Rated control supply voltages
(the 10th and 11th position of the order number must be changed)

Rated control supply voltage U_s	Control supply voltage at	Contactor type 3TH42/3TH43
AC operation		
Solenoid coils for AC 50 Hz		
50 Hz	**60 Hz**	
24 V AC	29 V AC	B0
36 V AC	42 V AC	G0
42 V AC	50 V AC	D0
48 V AC	58 V AC	H0
60 V AC	72 V AC	E0
110 V AC	132 V AC	F0
125/127 V AC	150/152 V AC	L0
230/220 V AC	276 V AC	P0 [1]
240 V AC	288 V AC	U0
400/380 V AC	480/460 V AC	V0 [1]
415 V AC	500 V AC	R0
500 V AC	600 V AC	S0
For Japan		
100 V AC	100-110 V AC	G6 [2]
200 V AC	200-220 V AC	N6 [2]
For USA and Canada		
110 V AC	120 V AC	K6 [2]
220 V AC	240 V AC	P6 [2]

Rated control supply voltage U_s	Contactor type 3TH42/3TH43
Solenoid coils for AC 50 and 60 Hz	
50/60 Hz	
24 V AC	C2
42 V AC	D2
110 V AC	G2
115 V AC	J2
120 V AC	K2
220 V AC	N2
230 V AC	L2
240 V AC	P2
440 V AC	R2
DC operation	
12 V DC	A4
24 V DC	B4
30 V DC	C4
36 V DC	V4
42 V DC	D4
48 V DC	W4
60 V DC	E4
110 V DC	F4
125 V DC	G4
220 V DC	M4
230 V DC	P4
240 V DC	Q4

[1] Operating range at 220 V or 380 V: 0.85 to 1.1 x U_s

[2] Operating range at 60 Hz: 0.85 to 1.1 x U_s

Accessories

Version	Rated control supply voltage U_s AC V	DC V	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Surge suppressors [1] for 3TH4 contactor relays								
 3TX7 402-3. **Noise suppression diodes** with line spacer, for mounting onto the coil terminal	--	24 ... 250	A	**3TX7 402-3A**		1	1 unit	41B
Diode assemblies (diode and Zener diode) with line spacer, DC operation, for mounting onto the coil terminal	--	24 ... 250	A	**3TX7 402-3D**		1	1 unit	41B
Varistors [2] with line spacer, for mounting onto the coil terminal	24 ... 48	24 ... 70	A	**3TX7 402-3G**		1	1 unit	41B
	48 ... 127	70 ... 150	A	**3TX7 402-3H**		1	1 unit	41B
	127 ... 240	150 ... 250	A	**3TX7 402-3J**		1	1 unit	41B
	240 ... 400	--	C	**3TX7 402-3K**		1	1 unit	41B
	400 ... 600	--	C	**3TX7 402-3L**		1	1 unit	41B
RC elements with line spacer, for mounting onto the coil terminal	24 ... 48	24 ... 70	A	**3TX7 402-3R**		1	1 unit	41B
	48 ... 127	70 ... 150	A	**3TX7 402-3S**		1	1 unit	41B
	127 ... 240	150 ... 250	A	**3TX7 402-3T**		1	1 unit	41B
	240 ... 400	--	C	**3TX7 402-3U**		1	1 unit	41B
	400 ... 600	--	C	**3TX7 402-3V**		1	1 unit	41B
Covers for switch position indicator	--	--	B	**3TX4 210-0P**		1	1 unit	41B

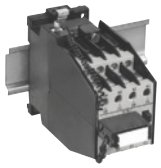
[1] The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 10 times; diode assembly 2 to 6 times, varistor +2 to 5 ms).

[2] Includes the peak value of the alternating voltage on the DC side.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3TH4 contactor relays, 8- and 10-pole

	For contactors	Version	Rated control supply voltage U_s AC 50/60 Hz	Time setting range (minimum times)	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
	Type		V	s		Order No. / Price per PU			
ON-delay devices									
 3TX4 180-0A	3TH42, 3TH43	**NTC thermistors** Time tolerance +100 %, -50 %	220 ... 230	0.1	B	**3TX4 180-0A**	1	1 unit	41A
Coupling links for control by PLC for 3TH4 contactor relays									
 3TX4 090 mounted to contactor	3TH42, 3TH43	Operating range: 17 to 30 V DC Power consumption: 0.5 W at 24 V DC							
		• For mounting directly to contactor coil **without** surge suppressor			A	**3TX4 090-0C**	1	1 unit	41B
		• For mounting directly to contactor coil **with** surge suppressor			A	**3TX4 090-0D**	1	1 unit	41B

	For contactors	Rated control supply voltage U_s		OFF-delay (minimum times)	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
		50/60 Hz AC	DC			Order No. / Price per PU			
	Type	V	V	s					
OFF-delay devices for contactors with DC operation									
	Bridging of voltage interruptions up to 1.2 sec								
 3TX4 701-0AN1	3TH42 . .-0BF4 3TH43 . .-0BF4	110	--	0.15 or 0.3	A	**3TX4 701-0AN1**	1	1 unit	41B
	3TH42 . .-0BM4 3TH43 . .-0BM4	220	--	0.6 or 1.2	A	**3TX4 701-0AN1**	1	1 unit	41B
	3TH42 . .-0BP4 3TH43 . .-0BP4	230	--	0.6 or 1.2	A	**3TX4 701-0AN1**	1	1 unit	41B
	3TH42 . .-0BB4 3TH43 . .-0BB4	--	24	0.4 or 0.8	B	**3TX4 701-0BB4**	1	1 unit	41B

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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3TH2 contactor relays, 4- and 8-pole

Overview

Standards

IEC 60947-1, EN 60947-1,
IEC 60947-5-1, EN 60947-5-1

The terminal designations comply with EN 50011.

The 3TH2 contactor relays are suitable for use in any climate.

The contactor relays with screw terminal are finger-safe according to EN 50274.

Connections

The 3TH20 contactor relays with 4 auxiliary contacts are available with SIGUT screw terminals, 6.3 mm x 0.8 mm flat connectors and solder pin connections.

The contactor relays with 6.3 mm x 0.8 mm flat connectors can be used in the plug-in base with solder pin connections for printed circuit boards. The contactor relays are coded and the plug-in base is codable in order to ensure non-interchangeability.

The 3TH22 contactor relays with 8 integrated contacts are available with screw terminals. The terminal designations are according to EN 50011.

Contact reliability

High contact stability at low voltages and currents, particularly suitable for solid-state circuits with currents ≥ 1 mA at a voltage of ≥ 17 V.

3TH27 latched contactor relays

The contactor coil and the coil of the release solenoid are both designed for uninterrupted duty.

RC elements, varistors diodes or diode assemblies can be fitted to both coils from the front for damping opening surges in the coil.

The contactor relay can also be switched on and released manually.

Accessories

Auxiliary switch blocks

The contactor relays with 4 contacts with screw terminals relays can be expanded by up to 4 contacts by the addition of snap-on auxiliary switch blocks (see Accessories, page 5/30).

A cover (with unit labeling plate) must be removed from the front of the contactor relay for this purpose. The auxiliary switch block is then easy to mount. The auxiliary switch blocks can be removed again by unlocking them with a laterally arranged orange slide.

The contactor relays with screw terminals with 4 contacts according to EN 50011, with the identification number 40E, can be extended with 80E, 71E, 62E, 53E or 44E auxiliary switch blocks to obtain contactor relays with 8 contacts according to EN 50011. The identification numbers 80E, 71E, 62E, 53E or 44E on the coded auxiliary switch blocks apply to the complete contactors. These auxiliary switch blocks cannot be combined with contactor relays with identification number 31E and 33E.

All contactor relays with screw terminals with 4 contacts according to EN 50011, identification number 40E, 31E or 22E, can be extended with auxiliary switch blocks with identification number 40, 31, 22, 20, 11 or 02 to obtain contactor relays with 6 or 8 contacts according to EN 50005. The identification numbers on the auxiliary switch blocks apply only to the attached auxiliary switch blocks.

Surge suppression

RC elements, varistors, diodes or diode assemblies (combination of a diode and a Zener diode for short break times) can be plugged onto all contactors and auxiliary switch blocks with screw terminals from the front in order to damp opening surges in the coil (see Accessories, page 5/31).

The unit labeling plate must be removed for this purpose. It can be snapped onto the attached surge suppressor.

Additional load module

The 3TX4 490-1J additional load module (see Accessories, page 5/31) can be used by programmable logic controllers to increase the permissible residual current and to limit the residual voltage of semiconductor outputs.

This module ensures the safe opening of 3TH2 and 3TF2 contactor relays with direct control through 230 V AC semiconductor outputs. It is accommodated in the same enclosure as the 3TX4 490-3. surge suppressors and can be plugged into the contactor.

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Technical specifications

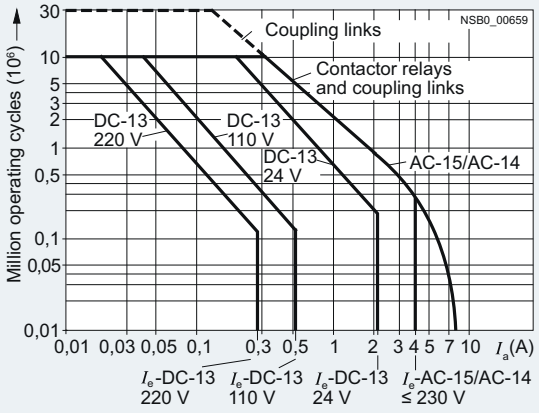
Contactor relays	Type	3TH2

Contact endurance for AC-15/AC-14 and DC-13 utilization categories

The contact endurance is mainly dependent on the breaking current. It is assumed that the operating mechanisms are switched randomly, i.e. not synchronized with the phase angle of the supply system.

If magnetic circuits other than the contactor coil systems or solenoid valves are present, e.g. magnetic brakes, protective measures for the load circuits are necessary. RC elements or freewheel diodes are suitable as protective measures for the circuits.

Legend for the diagram:
I_e = Rated operational current
I_a = Breaking current



Positively-driven operation of contacts in contactor relays

3TH20:
Yes, in the basic unit and the auxiliary switch block as well as between the basic unit and the snap-on auxiliary switch block (removable) acc. to:
- ZH 1/457
- IEC 60947-5-1, Appendix L

3TH22:
Yes, in the basic unit and the auxiliary switch block as well as between the basic unit and the snap-on auxiliary switch block (permanently mounted) acc. to:
- ZH 1/457
- IEC 60947-5-1, Appendix L
- SUVA

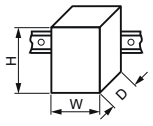
Explanations:

There is positively-driven operation if it is ensured that the NC and NO contacts cannot be closed at the same time.

ZH1/457
Safety rules for control units on power-operated presses in the metal-working industry.

IEC 60947-5-1, Appendix L
Low-Voltage Controlgear, Control Equipment and Switching Elements. Special requirements for positively-driven contacts

SUVA
Accident prevention regulations of the "Schweizer Unfallverhütungsanstalt" (Swiss Institute for Accident Insurance)



			Contactor relays		Auxiliary switch blocks
Type			3TH20 ..-....	3TH22 ..-....	3TX4 ...-..
Dimensions (W x H x D)		mm	45 x 48 x 63	45 x 48 x 91	45 x 33 x 28
• With 3TX4 490 surge suppressor		mm	45 x 48 x 88	45 x 48 x 116	--
General technical specifications					
Permissible mounting positions	AC and DC operation		Any		
Mechanical endurance	• AC operation • DC operation	Operating cycles	10 million 30 million		
Rated insulation voltage U_i (pollution degree 3)					
• Screw terminals		V	690	500	500
• Flat connectors 6.3 mm x 0.8 mm		V	500	--	--
• Solder pin connections		V	500	--	--
Rated impulse withstand voltage U_{imp} (pollution degree 3)					
• Screw terminals		kV	6	6	6
• Flat connectors 6.3 mm x 0.8 mm		kV	6	--	--
• Solder pin connections		kV	6	--	--
Protective separation between coil and contacts (according to IEC 60947-1, Appendix N)		V	Up to 300		
Permissible ambient temperature[1]	• During operation • During storage	°C °C	-25 ... +55 -55 ... +80		
Degree of protection acc. to IEC 60947-1 Appendix C			IP00 open IP20 for screw terminals IP40 coil assembly		
Touch protection acc. to EN 50274			Finger-safe for screw terminals		
Shock resistance					
• Rectangular pulse	- AC operation - DC operation	g/ms g/ms	7/5 and 4/10 10/5 and 6/10		
• Sine pulse	- AC operation - DC operation	g/ms g/ms	9/5 and 6/10 13/5 and 8/10		
Conductor cross-sections			[2]		

[1] Applies to 50/60 Hz coil:
Operating range at 60 Hz: 0.85 ... 1.1 x U_s;
at 50 Hz, 1.1 x U_s, side-by-side mounting and 100 % ON period the maximum ambient temperature is +40 °C.

[2] For conductor cross-sections see page 5/26.

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3TH2 contactor relays, 4- and 8-pole

Contactor relays	Type		3TH2
Short-circuit protection			
Short-circuit test with fuse links of gG operational class: LV HRC, type 3NA; DIAZED, type 5SB; NEOZED, type 5SE with short-circuit current I_k = 1 kA acc. to IEC 60947-5-1		A	6
Conductor cross-sections			
Main and auxiliary conductors			**Screw terminals**
• Solid		mm^2	2 x (0.5 ... 2.5)
• Finely stranded with end sleeve		mm^2	2 x (0.5 ... 1.5)
• Terminal screw			M3
			Flat connectors
• Finely stranded When using a plug-in sleeve	- 6.3 ... 1 - 6.3 ... 2.5	mm^2 mm^2	0.5 ... 1 1 ... 2.5
			Solder pin connections (only for printed circuit boards)
• Solder pin cross-section	(does not apply to plug-in bases)	mm^2	0.8 x 1.2
Control circuits			
Coil operating range[1]			0.8 ... 1.1 x U_s
Power consumption of the solenoid coils (when coil is cold and 1.0 x U_s)			
• AC operation, 50 Hz	Closing P.f. Closed P.f.	VA VA 	15 0.41 6.8 0.42
• AC operation, 60 Hz	Closing P.f. Closed P.f.	VA VA 	14.4 0.36 6.1 0.46
• AC operation, 50/60 Hz[1]	Closing P.f. Closed P.f.	VA VA 	16.5/13.2 0.43/0.38 8.0/5.4 0.48/0.42
• DC operation	Closing = Closed	W	3
Permissible residual current of the electronics (with 0 signal)	AC operation DC operation	mA mA	≤3 x (220 V/U_s) ≤1 x (220 V/U_s)
Operating times for 0.8 ... 1.1 x U_s[2] Total break time = Opening delay + Arcing time Values apply with coil in cold state and at operating temperature for operating range			
• AC operation			
- Closing	ON-delay NO OFF-delay NC	ms ms	5 ... 20 4 ... 12
- Opening	OFF-delay NO ON-delay NC	ms ms	3 ... 24 3 ... 20
• DC operation			
- Closing	ON-delay NO OFF-delay NC	ms ms	16 ... 140 13 ... 40
- Opening	OFF-delay NO ON-delay NC	ms ms	3 ... 6 4 ... 10
• Arcing time		ms	10
Operating times for 1.0 x U_s[2]			
• AC operation			
- Closing	ON-delay NO OFF-delay NC	ms ms	6 ... 17 5 ... 12
- Opening	OFF-delay NO ON-delay NC	ms ms	3 ... 24 5 ... 20
• DC operation			
- Closing	ON-delay NO OFF-delay NC	ms ms	18 ... 42 15 ... 26
- Opening	OFF-delay NO ON-delay NC	ms ms	3 ... 5 4 ... 10

1) Applies to 50/60 Hz coil
Operating range at 60 Hz: 0.85 ... 1.1 x U_s;
at 50 Hz, 1.1 x U_s, side-by-side mounting and 100 % ON period the maximum ambient temperature is +40 °C.

2) The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 10 times; diode assembly 2 to 6 times, varistor +2 to 5 ms).

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Contactor relays	Type		3TH2
Load side			
AC capacity			
Utilization category AC-12			
Rated operational current I_e (at 60 °C)		A	10
Utilization categories AC-15 and AC-14			
Rated operational current I_e For rated operational voltage U_e			
	230/220 V	A	4
	400/380 V	A	3
	500 V	A	2
	690/660 V	A	1
Rated power of induction motors			
Acc. to utilization category	110 V	kW	0.2
AC-2 and AC-3	230/220 V	kW	0.55
	400/380 V	kW	1.1
	500 V	kW	1.5
	690/660 V	kW	1.5
Load rating with DC			
Utilization category DC-12		A	10
Rated operational current I_e For rated operational voltage U_e			
• 1 conducting path[1)]	Up to 24 V	A	4
	60 V	A	2
	110 V	A	1.1
	240/220 V	A	0.5
• 2 conducting paths in series	Up to 24 V	A	10
	60 V	A	10
	110 V	A	4
	240/220 V	A	2
• 3 conducting paths in series	Up to 24 V	A	10
	60 V	A	10
	110 V	A	6
	240/220 V	A	2.5
Utilization category DC-13			
Rated operational current I_e For rated operational voltage U_e			
• 1 conducting path	Up to 24 V	A	2.1
	60 V	A	0.9
	110 V	A	0.52
	240/220 V	A	0.27
• 2 conducting paths in series	Up to 24 V	A	10
	60 V	A	3.5
	110 V	A	1.3
	240/220 V	A	0.9
• 3 conducting paths in series	Up to 24 V	A	10
	60 V	A	4.7
	110 V	A	3
	240/220 V	A	1.2
Switching frequency			
Switching frequency z in operating cycles/hour Rated operation for utilization category			
	AC-12/DC-12	h^{-1}	1000
Dependence of the switching frequency z' on the operational current I' and operational voltage U' $z' = z \cdot (I_e/I') \cdot (400\ V/U')^{1.5} \cdot$ 1/h			
	AC-2	h^{-1}	500
	AC-3	h^{-1}	1000
	AC-15/AC-14	h^{-1}	1200
	DC-13	h^{-1}	1200
No-load switching frequency		h^{-1}	10000

[1)] Contact endurance 0.1 x 10^6 operating cycles.

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3TH2 contactor relays, 4- and 8-pole

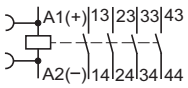
Selection and ordering data

Contacts	Rated operational current I_e/AC-15/AC-14 at				Contacts		DT	Screw terminals		PU (UNIT, SET, M)	PS*	PG
	230/ 220 V	400/ 380 V	500 V	690/ 660 V	Ident. No. acc. to EN 50011	Version		Order No.	Price per PU			
Number	**A**	A	A	A		NO NC						

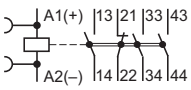
For screw fixing and snap-on mounting onto TH 35 standard mounting rail

Terminal designations according to EN 50011

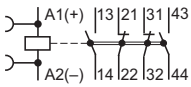
4 NO, Ident. No. **40E**



3 NO + 1 NC, Ident. No. **31E**



2 NO + 2 NC, Ident. No. **22E**





3TH20 . .-0A. .

AC operation

4	**4**	3	2	1	**40E**	4	--	A	**3TH20 40-0AP0**	1	1 unit	41A
					31E	3	1	A	**3TH20 31-0AP0**	1	1 unit	41A
					22E	2	2	A	**3TH20 22-0AP0**	1	1 unit	41A

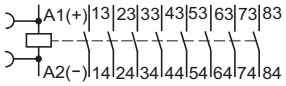
DC operation · DC solenoid system

4	**4**	3	2	1	**40E**	4	--	A	**3TH20 40-0BB4**	1	1 unit	41A
					31E	3	1	A	**3TH20 31-0BB4**	1	1 unit	41A
					22E	2	2	A	**3TH20 22-0BB4**	1	1 unit	41A

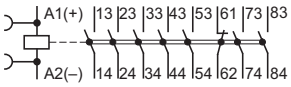
With permanently mounted auxiliary switch blocks · For screw fixing and snap-on mounting onto TH 35 standard mounting rail

Terminal designations according to EN 50011

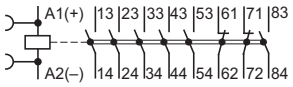
8 NO, Ident. No. **80E**



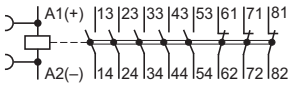
7 NO + 1 NC, Ident. No. **71E**



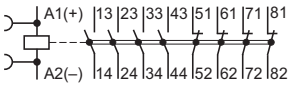
6 NO + 2 NC, Ident. No. **62E**



5 NO + 3 NC, Ident. No. **53E**



4 NO + 4 NC, Ident. No. **44E**





3TH22 . .-0A. .

AC operation

8	**4**	3	2	--	**80E**	8	0	C	**3TH22 80-0AP0**	**53.50**	1	1 unit	41A
					71E	7	1	C	**3TH22 71-0AP0**	**53.50**	1	1 unit	41A
					62E	6	2	C	**3TH22 62-0AP0**	**53.50**	1	1 unit	41A
					53E	5	3	C	**3TH22 53-0AP0**	**53.50**	1	1 unit	41A
					44E	4	4	C	**3TH22 44-0AP0**	**53.50**	1	1 unit	41A

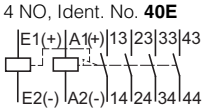
DC operation · DC solenoid system

8	**4**	3	2	--	**80E**	8	0	C	**3TH22 80-0BB4**	**58.60**	1	1 unit	41A
					71E	7	1	C	**3TH22 71-0BB4**	**58.60**	1	1 unit	41A
					62E	6	2	C	**3TH22 62-0BB4**	**58.60**	1	1 unit	41A
					53E	5	3	C	**3TH22 53-0BB4**	**58.60**	1	1 unit	41A
					44E	4	4	C	**3TH22 44-0BB4**	**58.60**	1	1 unit	41A

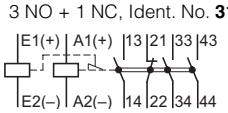
Latched contactor relays · For screw fixing and snap-on mounting onto TH 35 standard mounting rail

Terminal designations according to EN 50011

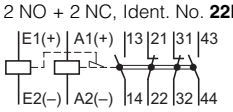
4 NO, Ident. No. **40E**



3 NO + 1 NC, Ident. No. **31E**



2 NO + 2 NC, Ident. No. **22E**





3TH27 ..

AC operation

4	**4**	3	2	1	**40E**	4	--	C	**3TH27 40-0AP0**	**130.—**	1	1 unit	41A
					31E	3	1	C	**3TH27 31-0AP0**	**130.—**	1	1 unit	41A
					22E	2	2	C	**3TH27 22-0AP0**	**130.—**	1	1 unit	41A

DC operation · DC solenoid system

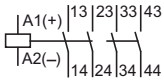
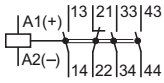
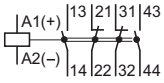
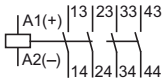
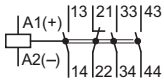
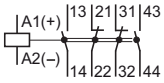
4	**4**	3	2	1	**40E**	4	--	C	**3TH27 40-0BB4**	**135.—**	1	1 unit	41A
					31E	3	1	C	**3TH27 31-0BB4**	**135.—**	1	1 unit	41A
					22E	2	2	C	**3TH27 22-0BB4**	**135.—**	1	1 unit	41A

Accessories see pages 5/30 and 5/31.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3TH2 contactor relays, 4- and 8-pole

Contacts	Rated operational current I_e/AC-15/AC-14 at				Contacts		DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	230/ 220 V	400/ 380 V	500 V	690/ 660 V	Ident. No. acc. to EN 50011	Version						
Number	**A**	A	A	A		NO NC						
Contactor relays with 6.3 mm x 0.8 mm flat connectors												
Terminal designations according to EN 50011												
4 NO, Ident. No. **40E** 												
3 NO + 1 NC, Ident. No. **31E** 												
2 NO + 2 NC, Ident. No. **22E** 												
 3TH20 ..-3...	***AC operation*** For screw fixing and snap-on mounting onto 35 mm standard mounting rail							**Flat connectors**				
	4	**4**	3	2	--	**40E**	4 -- C	**3TH20 40-3AP0**		1	1 unit	41A
						31E	3 1 C	**3TH20 31-3AP0**		1	1 unit	41A
						22E	2 2 C	**3TH20 22-3AP0**		1	1 unit	41A
	For screw fixing (diagonal)											
	4	**4**	3	2	--	**40E**	4 -- C	**3TH20 40-7AP0**		1	1 unit	41A
						31E	3 1 C	**3TH20 31-7AP0**		1	1 unit	41A
						22E	2 2 C	**3TH20 22-7AP0**		1	1 unit	41A
 3TH20 ..-7...	***DC operation · DC solenoid system*** For screw fixing and snap-on mounting onto 35 mm standard mounting rail											
	4	**4**	3	2	--	**40E**	4 -- C	**3TH20 40-3BB4**		1	1 unit	41A
						31E	3 1 C	**3TH20 31-3BB4**		1	1 unit	41A
						22E	2 2 C	**3TH20 22-3BB4**		1	1 unit	41A
	For screw fixing (diagonal)											
	4	**4**	3	2	--	**40E**	4 -- C	**3TH20 40-7BB4**		1	1 unit	41A
						31E	3 1 C	**3TH20 31-7BB4**		1	1 unit	41A
						22E	2 2 C	**3TH20 22-7BB4**		1	1 unit	41A
Contactor relays with solder pin connections for printed circuit boards												
Terminal designations according to EN 50011												
4 NO, Ident. No. **40E** 												
3 NO + 1 NC, Ident. No. **31E** 												
2 NO + 2 NC, Ident. No. **22E** 												
 3TH20 ..-6...	***AC operation*** For screw fixing (diagonal)							**Solder pin connections**				
	4	**4**	3	2	--	**40E**	4 -- C	**3TH20 40-6AP0**		1	1 unit	41A
						31E	3 1 C	**3TH20 31-6AP0**		1	1 unit	41A
						22E	2 2 C	**3TH20 22-6AP0**		1	1 unit	41A
	DC operation · DC solenoid system For screw fixing (diagonal)											
	4	**4**	3	2	--	**40E**	4 -- C	**3TH20 40-6BB4**		1	1 unit	41A
						31E	3 1 C	**3TH20 31-6BB4**		1	1 unit	41A
						22E	2 2 C	**3TH20 22-6BB4**		1	1 unit	41A

Accessories see pages 5/30 and 5/31.

Options

Rated control supply voltages (the 10th and 11th position of the order number must be changed)

Contactor type / Rated control supply voltage U_s	3TH20 ..-0...	3TH20 ..-3..., 3TH20 ..-6..., 3TH20 ..-7..., 3TH22, 3TH27
AC operation		
Solenoid coils for AC 50 and 60 Hz		
50 Hz / **60 Hz**		
24 V AC / 29 V AC	B0	--
110 V AC / 132 V AC	F0	--
230/220 V AC / 276 V AC	P0[1)]	P0[1)]

Contactor type / Rated control supply voltage U_s	3TH20 ..-0...	3TH20 ..-3..., 3TH20 ..-6..., 3TH20 ..-7..., 3TH22, 3TH27
DC operation		
Solenoid coils for DC		
24 V DC	B4	B4
110 V DC	F4	--
220 V DC	M4	--

[1)] Operating range at 220 V or 380 V: 0.85 to 1.15 x U_s; lower operating range limit according to IEC 60947.

Please inquire about further voltages.

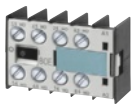
* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3TH2 contactor relays, 4- and 8-pole

Accessories

Rated operational current I_e/AC-15/AC-14 at 230/220 V	400/380 V	500 V	Contacts Ident. No.	Version NO	NC	NO	NC	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	A	A											
Snap-on auxiliary switch blocks for 3TH20 contactor relays													
For expansion to 8 contacts according to EN 50011 Only for 3TH20 40-0... (with 4 NO, Ident. No. 40E)													
4	3	2	**80E**	4	--	--	--	▶	**3TX4 440-0A**		1	1 unit	41A
			71E	3	1	--	--	▶	**3TX4 431-0A**		1	1 unit	41A
			62E	2	2	--	--	▶	**3TX4 422-0A**		1	1 unit	41A
			53E	1	3	--	--	▶	**3TX4 413-0A**		1	1 unit	41A
			44E	--	4	--	--	▶	**3TX4 404-0A**		1	1 unit	41A
For expansion to 6 or 8 contacts according to EN 50005													
4	3	2	**40E**	4	--	--	--	▶	**3TX4 440-2A**		1	1 unit	41A
			31E	3	1	--	--	▶	**3TX4 431-2A**		1	1 unit	41A
			22E	2	2	--	--	▶	**3TX4 422-2A**		1	1 unit	41A
			22; 2U	--	--	2	2	D	**3TX4 422-2G**		1	1 unit	41A
4	3	2	**20E**	2	--	--	--	▶	**3TX4 420-2A**		1	1 unit	41A
			11E	1	1	--	--	▶	**3TX4 411-2A**		1	1 unit	41A
			02E	--	2	--	--	▶	**3TX4 402-2A**		1	1 unit	41A
			11; U	--	--	1	1	D	**3TX4 411-2G**		1	1 unit	41A



3TX4 440-0A

For contactors Type	Rated control supply voltage U_s 50/60 Hz AC V	DC V	OFF-delay (minimum times) s	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
OFF-delay devices for contactors with DC operation									
Bridging of voltage interruptions up to 0.8 sec									
3TH2. . .-0BB4	--	24	0.25 or 0.5	A	**3TX4 490-1H**		1	1 unit	41B
3TH2. . .-0BF4	110	--	0.1 or 0.2	A	**3TX4 490-1A**		1	1 unit	41B
3TH2. . .-0BM4, 3TH2. . .-0BP4	220	--	0.4 or 0.8						

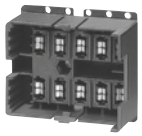


3TX4 490-1A

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3TH2 contactor relays, 4- and 8-pole

	For contactors	Rated control supply voltage U_s		Power consumption of LED at U_s	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	Type	V AC	V DC	mW						
Surge suppressors[1] **for plugging onto contactors with and without auxiliary switch blocks**										
	Version without LED									
	RC elements									
 3TX4 490-3A	3TH2. ..-0...	24 ... 48	24 ... 70	--	B	**3TX4 490-3R**		1	1 unit	41B
		48 ... 127	70 ... 150	--	B	**3TX4 490-3S**		1	1 unit	41B
		127 ... 240	150 ... 250	--	B	**3TX4 490-3T**		1	1 unit	41B
		240 ... 400	--	--	B	**3TX4 490-3U**		1	1 unit	41B
		400 ... 600	--	--	B	**3TX4 490-3V**		1	1 unit	41B
	Varistors									
	3TH2. ..-0...	≤48	24 ... 70	--	B	**3TX4 490-3G**		1	1 unit	41B
		48 ... 127	70 ... 150	--	B	**3TX4 490-3H**		1	1 unit	41B
		127 ... 240	150 ... 250	--	B	**3TX4 490-3J**		1	1 unit	41B
		240 ... 400	--	--	B	**3TX4 490-3K**		1	10 units	41B
		400 ... 600	--	--	B	**3TX4 490-3L**		1	10 units	41B
	Noise suppression diodes									
	3TH2. ..–0...	--	12 ... 250	--	B	**3TX4 490-3A**		1	1 unit	41B
	Diode assemblies (diode and Zener diode) For DC operation and short break times									
	3TH2. ..–0...	--	24 ... 250	--	B	**3TX4 490-3B**		1	1 unit	41B
	Version with LED									
	Varistors									
 3TX4 490-4G	3TH2. ..-0...	24 ... 48	12 ... 24	10 ... 120	B	**3TX4 490-4G**		1	1 unit	41B
		48 ... 127	24 ... 70	20 ... 470	B	**3TX4 490-4H**		1	1 unit	41B
		127 ... 240	70 ... 150	50 ... 700	B	**3TX4 490-4J**		1	1 unit	41B
		--	150 ... 250	160 ... 950	B	**3TX4 490-4K**		1	1 unit	41B
	Noise suppression diodes									
	3TH2. ..-0...	--	24 ... 70	20 ... 470	B	**3TX4 490-4A**		1	1 unit	41B
		--	70 ... 150	50 ... 700	B	**3TX4 490-4B**		1	1 unit	41B
		--	150 ... 250	160 ... 950	B	**3TX4 490-4C**		1	1 unit	41B
Additional load modules for 3TH2 contactor relays for plugging onto contactors with and without auxiliary switch blocks										
 3TX4 490-1J	For increasing the permissible residual current and for limiting the residual voltage of SIMATIC semiconductor outputs									
	3TH2. ..-0A..	230/220, 50 Hz		--	B	**3TX4 490-1J**		1	1 unit	41B
		230, 60 Hz		--						
		230, 50/60 Hz		--						
		Operating range 0.8 ... 1.1 × U_s.								
Plug-in bases with solder pin connections for printed circuit boards, width 45 mm										
 3TX4 491-2A	For 3TH2 contactor relays; with flat connectors 1 x 6.3 mm ... 0.8 mm Rated insulation voltage U_i: 400 V (for pollution degree 3); rated impulse withstand voltage U_{imp}: 6 kV; rated operational current I_e: 6 A; CE and UL rated data: max. 300 V, 6 A									
	3TH20 ..-3..., 3TH20 ..-7...				A	**3TX4 491-2A**		1	5 units	41A
Release tools										
	3TH20 ..-7...	For releasing contactors from 3TX4 491-2A plug-in bases			D	**3TX4 491-2K**		1	1 unit	41B

[1] The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 10 times; diode assembly 2 to 6 times, varistor +2 to 5 ms).

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*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 3RH21 coupling relays for switching auxiliary circuits, 4-pole

Overview

DC operation

IEC 60947-1, EN 60947-1,
IEC 60947-5-1, EN 60947-5-1

The 3RH21 coupling relays for switching auxiliary circuits are tailored to the special requirements of working with electronic controls.

The 3RH21 coupling relays cannot be extended with auxiliary switch blocks.

Coupling relays have a low power consumption and an extended coil operating range.

Depending on the version, the solenoid coils are supplied either without overvoltage damping (3RH21 ..-.HB40 or 3RH21 ..-.MB40-0KT0 versions) or with a diode or suppressor diode connected as standard.

Technical specifications

All technical specifications not mentioned in the table below are identical to those of the 3RH21 contactor relays (see page 5/6).

Contactor type		**3RH21 ..-.HB40**	**3RH21 ..-.JB40**	**3RH21 ..-.KB40**
Size		**S00**	**S00**	**S00**
Control circuits				
Coil operating range		0.7 ... 1.85 x U_s		
Power consumption of the solenoid coil (for cold coil) Closing = Closed				
• At U_s = 17 V	W	1.4		
• At U_s = 24 V	W	2.8		
• At U_s = 30 V	W	4.4		
Permissible residual current of the electronics for 0 signal		< 10 mA x (24 V/U_s)		
Overvoltage configuration of the solenoid coil		No overvoltage damping 	With diode 	With suppressor diode 
Operating times				
• **Closing** at 17 V				
- ON-delay NO	ms	40 ... 130		
- OFF-delay NC	ms	30 ... 80		
• At 24 V				
- ON-delay NO	ms	35 ... 60		
- OFF-delay NC	ms	25 ... 40		
• At 30 V				
- ON-delay NO	ms	25 ... 50		
- OFF-delay NC	ms	15 ... 30		
• **Opening** at 17 ... 30 V				
- OFF-delay NO	ms	7 ... 20	38 ... 65	7 ... 20
- ON-delay NC	ms	20 ... 30	55 ... 75	20 ... 30
Upright mounting position		Request required		

Contactor type		**3RH21 ..-.MB40-0KT0**	**3RH21 ..-.VB40**	**3RH21 ..-.WB40**
Size		**S00**	**S00**	**S00**
Control circuits				
Coil operating range		0.85 ... 1.85 x U_s		
Power consumption of the solenoid coil (for cold coil) Closing = Closed at U_s = 24 V	W	1.6		
Permissible residual current of the electronics for 0 signal		< 8 mA x (24 V/U_s)		
Overvoltage configuration of the solenoid coil		Diode, varistor or RC element, attachable 	Built-in diode 	Built-in suppressor diode 

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SIRIUS 3RH21 coupling relays for switching auxiliary circuits, 4-pole

Contactor type		3RH21 ..-.MB40-0KT0	3RH21 ..-.VB40	3RH21 ..-.WB40
Size		S00	S00	S00
Control circuits				
Operating times				
• Closing at 20.5 V				
- ON-delay NO	ms	30 ... 120		
- OFF-delay NC	ms	20 ... 110		
• At 24 V				
- ON-delay NO	ms	25 ... 90		
- OFF-delay NC	ms	15 ... 80		
• At 44 V				
- ON-delay NO	ms	15 ... 60		
- OFF-delay NC	ms	10 ... 50		
• Closing at 17 ... 30 V				
- OFF-delay NO	ms	5 ... 20	20 ... 80	5 ... 20
- ON-delay NC	ms	10 ... 30	30 ... 90	10 ... 30
Upright mounting position		Request required		

5

Selection and ordering data

DC operation
Low power consumption
Extended operating range of the solenoid coil
Integrated coil circuit

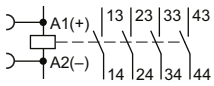
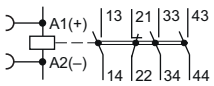
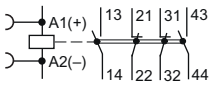
PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41A



3RH21 ..-1.B40



3RH21 ..-2.B40

Rated operational current I_e/AC-15/AC-14 at **230 V**	Auxiliary contacts Ident. No. acc. to EN 50011	Version		DT	Screw terminals Order No.	Price per PU	DT	Spring-type terminals Order No.	Price per PU
									
A		NO	NC						
For screw fixing and snap-on mounting onto TH 35 standard mounting rail									
Size S00									
Diode, varistor or RC element, attachable									
Terminal designations according to EN 50011 (no auxiliary switch blocks can be mounted)									
4 NO, Ident. No. **40E**									
									
3 NO + 1 NC, Ident. No. **31E**									
									
2 NO + 2 NC, Ident. No. **22E**									
									
Rated control supply voltage U_s = 24 V DC, coil operating range **0.7 to 1.25 x U_s**									
Power consumption of the solenoid coils **2.8 W** at 24 V									
10	**40E**	4	--	B	**3RH21 40-1HB40**		B	**3RH21 40-2HB40**	
	31E	3	1	B	**3RH21 31-1HB40**		B	**3RH21 31-2HB40**	
	22E	2	2	B	**3RH21 22-1HB40**		B	**3RH21 22-2HB40**	
Rated control supply voltage U_s = 24 V DC, coil operating range **0.85 to 1.85 x U_s**									
Power consumption of the solenoid coils **1.6 W** at 24 V									
10	**40E**	4	--	B	**3RH21 40-1MB40-0KT0**		B	**3RH21 40-2MB40-0KT0**	
	31E	3	1	B	**3RH21 31-1MB40-0KT0**		B	**3RH21 31-2MB40-0KT0**	
	22E	2	2	B	**3RH21 22-1MB40-0KT0**		B	**3RH21 22-2MB40-0KT0**	

Surge suppressors see page 5/13.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 3RH21 coupling relays for switching auxiliary circuits, 4-pole

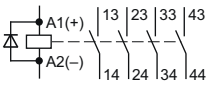
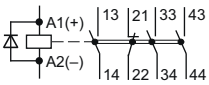
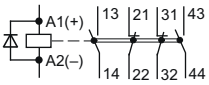
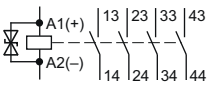
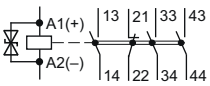
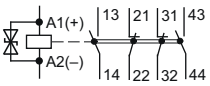
PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41A



3RH21 ..-1.B40



3RH21 ..-2.B40

Rated operational current I_e/AC-15/AC-14 at **230 V**	Auxiliary contacts Ident. No. acc. to EN 50011	Version	DT	Screw terminals Order No.	Price per PU	DT	Spring-type terminals Order No.	Price per PU
A		NO NC						
For screw fixing and snap-on mounting onto TH 35 standard mounting rail								
Size S00								
With integrated coil circuit (diode)								
Terminal designations according to EN 50011 (no auxiliary switch blocks can be mounted)								
4 NO, Ident. No. **40E** 								
3 NO + 1 NC, Ident. No. **31E** 								
2 NO + 2 NC, Ident. No. **22E** 								
Rated control supply voltage U_s = 24 V DC, coil operating range **0.7 to 1.25 x U_s**								
Power consumption of the solenoid coils **2.8 W** at 24 V								
10	**40E**	4 --	B	**3RH21 40-1JB40**	B	**3RH21 40-2JB40**		
	31E	3 1	▶	**3RH21 31-1JB40**	▶	**3RH21 31-2JB40**		
	22E	2 2	▶	**3RH21 22-1JB40**	B	**3RH21 22-2JB40**		
Rated control supply voltage U_s = 24 V DC, coil operating range **0.85 to 1.85 x U_s**								
Power consumption of the solenoid coils **1.6 W** at 24 V								
10	**40E**	4 --	B	**3RH21 40-1VB40**	B	**3RH21 40-2VB40**		
	31E	3 1	B	**3RH21 31-1VB40**	B	**3RH21 31-2VB40**		
	22E	2 2	B	**3RH21 22-1VB40**	B	**3RH21 22-2VB40**		
With integrated coil circuit (suppressor diode)								
Terminal designations according to EN 50011 (no auxiliary switch blocks can be mounted)								
4 NO, Ident. No. **40E** 								
3 NO + 1 NC, Ident. No. **31E** 								
2 NO + 2 NC, Ident. No. **22E** 								
Rated control supply voltage U_s = 24 V DC, coil operating range **0.7 to 1.25 x U_s**								
Power consumption of the solenoid coils **2.8 W** at 24 V								
10	**40E**	4 --	B	**3RH21 40-1KB40**	B	**3RH21 40-2KB40**		
	31E	3 1	▶	**3RH21 31-1KB40**	▶	**3RH21 31-2KB40**		
	22E	2 2	▶	**3RH21 22-1KB40**	▶	**3RH21 22-2KB40**		
Rated control supply voltage U_s = 24 V DC, coil operating range **0.85 to 1.85 x U_s**								
Power consumption of the solenoid coils **1.6 W** at 24 V								
10	**40E**	4 --	B	**3RH21 40-1SB40**	X	**3RH21 40-2SB40**		
	31E	3 1	B	**3RH21 31-1SB40**	X	**3RH21 31-2SB40**		
	22E	2 2	B	**3RH21 22-1SB40**	B	**3RH21 22-2SB40**		

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Contactors with Extended Operating Range 0.7 ... 1.25 x U_s for Railway Applications

Overview

DC operation

IEC 60947-4-1, EN 60947-4-1,
for requirements acc. to IEC 60077-1 and IEC 60077-2

The contactor relays are finger-safe according to EN 50274. The size S00 contactor relays have spring-type connections for all terminals.

Ambient temperature

The permissible ambient temperature for operation of the contactor relays (across the full coil operating range) is -40 to +70 °C.

Uninterrupted duty at temperatures > +60 °C reduces the mechanical endurance, the current carrying capacity of the conducting paths and the switching frequency.

Control and auxiliary circuits

The solenoid coils of the contactor relays have an extended coil operating range from 0.7 to 1.25 x U_s and are fitted as standard with surge suppressors. The opening delay is consequently 2 to 5 ms longer than for standard contactors.

Application

For operation in installations which are subject both to considerable variations in the control voltage and to high ambient temperatures, e.g. railway applications under extreme climatic conditions, rolling mills, etc.

Also for control supply voltages with battery buffering to extend the operating time in the event of battery charge failure.

Contactor relays with conventional coil

Control and auxiliary circuits

These contactor relays have an extended operating range from 0.7 to 1.25 x U_s; the coils are fitted with a suppressor diode as standard. An additional series resistor is not required.

Note:

An additional auxiliary switch block cannot be mounted.

Side-by-side mounting

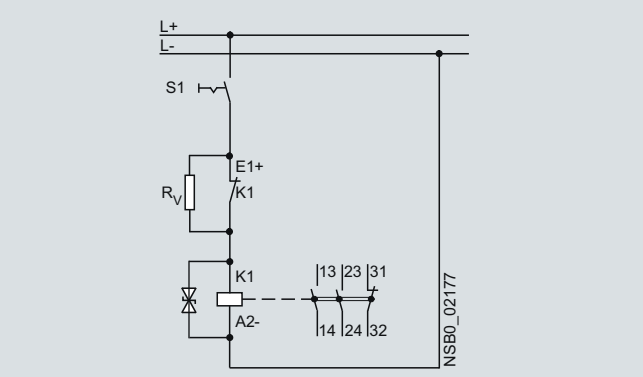
A clearance of 10 mm is required for side-by-side mounting at ambient temperatures > 60 °C ≤70 °C.

Contactor relays with series resistor

Control and auxiliary circuits

The DC solenoid systems of the contactor relays are modified (to holding excitation) by means of a series resistor.

The size S00 contactor relays are supplied prewired with a plug-on module containing the series resistor. A surge suppressor (a suppressor diode or varistor as preferred) is integrated.



Circuit diagram (version with suppressor diode)

A 4-pole auxiliary switch block (according to EN 50005) can be fitted additionally.

Side-by-side mounting

Side-by-side-side mounting is permissible at ambient temperatures up to 70 °C.

Technical specifications

Contactor relays	Type			3RH21 ..
General technical specifications				
Upright mounting position				
• Contactors with series resistor				Special version (on request)
• Contactors without series resistor				Special version (on request)
Ambient temperature				
• During operation			°C	-40 ... +70
• During storage			°C	-55 ... +80
Control circuits				
Coil operating range	DC			0.7 ... 1.25 x U_s
Power consumption of the solenoid coils				For cold coil and 1.0 x U_s
• Contactors with series resistor		- Closing	W	13
		- Closed	W	4
• Contactors without series resistor		- Closing	W	2.8
		- Closed	W	2.8

All details and technical specifications not mentioned here are identical to those of the standard versions; see page 5/4.

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Contactors with Extended Operating Range 0.7 ... 1.25 x U_s for Railway Applications

SIRIUS 3RH21 contactor relays

Selection and ordering data

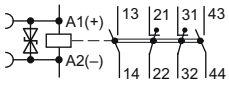
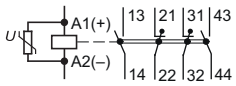
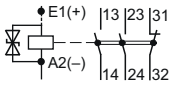
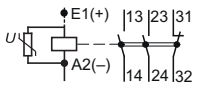
DC operation · DC solenoid system
Spring-type terminals
For screw fixing and snap-on mounting onto standard mounting rails
Solenoid coil with surge suppression



3RH21 22-2K.40



3RH21 22-2K.40-0LA0

Rated operational current I_e/AC-15/AC-14 T_u: 70 °C at				Contacts		Rated control supply voltage U_s	DT	Spring-type terminals	PU (UNIT, SET, M)	PS*	PG
230 V	400 V	500 V	690 V	Version				Order No.	Price per PU		
A	A	A	A	NO	NC	V DC					
3RH21 contactor relays											
Size S00											
With conventional coil, fitted with suppressor diode											
Terminal designations acc. to EN 50011											
2 NO + 2 NC, Ident. No. **22E**											
											
10	3	2	1	2	2[1]	24	▶	**3RH21 22-2KB40**	1	1 unit	41A
						110	A	**3RH21 22-2KF40**	1	1 unit	41A
				3	1[1]	24	▶	**3RH21 31-2KB40**	1	1 unit	41A
				4	--[1]	24	B	**3RH21 40-2KB40**	1	1 unit	41A
With conventional coil, fitted with varistor											
Terminal designations acc. to EN 50011											
2 NO + 2 NC, Ident. No. **22E**											
											
10	3	2	1	2	2[1]	24	B	**3RH21 22-2LB40**	1	1 unit	41A
						110	B	**3RH21 22-2LF40**	1	1 unit	41A
With series resistor, fitted with suppressor diode											
Terminal designations acc. to EN 50011											
2 NO + 1 NC, Ident. No. **21X**											
											
10	3	2	1	2	1[2]	24	B	**3RH21 22-2KB40-0LA0**	1	1 unit	41A
						110	B	**3RH21 22-2KF40-0LA0**	1	1 unit	41A
With series resistor, fitted with varistor											
Terminal designations acc. to EN 50011											
2 NO + 1 NC, Ident. No. **21X**											
											
10	3	2	1	2	1[2]	24	B	**3RH21 22-2LB40-0LA0**	1	1 unit	41A
						110	B	**3RH21 22-2LF40-0LA0**	1	1 unit	41A

[1] It is not possible to mount an auxiliary switch block.
[2] 4-pole auxiliary switch block acc. to EN 50005 can be mounted.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Contactors with Extended Operating Range 0.7 ... 1.25 x U_s for Railway Applications

Overview

Standards

IEC 60947-4-1, EN 60947-4-1;
for requirements acc. to IEC 60077-1 and IEC 60077-2

The contactor relays are finger-safe according to EN 50274. Terminal covers may have to be fitted onto the connecting bars, depending on the configuration with other devices.

Ambient temperature

The permissible ambient temperature for operation of the contactors (across the full coil operating range) is -50 to +70 °C. Uninterrupted duty at temperatures < -25 °C and > +55 °C reduces the mechanical endurance, the current-carrying capacity of the conducting paths and the switching frequency.

A clearance of 10 mm is required for side-by-side mounting at ambient temperatures > 55 °C. There is no need to reduce the technical specifications.

Application

For operation in plants which are subject both to considerable variations in the control voltage and to high ambient temperatures, e.g. in railway applications.

Control and auxiliary circuits

The solenoid coils of the contactor relays have an extended coil operating range from 0.7 to 1.25 x U_s and are fitted as standard with varistors to provide protection against overvoltage. The opening delay is consequently 2 to 5 ms longer than for standard contactors.

Technical specifications

Contactor relay	Type			3TH42
General technical specifications				
Permissible ambient temperature				
• During operation			°C	-50 ... +70[1)]
• During storage			°C	-55 ... +80
Control circuits				
Coil operating range				0.7 ... 1.25 x U_s
Power consumption of the solenoid coils (for cold coil)				
		0.7 x U_s	W	2.6
		1.0 x U_s	W	5.2
		1.25 x U_s	W	8.2
(For cold coil: Closing = Closed)				
Permissible residual current of the electronics (with 0 signal)				
• DC operation				≤10 mA x (24 V/U_s)
Operating times (Total break time = OFF-delay + Arcing time)				
• Closing				
- 0.7 x U_s	ON-delay (NO)		ms	70 ... 200
	OFF-delay (NC)		ms	28 ... 33
- 1 x U_s	ON-delay (NO)		ms	45 ... 80
	OFF-delay (NC)		ms	30 ... 34
- 1.25 x U_s	ON-delay (NO)		ms	40 ... 60
	OFF-delay (NC)		ms	31 ... 35
• Opening				
- 0.7 ... 1.25 x U_s	OFF-delay (NO)		ms	20 ... 30
	ON-delay (NC)		ms	22 ... 32
• Arcing time			ms	10

[1)] Side-by-side mounting with 10 mm distance.

All details and technical specifications not mentioned here are identical to those of the standard versions; see page 5/16.

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Contactors with Extended Operating Range 0.7 ... 1.25 x U_s for Railway Applications

3TH4 contactor relays

Selection and ordering data

Solenoid coil fitted with varistor



3TH4

Contacts	Rated operational current I_e/AC-15/AC-14				Contacts[1]			Rated control supply voltage U_s	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
					Ident. No. acc. to EN 50011	Version				Order No. / Price per PU			
	230 V	400 V	500 V	690 V		NO	NC						
Number	A	A	A	A				V DC					
For screw fixing and snap-on mounting onto TH 35 standard mounting rail													
DC operation · DC solenoid system													
8	**10**	6	4	2	**44E**	4	4	24	▶	**3TH42 44-0LB4**	1	1 unit	41A
								110	▶	**3TH42 44-0LF4**	1	1 unit	41A
8	**10**	6	4	2	**53E**	5	3	24	D	**3TH42 53-0LB4**	1	1 unit	41A
								110	▶	**3TH42 53-0LF4**	1	1 unit	41A
8	**10**	6	4	2	**62E**	6	2	24	▶	**3TH42 62-0LB4**	1	1 unit	41A
								110	▶	**3TH42 62-0LF4**	1	1 unit	41A

[1] Contacts not extendable.

Accessories see page 5/22.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

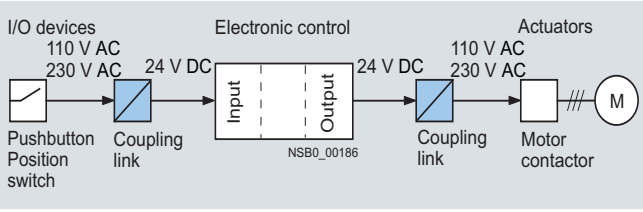
AC and DC operation

IEC 60947-5-1, EN 60947-5-1

In the coupling links in double-decker design, the connections are arranged on two levels; the units are extremely compact. Connection method: Screw terminals or spring-type terminals. For test purposes, versions are available with manual-0-automatic switches.

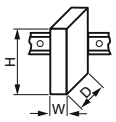
The input and output coupling links differ with regard to the positioning of the terminals and the LEDs. For equipment identification purposes, each coupling link has a blank labeling plate.

The semiconductor couplers have a low power consumption and are therefore particularly well suited for solid-state systems.



Application example: Motor control

Technical specifications

Type			3TX7 002, 3TX7 003	3TX7 004, 3TX7 005
Dimensions (W x H x D) For width B see Selection and ordering data		mm	W x 60 x 62	W x 80 x 84

General technical specifications			
Rated insulation voltage U_i (pollution degree 3)		V	300
Protective separation[1] between coil and contacts acc. to IEC 60947-1, Appendix N		V	Up to 300 AC
Permissible ambient temperature			
• During operation		°C	-25 ... +60
• During storage		°C	-40 ... +80
Degree of protection			
• Connections			IP20
• Enclosure			IP30
Short-circuit protection			
• Short-circuit test with fuse links of gG operational class with short-circuit current I_k = 1 kA acc. to IEC 60947-5-1		A	4
Conductor cross-sections			
(For 3TX7 002, 3TX7 004)			**Screw terminals**
• Solid		mm^2	1 x (0.25 ... 4)
• Finely stranded without end sleeve		mm^2	1 x (0.5 ... 2.5)
• Finely stranded with end sleeve		mm^2	1 x (0.5 ... 2.5)
• Terminal screws			M3
- Corresponding opening tool			Screwdriver, size 3.5 mm x 0.5 mm
(For 3TX7 003, 3TX7 005)			**Spring-type terminals**
• Solid or finely stranded		mm^2	1 x (0.08 ... 2.5)
• Finely stranded with end sleeve		mm^2	1 x (0.25 ... 1.5)
• Corresponding opening tool			Screwdriver, size 3.0 mm x 0.5 mm (3RA29 08-1A)

[1] For 3TX7 00.-1FB02, no protective separation acc. to IEC 60947-1, Appendix N.

Type	3TX7 002-, 3TX7 003-		1AB00 1AB02	1BB00	1FB02	1CB00	2AB00	2AE00	1BF00 2BF02	2AF00 2AF05
Control side										
Operating range			0.8 ... 1.25 x U_s					0.8 ... 1.1 x U_s		
Power consumption										
• At U_s = 24 V AC/DC		W	0.75		1.2		0.75		--	
• At U_s = 230 V AC/DC		W	--		--		--		1.2	

Type		3TX7 004, 3TX7 005	Exception: 3TX7 005-…05
Control side			
Operating range			
• At U_s = 24 V AC/DC		0.7 ... 1.25 x U_s	
• At U_s = 110 V AC/DC and 230 V		0.8 ... 1.1 x U_s	
- Exception: 3TX7 005-1LN00		0.7 ... 1.25 x U_s	
Power consumption			
• At U_s = 24 V AC/DC	W	0.5	--
• At U_s = 230 V AC	VA	--	6
• At U_s = 230 V DC	W	--	1

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Relay couplers

Type			3TX7 002, 3TX7 003	Exception: 3TX7 002-1CB00
Load side				
Rated operational currents I_e [1]				
Conventional thermal current I_{th}		A	6	
Rated operational current I_e acc. to utilization categories (IEC 60947-5-1)				
• AC-15	At 24 ... 230 V	A	3	2
• DC-13	At 24 V	A	1	
	At 110 V	A	0.2	
	At 230 V	A	0.1	
Switching current for resistive load acc. to IEC 60947-5-1				
• AC-12	At 24 ... 230 V	A	6	
• DC-12	At 24 V	A	6	
	At 110 V	A	0.2	
	At 230 V	A	0.2	
Switching voltage	AC/DC	V	24 ... 250	
Min. contact load for 3TX7 00.-...02			1 V AC/DC/0.1 A	
Mechanical endurance		Operating cycles	20 x 10^6	
Electrical endurance at I_e		Operating cycles	1 x 10^5	

Type			3TX7 004-1B, -1L, 3TX7 005-1L	3TX7 004-.M, 3TX7 005-.M,
Load side				
Rated operational currents I_e [1]				
Conventional thermal current I_{th}		A	6	
Rated operational current I_e acc. to utilization categories (IEC 60947-5-1)				
• AC-15	At 24 ... 230 V	A	3	2
• DC-13	At 24 V	A	1	
	At 110 V	A	0.2	
	At 230 V	A	0.1	
Switching current for resistive load acc. to IEC 60947-5-1				
• AC-12	At 24 ... 230 V	A	6	
• DC-12	At 24 V	A	6	
	At 110 V	A	0.3	
	At 230 V	A	0.2	
Power limit for hard gold-plating				
• Voltage		V	30	
• Current		mA	20	
Switching voltage	AC/DC	V	17 ... 250	
Min. switching voltage (reliability 1 ppm)				
• Standard contacts			17 V DC/5 mA	
• Hard gold-plated contacts			5 V DC/1 mA	
Mechanical endurance		Operating cycles	20 x 10^6	
Electrical endurance at I_e		Operating cycles	1 x 10^6	0.5 x 10^6

[1] Capacitive loads can result in micro-weldings on the contacts.

Note:

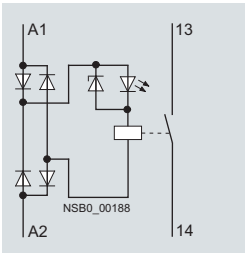
If inductive loads are connected in parallel, the endurance of the relay couplers can be increased.

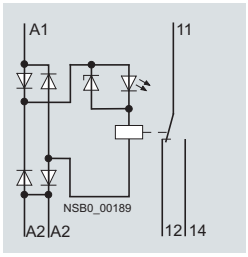
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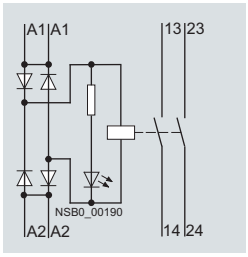
Relay couplers – circuit diagrams for 3TX7 002, 3TX7 003

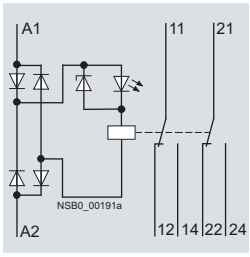
Terminal designations acc. to EN 50005

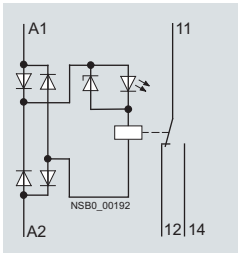
Output/input coupling links	**Output coupling links**			**Input coupling links**
3TX7 002-1AB00 3TX7 002-1AB02 3TX7 002-2A.00 3TX7 002-2AF05 3TX7 003-1AB00	3TX7 002-1BB00 3TX7 002-1BF00 3TX7 003-1BB00	3TX7 002-1CB00 3TX7 003-1CB00	3TX7 002-1FB02	3TX7 002-2BF02





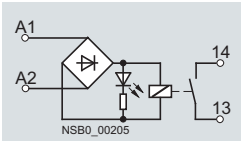


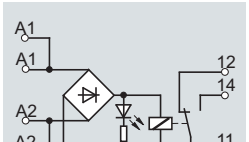


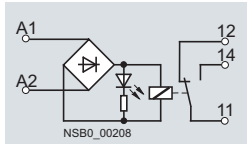


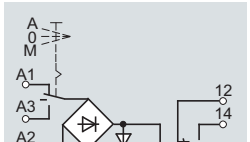
Relay couplers – circuit diagrams for 3TX7 004, 3TX7 005

Output coupling links				**Input coupling links**
3TX7 00.-1M.00	3TX7 00.-1BB00 3TX7 00.-1BF05	3TX7 00.-1L.0.	3TX7 00.-1BB10	3TX7 00.-2M.02

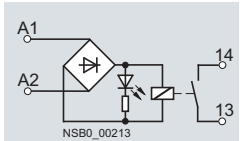








A = Automatic
0 = Zero position
M = Manual



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Relay couplers

Selection and ordering data

AC and DC operation · For snap-on mounting onto TH 35 standard mounting rail

	Rated control supply voltage U_s at AC 50/60 Hz	Contacts Version NO	CO	Width W	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	V			mm						
3TX7 002 relay coupling links with screw terminals										
 3TX7 002	**Output coupling links**					**Screw terminals**				
	24 AC/DC	1	--	11.5	▶	**3TX7 002-1AB00**		1	1 unit	41H
	24 AC/DC	1[1]	--	11.5	▶	**3TX7 002-1AB02**		1	1 unit	41H
	24 AC/DC	--	1	17.5	▶	**3TX7 002-1BB00**		1	1 unit	41H
	230 AC/DC[3]	--	1	17.5	▶	**3TX7 002-1BF00**		1	1 unit	41H
	24 AC/DC	2[2]	--	22.5	▶	**3TX7 002-1CB00**		1	1 unit	41H
	24 AC/DC	--	2[1] [2]	22.5	▶	**3TX7 002-1FB02**		1	1 unit	41H
	Input coupling links									
	24 AC/DC	1	--	11.5	▶	**3TX7 002-2AB00**		1	1 unit	41H
	110 AC/DC[4]	1	--	11.5	▶	**3TX7 002-2AE00**		1	1 unit	41H
	230 AC/DC[3]	1[2]	--	11.5	▶	**3TX7 002-2AF00**		1	1 unit	41H
	230 AC/DC	1[2]	--	11.5	▶	**3TX7 002-2AF05**		1	1 unit	41H
	230 AC/DC[3]	--	1[1]	17.5	▶	**3TX7 002-2BF02**		1	1 unit	41H
3TX7 003 relay coupling links with spring-type terminals										
 3TX7 003	**Output coupling links**					**Spring-type terminals**				
	24 AC/DC	1	--	11.5	▶	**3TX7 003-1AB00**		1	1 unit	41H
	24 AC/DC	--	1	17.5	▶	**3TX7 003-1BB00**		1	1 unit	41H
	24 AC/DC	2[2]	--	22.5	▶	**3TX7 003-1CB00**		1	1 unit	41H
	Input coupling links									
	230 AC/DC	1	--	11.5	A	**3TX7 003-2AF00**		1	1 unit	41H

[1] Hard gold-plated contacts.

[2] Different potential up to 300 V permitted; no protective separation.

[3] Observe max. permissible cable length for AC control voltage: 7 m.

[4] Observe max. permissible cable length for AC control voltage: 15 m.

Note:

For coil voltages which are not listed, see "SITOP power DC Power Supplies", e.g. 6EP1 331-2BA10 and 6EP1 731-2BA00 (see Chapter 15, "Stabilized Power Supplies").

Note:

A clearance of at least 10 mm between the modules or to adjacent contacts is required for operation with rated voltage and 100 % ON period over 24 hours a day.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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	Rated control supply voltage U_s at AC 50/60 Hz	Contacts Version		Manual-0-automatic switch for testing purposes	Width W	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	V	NO	CO		mm						
3TX7 004 relay couplers with screw terminals											
 3TX7 004-1LB0.	**Output coupling links**						**Screw terminals**				
	24 AC/DC	--	1	Without	6.2	▶	**3TX7 004-1LB00**		1	1 unit	41H
	24 AC/DC	--	1[2]	Without	6.2	▶	**3TX7 004-1LB02**		1	1 unit	41H
	24 AC/DC	--	1	With	12.5	▶	**3TX7 004-1BB10**		1	1 unit	41H
	230 AC/DC	--	1	Without	6.2	▶	**3TX7 004-1LF00**		1	1 unit	41H
	230 AC/DC	--	1	Without	12.5[1]	▶	**3TX7 004-1BF05**		1	1 unit	41H
	24 AC/DC	1	--	Without	6.2	▶	**3TX7 004-1MB00**		1	1 unit	41H
	230 AC/DC	1	--	Without	6.2	▶	**3TX7 004-1MF00**		1	1 unit	41H
	Input coupling links										
	24 AC/DC	1[2]	--	Without	6.2	▶	**3TX7 004-2MB02**		1	1 unit	41H
	110 AC/DC	1[2]	--	Without	6.2	▶	**3TX7 004-2ME02**		1	1 unit	41H
	230 AC/DC	1[2]	--	Without	6.2	▶	**3TX7 004-2MF02**		1	1 unit	41H
3TX7 005 relay couplers with spring-type terminals											
 3TX7 005-2MB02	**Output coupling links**						**Spring-type terminals**				
	24 AC/DC	--	1	Without	6.2	▶	**3TX7 005-1LB00**		1	1 unit	41H
	24 AC/DC	--	1[2]	Without	6.2	▶	**3TX7 005-1LB02**		1	1 unit	41H
	110 AC/DC[3]	--	1	Without	6.2	B	**3TX7 005-1LN00**		1	1 unit	41H
	230 AC/DC	--	1	Without	6.2	▶	**3TX7 005-1LF00**		1	1 unit	41H
	24 AC/DC	1	--	Without	6.2	▶	**3TX7 005-1MB00**		1	1 unit	41H
	230 AC/DC	1	--	Without	6.2	▶	**3TX7 005-1MF00**		1	1 unit	41H
	Input coupling links										
	24 AC/DC	1[2]	--	Without	6.2	C	**3TX7 005-2MB02**		1	1 unit	41H
	230 AC/DC	1[2]	--	Without	6.2	B	**3TX7 005-2MF02**		1	1 unit	41H

[1] For long cables.
[2] Hard gold-plated contacts.
[3] Extended operating range 0.7 ... 1.25 x U_s

Note:

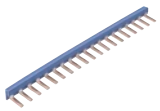
For replacement products, see 3RS18 coupling links with industrial housing or other 3TX7 0 products.

For coil voltages which are not listed, see "SITOP power DC Power Supplies", e.g. 6EP1 331-2BA10 and 6EP1 731-2BA00 (see Chapter 15, "Stabilized Power Supplies").

Note:

A clearance of at least 10 mm between the modules or to adjacent contacts is required for operation with rated voltage and 100 % ON period over 24 hours a day.

Accessories

	For coupling links Type	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Connecting comb, blue								
 3TX7 004-8AA00	3TX7 004	For linking the same potentials 24 terminals, current carrying capacity for infeed max. 26 A Width 6.2 mm	▶	**3TX7 004-8AA00**		1	1 unit	41H
Connecting cable, blue								
 3TX7 004-8BA00	3TX7 002 and 3TX7 004 with screw terminals 3TX7 003 and 3TX7 005 with spring-type terminals	With infeed, blue 24 terminals, current carrying capacity for infeed max. 12 A Length of cable between 2 terminals approx. 11 cm	A	**3TX7 004-8BA00**		1	1 unit	41H

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Coupling Relays

3TX7 Coupling Relays, Narrow Design

Relay couplers with plug-in connection

Overview

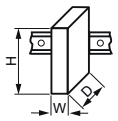
Coupling links are used to connect signals from and to a PLC. The plug-in relays enable the relay to be replaced at the end of its service life without detaching the wiring.

For easy linking of the signals, each terminal can be jumpered using an external connecting comb.

Benefits

- Plug-in base couplers with spring-type terminals and 6.2 mm width
- Fast exchange with existing wiring (plug-in relay)
- Tested complete units →shorter mounting time
- Single relays available as components
- The wire inlet and terminals can be reached from the front. This results in faster wiring time and wiring errors are prevented.
- Linking of control supply voltage and control signals with 16-pole connecting comb
- Galvanic isolation plate for isolating different voltages for neighboring units
- Integrated reverse polarity protection and EMC arc-suppression diode
- Clearly visible functional state of the relay coupler by yellow LED
- Protective separation according to IEC 61140
- Device versions with hard gold-plated contacts, hence high contact reliability
- 230 V AC/DC versions available

Technical specifications

Type			**3TX7 014, 3TX7 015**
Dimensions (W x H x D)		mm	6.2 x 90 x 92
• Galvanic isolation plate 3TX7 014-7CE00		mm	1 x 89.2 x 94.2

General technical specifications		
Rated insulation voltage U_i (pollution degree 2)	V	300
Protective separation between coil and contacts acc. to IEC 60947-1, Appendix N	V	Up to 300 AC
Permissible ambient temperature		
• During operation	°C	-25 ... +55
• During storage	°C	-40 ... +80
Degree of protection		
• Enclosure		IP20
• Relays		IP40
Short-circuit protection		
• Short-circuit test with fuse links of gG operational class with short-circuit current I_k = 1 kA acc. to IEC 60947-5-1	A	4
Conductor cross-sections		
For 3TX7 014:		**Screw terminals**
• Solid	mm^2	0.5 ... 2.5
• Finely stranded with or without end sleeve	mm^2	0.5 ... 1.5
• Terminal screws		M2.5
- Corresponding opening tool		Screwdriver, 3.0 mm x 0.5 mm (3RA29 08-1A)
For 3TX7 015:		**Spring-type terminals**
• Solid or finely stranded	mm^2	0.5 ... 2.5
• Finely stranded with end sleeve	mm^2	0.5 ... 1.5
• Corresponding opening tool		Screwdriver, 3.0 mm x 0.5 mm (3RA29 08-1A)

Type		**3TX7 01.-1.M**	**3TX7 01.-1.B**	**3TX7 0.-1.E**	**3TX7 01.-1.F**
Control side					
Operating range		0.85 ... 1.1U_s	0.7 ... 1.25U_s	0.8 ... 1.1 U_s	0.8 ... 1.1 U_s
Power consumption, max.					
• At U_s = 24 V	W	0.5			
• At U_s = 115 V	W	0.5			
• At U_s = 230 V	W	1			
Protection circuit					
• DC		Freewheel diode + Reverse polarity protection			
• AC		Rectifier bridge			

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Type			3TX7 014, 3TX7 015
Load side			
Rated currents[1]			
• Conventional thermal current I_{th}		A	5
• Rated operational currents I_e			
- AC-15	At 24 ... 230 V	A	3
- DC-13	At 24 V	A	1
	At 110 V	A	0.2
	At 230 V	A	0.1
Switching voltage	AC/DC	V	24 ... 250
Min. contact load (reliability 1 ppm)			
• Standard contact			17 V DC/5 mA
• Hard gold-plated contacts			5 V DC/1 mA
Mechanical endurance		Operating cycles	20×10^6
Electrical endurance at I_e acc. to AC-15		Operating cycles	1×10^5

[1] Capacitive loads can result in micro-weldings on the contacts.

Note:

If inductive loads are connected in parallel, the endurance of the relay couplers can be increased.

5

Selection and ordering data

Rated control supply voltage U_s at AC 50/60 Hz	Contacts Version		DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
V	NO	CO						
Plug-in base couplers, width 6.2 mm, complete with relay								
				Screw terminals				
24 DC	1	--	A	**3TX7 014-1AM00**		1	5 units	41H
24 DC	--	1	A	**3TX7 014-1BM00**		1	5 units	41H
24 AC/DC	--	1	A	**3TX7 014-1BB00**		1	5 units	41H
115 AC/DC	--	1	A	**3TX7 014-1BE00**		1	5 units	41H
230 AC/DC	--	1	A	**3TX7 014-1BF00**		1	5 units	41H
Plug-in base couplers, width 6.2 mm, complete with relay and hard gold-plating[1]								
24 DC	--	1	A	**3TX7 014-1BM02**		1	5 units	41H
24 AC/DC	--	1	A	**3TX7 014-1BB02**		1	5 units	41H
115 AC/DC	--	1	A	**3TX7 014-1BE02**		1	5 units	41H
230 AC/DC	--	1	A	**3TX7 014-1BF02**		1	5 units	41H
Plug-in base couplers, width 6.2 mm, complete with relay								
				Spring-type terminals				
24 DC	1	--	A	**3TX7 015-1AM00**		1	5 units	41H
24 DC	--	1	A	**3TX7 015-1BM00**		1	5 units	41H
24 AC/DC	--	1	A	**3TX7 015-1BB00**		1	5 units	41H
115 AC/DC	--	1	A	**3TX7 015-1BE00**		1	5 units	41H
230 AC/DC	--	1	A	**3TX7 015-1BF00**		1	5 units	41H
Plug-in base couplers, width 6.2 mm, complete with relay and hard gold-plating[1]								
24 DC	--	1	A	**3TX7 015-1BM02**		1	5 units	41H
24 AC/DC	--	1	A	**3TX7 015-1BB02**		1	5 units	41H
115 AC/DC	--	1	A	**3TX7 015-1BE02**		1	5 units	41H
230 AC/DC	--	1	A	**3TX7 015-1BF02**		1	5 units	41H



3TX7 014-1AM00

[1] The versions with hard gold-plated contacts feature high contact reliability (also for low currents) and are therefore especially suitable for solid-state inputs of programmable logic controllers.

Note:

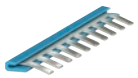
A clearance of at least 10 mm between the modules or to adjacent contacts is required for operation with rated voltage and 100 % ON period over 24 hours a day.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Relay couplers with plug-in connection

Accessories

	For coupling links	Rated control supply voltage U_s	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		V							
Replacement relay modules[1], width 6.2 mm, 1 changeover contact									
			For complete unit						
	3TX7 014 and 3TX7 015	12 DC	• 24 V AC/DC	A	**3TX7 014-7BQ00**		1	20 units	41H
			• 24 V DC, hard gold-plating	A	**3TX7 014-7BQ02**		1	20 units	41H
	3TX7 014 and 3TX7 015	24 DC	• 24 V DC	A	**3TX7 014-7BM00**		1	20 units	41H
			• 24 V DC, hard gold-plating	A	**3TX7 014-7BM02**		1	20 units	41H
	3TX7 014 and 3TX7 015	60 DC	• 115 V or 230 V AC/DC	A	**3TX7 014-7BP00**		1	20 units	41H
			• 115 V or 230 V AC/DC, hard gold-plated	A	**3TX7 014-7BP02**		1	20 units	41H
Connecting comb, blue									
 3TX7 014-7AA00	3TX7 014 and 3TX7 015	--	For linking the same potentials 16 terminals, current carrying capacity for infeed max. 6 A	A	**3TX7 014-7AA00**		1	5 units	41H
Galvanic isolation plates									
 3TX7 014-7CE00	3TX7 014 and 3TX7 015	--	--	A	**3TX7 014-7CE00**		1	10 units	41H

[1] The versions with hard gold-plated contacts feature high contact reliability (also for low currents) and are therefore especially suitable for solid-state inputs of programmable logic controllers.

Terminals and assignment of the replacement relay modules

Plug-in base couplers			Spare modules
3TX7 014-….. **3TX7 015-…..**	**U_s** (+)A1/(-)A2	**NO** (13/14) or **CO** (11/12/14)	**3TX7 014-…..**
-1AM00	24 V DC	NO (normally open contact)	**-7BM00**
-1BM00	24 V DC	CO (changeover contact)	**-7BM00**
-1BB00	24 V AC/DC		**-7BQ00**
-1BE00	115 V AC/DC		**-7BP00**
-1BF00	230 V AC/DC		**-7BP00**
-1BM02[1]	24 V DC	CO (changeover contact)	**-7BM02[1]**
-1BB02[1]	24 V AC/DC		**-7BQ02[1]**
-1BE02[1]	115 V AC/DC		**-7BP02[1]**
-1BF02[1]	230 V AC/DC		**-7BP02[1]**

[1] Hard gold-plated contacts

Note:

For more information about replacement relay modules see the Industry Mall, the interactive catalog CA 01 or the Internet.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

AC and DC operation

IEC 60947, EN 60947,
IEC 60664-1, EN 60664-1 and EN 50005;
optocouplers: IEC 60747-5, EN 60747-5;
programmable controllers: IEC 61131-2

The input and output coupling links differ with regard to the positioning of the terminals and the LEDs. For equipment identification purposes, each coupling link has a blank labeling plate.

The semiconductor couplers have a low power consumption and are therefore particularly well suited for solid-state systems.

In the coupling links in double-decker design, the connections are arranged on two levels; these units are extremely compact. For test purposes, versions are available with manual-0-automatic switches. This design can also be supplied with spring-type terminals.

Surge suppression

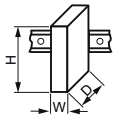
In the case of optocouplers, the contact element is a semiconductor. These are not subject to wear; so welding is not possible.

Note:

With semiconductors, the switching current is not dependent on the inductance of the load, i.e. the switching current for a DC-13 load is the same as that for an inductive DC-12 load.

This means that coupling links with a semiconductor output are particularly suitable for inductive loads such as solenoid valves. It is not relevant to specify any number of operating cycles because this does not affect the endurance of the semiconductor provided it is not overheated.

Technical specifications

Type			**3TX7 002**	**3TX7 004, 3TX7 005**
Dimensions (W x H x D) For W see Selection and ordering data		mm	W x 60 x 62	W x 80 x 80
General technical specifications				
Rated insulation voltage U_i (pollution degree 3)		V	300	
Optoelectronic coupling elements: **Protective separation** acc. to IEC 60947-1, Appendix N		V	Up to 300	
Permissible ambient temperature				
• During operation		°C	-25 ... +60	
• During storage		°C	-40 ... +80	
Conductor cross-sections				
(For 3TX7 002, 3TX7 004)			**Screw terminals**	
• Solid		mm^2	1 x (0.25 ... 4)	
• Finely stranded without end sleeve		mm^2	1 x (0.5 ... 2.5)	
• Finely stranded with end sleeve		mm^2	1 x (0.5 ... 2.5)	
• Terminal screws			M3	
- Corresponding opening tool			Screwdriver, size 3.0 mm x 0.5 mm (3RA29 08-1A)	
(For 3TX7 005)			**Spring-type terminals**	
• Solid or finely stranded		mm^2	--	1 x (0.08 ... 2.5)
• Finely stranded with end sleeve		mm^2	--	1 x (0.25 ... 1.5)
• Corresponding opening tool			--	Screwdriver, size 3.0 mm x 0.5 mm (3RA29 08-1A)

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Semiconductor couplers

Type		3TX7 002-3AB00	3TX7 002-3AB01	3TX7 002-4AB00	3TX7 002-4AG00
Control side					
Operating range	V	17 ... 30 DC	11 ... 30 DC	17 ... 30 AC/DC	88 ... 264 AC
Power consumption, max.					
• At 17 V DC	mA	18	5	--	--
• At 24 V DC	mA	20	7	--	--
• At 30 V DC	mA	22	8.5	--	--
• At 17 V AC/DC	mA	--	--	10	--
• At 24 V AC/DC	mA	--	--	14	--
• At 30 V AC/DC	mA	--	--	18	--
• At 88 V AC/DC	mA	--	--	--	9
• At 230 V AC/DC	mA	--	--	--	24
• At 264 V AC/DC	mA	--	--	--	28
Load side					
Switching current	A	1.8	1.5 [2]	0.1	0.1
Short-time loading capacity	A	20	4	1	1
	ms	20	200	20	20
Switching voltage (operating range)[1]					
• Effective AC 50/60 Hz	V	48 ... 264	--	--	--
• DC		--	≤60	≤30	≤30
Minimum load current	mA	60	--	--	--
Voltage drop conducting	V	≤1.5	≤1.1	≤1.7	≤0.3

[1] Observe minimum switching voltage for 3TX7 002-3AB00.

[2] See derating diagram.

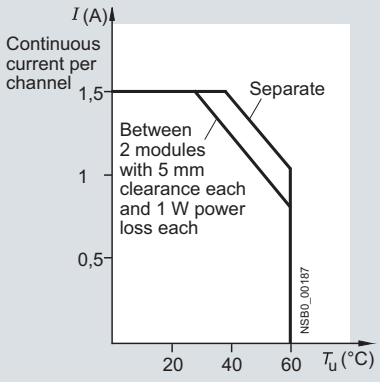
Type	3TX7 004- 3TX7 005-	3AB04	3AC.4	3AC03	3PB54	3PB74	4PG24	3PG74
Control side								
Operating range	V	11 ... 30 DC					110 ... 230 AC/DC	88 ... 253 AC/DC
Power consumption, max.								
• At 24 V DC	W	0.5		0.25	0.2		--	--
• At 110 V DC	W	--		--	--		--	0.2
• At 230 V AC	VA	--		--	--		1.5	1.5
Load side								
Switching voltage	V	10 ... 48 DC	10 ... 30 DC	24 ... 250 AC	10 ... 30 DC	11 ... 30 DC	10 ... 30 DC	11 ... 30 DC
Switching current	A	0.5	5	2	1.5	3	0.1	3
Short-time loading capacity								
• Current	A	1.5	Short-circuit proof[1]	100	Short-circuit proof[2]		0.2	Short-circuit proof[2]
• Duration	ms	20	--	20	--	--	3	--
Minimum load current	mA	--	500[3]	50	--	--	--	--

[1] In the event of a short circuit or overload, the semiconductor output switches off. In order to operate the device again, it must be temporarily disconnected from the power supply.

[2] In the event of a short circuit or overload, the current is limited by the semiconductor output.

[3] If the current falls below the minimum load current, the built-in semiconductor detects an open circuit in the load circuit. The control must be temporarily switched off for resetting.

Derating diagram for 3TX7 002-3AB01



Load current as a function of ambient temperature T_u

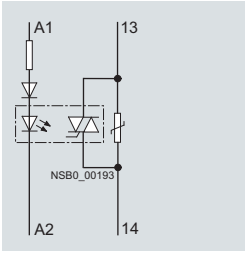
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Semiconductor couplers – circuit diagrams

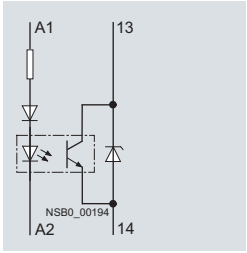
Terminal designations acc. to EN 50005

Output coupling links

3TX7 002-3AB00

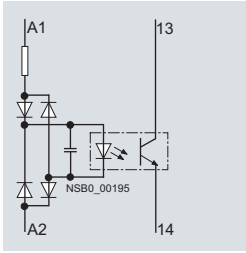


3TX7 002-3AB01

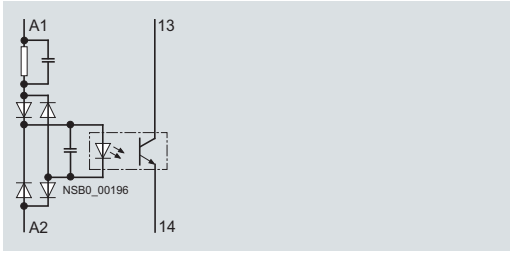


Input coupling links

3TX7 002-4AB00

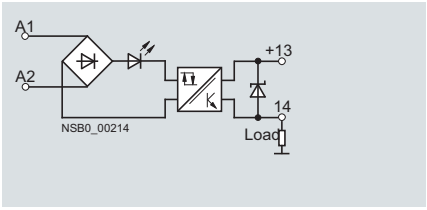


3TX7 002-4AG00

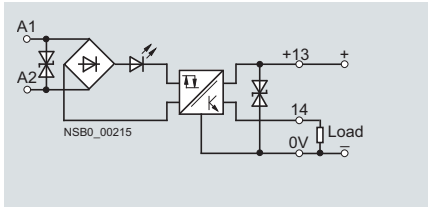


Output coupling links

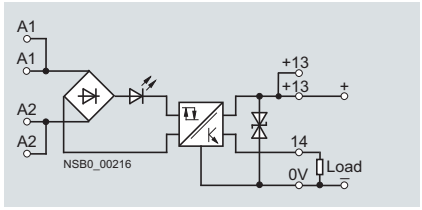
3TX7 00.-3AB04
3TX7 00.-3PB41



3TX7 00.-3PB54
3TX7 00.-3PG74
3TX7 00.-3PB74

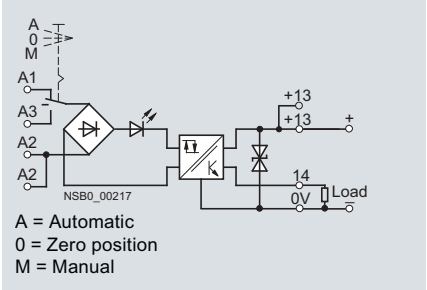


3TX7 00.-3AC04



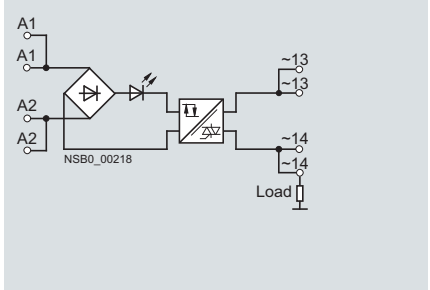
Output coupling links

3TX7 00.-3AC14



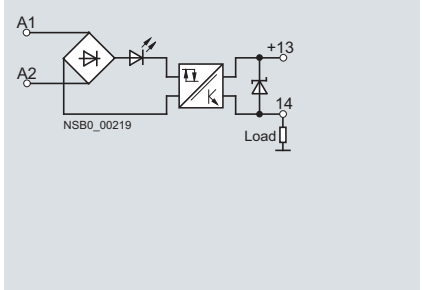
A = Automatic
0 = Zero position
M = Manual

3TX7 00.-3AC03



Input coupling links

3TX7 00.-4AB04



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Semiconductor couplers

Selection and ordering data

AC and DC operation · For snap-on mounting onto TH 35 standard mounting rail

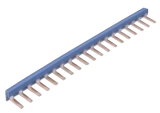
	Rated control supply voltage U_S at AC 50/60 Hz	Switching voltage	Switching current	Manual-0-automatic switch for testing purposes	Width W	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	V	V	A		mm						
3TX7 002 semiconductor couplers with screw terminals, 1 transistor											
 3TX7 002	**Output coupling links**						**Screw terminals** ⊕				
	24 DC	48 ... 264 AC	1.8	--	11.5	▶	**3TX7 002-3AB00**		1	1 unit	41H
		< 60 DC	1.5	--	11.5	▶	**3TX7 002-3AB01**		1	1 unit	41H
	Input coupling links										
	24 AC/DC	< 30 DC	0.1	--	11.5	▶	**3TX7 002-4AB00**		1	1 unit	41H
	110 ... 240 AC	< 30 DC	0.1	--	12.5	▶	**3TX7 002-4AG00**		1	1 unit	41H
3TX7 004 semiconductor couplers with screw terminals											
 3TX7 004-3AB04	**Output coupling links**										
	24 DC	≤48 DC	0.5	--	6.2	▶	**3TX7 004-3AB04**		1	1 unit	41H
	24 DC	11 ... 30 DC	1.5	--	6.2	▶	**3TX7 004-3PB54**		1	1 unit	41H
	24 DC	≤30 DC	3	--	6.2	▶	**3TX7 004-3PB74**		1	1 unit	41H
	110 ... 230 AC/DC	≤30 DC	3	--	6.2	A	**3TX7 004-3PG74**		1	1 unit	41H
	24 DC	≤30 DC	5	--	12.5	▶	**3TX7 004-3AC04**		1	1 unit	41H
	24 DC	≤30 DC	5	Yes	12.5	B	**3TX7 004-3AC14**		1	1 unit	41H
	24 DC	24 ... 250 AC	2	--	12.5	▶	**3TX7 004-3AC03**		1	1 unit	41H
	Input coupling links										
	110 ... 230 AC/DC	≤30 DC	0.1	--	6.2	▶	**3TX7 004-4PG24**		1	1 unit	41H
3TX7 005 semiconductor couplers with spring-type terminals											
	Output coupling links						**Spring-type terminals**				
	24 DC	≤48 DC	0.5	--	6.2	▶	**3TX7 005-3AB04**		1	1 unit	41H
	24 DC	11 ... 30 DC	1.5	--	6.2	▶	**3TX7 005-3PB54**		1	1 unit	41H
	24 DC	≤30 DC	3	--	6.2	A	**3TX7 005-3PB74**		1	1 unit	41H
	110 ... 230 AC/DC			--	6.2	A	**3TX7 005-3PG74**		1	1 unit	41H
	24 DC	≤30 DC	5	--	12.5	▶	**3TX7 005-3AC04**		1	1 unit	41H
	24 DC			Yes	12.5	C	**3TX7 005-3AC14**		1	1 unit	41H
	24 DC	24 ... 250 AC	2	--	12.5	C	**3TX7 005-3AC03**		1	1 unit	41H
	Input coupling links										
	110 ... 230 AC/DC	≤30 DC	0.1	--	6.2	▶	**3TX7 005-4PG24**		1	1 unit	41H

Note:

For replacement products, see 3RS18 coupling links with industrial housing or other 3TX7 0 products.

For coil voltages which are not listed, see "SITOP power DC Power Supplies", e.g. 6EP1 331-2BA10 and 6EP1 731-2BA00 (see Chapter 15, "Stabilized Power Supplies").

Accessories

	For coupling links Type	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Connecting comb, blue								
 3TX7 004-8AA00	3TX7 004	For linking the same potentials 24 terminals, current carrying capacity for infeed max. 26 A Width 6.2 mm	▶	**3TX7 004-8AA00**		1	1 unit	41H
Connecting cable, blue								
 3TX7 004-8BA00	3TX7 002 and 3TX7 004 with screw terminals 3TX7 003 and 3TX7 005 with spring-type terminals	With infeed, blue 24 terminals, current carrying capacity for infeed max. 12 A Length of cable between 2 terminals approx. 11 cm	A	**3TX7 004-8BA00**		1	1 unit	41H

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

The 3RS18 coupling relays are couplers in the proven 22.5 mm industrial enclosure. This enclosure supports the same connection methods as for the 3RP15 timing relays, including spring-type connection; 2 wires can be clamped.

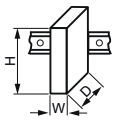
The series comprises devices with up to 3 changeover contacts with screw terminals or spring-type terminals and in combination voltage or wide voltage range versions.

The relay coils are attenuated internally with noise suppression diodes.

Versions:

- Wide voltage range: One connection for a wide voltage range
- Combination voltage: Two connections for different voltage ranges
- Versions with solid-state compatible outputs (hard gold-plating)
- 1, 2 or 3 changeover contacts

Technical specifications

Type			3RS1800-.A...	3RS1800-.B...	3RS1800-.H...
Dimensions (W x H x D)		mm	22.5 x 86 x 84	22.5 x 86 x 94	22.5 x 86 x 103
General technical specifications					
Rated insulation voltage U_i pollution degree 3		V	500		
Protective separation acc. to IEC 60947-1, Appendix N between the coil and the contacts and between the individual contacts.		V	300		
Permissible ambient temperature					
• During operation		°C	-25 ... +60		
• During storage		°C	-40 ... +80		
Degree of protection acc. to IEC 60529					
• Enclosure			IP20		
• Cover			IP40		
Short-circuit protection					
• Short-circuit test with fuse links of gG operational class with short-circuit current I_k = 1 kA acc. to IEC 60947-5-1		A	4		
Conductor cross-sections					
For 3RS18 00-1:			**Screw terminals**		
• Solid		mm^2	1 x (0.5 ... 4); 2 x (0.5 ... 2.5)		
• Finely stranded with end sleeve		mm^2	2 x (0.5 ... 2.5)		
• AWG cables, solid or stranded		mm^2	2 x (20 ... 14)		
• Terminal screw			M3.5		
- Corresponding opening tool			Screwdriver, size 3.0 mm x 0.5 mm (3RA29 08-1A)		
• Tightening torque		Nm	0.8 ... 1.2		
For 3RS18 00-2:			**Spring-type terminals**		
• Solid		mm^2	2 x (0.25 ... 1.5)		
• Finely stranded without end sleeve		mm^2	2 x (0.25 ... 1.5)		
• Finely stranded with end sleeve		mm^2	2 x (0.25 ... 1)		
• AWG cables, solid or stranded		AWG	2 x (24 ... 16)		
• Corresponding opening tool			Screwdriver, size 3.0 mm x 0.5 mm (3RA29 08-1A)		
Control side					
Operating range			0.85 ... 1.1 x U_s		
Power consumption, max.	AC or DC	VA/W	8 / 1		
Load side					
Conventional thermal current I_{th}		A	6		
Rated operational currents I_e					
• AC-15	At 24 ... 400 V		3		
• DC-13	At 24 V	A	1		
	At 110 V	A	0.2		
	At 230 V	A	0.1		
Switching current for resistive load					
• AC-12	At 24 ... 400 V	A	5		
• DC-12	At 24 V	A	5		
	At 115 V	A	0.2		
	At 230 V	A	0.2		
Switching voltage					
• Max. AC		V	400		
• Max. DC		V	250		
Min. contact load					
• Standard contacts			17 V DC, 5 mA at 1 ppm fault		
• Hard gold-plated contacts			5 V DC, 1 mA at 1 ppm fault		
Mechanical endurance	Operating cycles		20 x 10^6		
Electrical endurance at I_e	Operating cycles		1 x 10^6		

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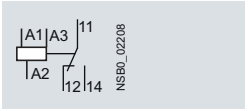
3RS18 Coupling Relays with Industrial Housing

Relay couplers

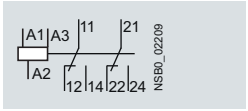
Circuit diagrams

Terminal designations acc. to EN 50005

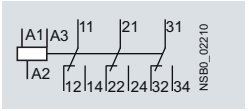
3RS18 00-.AP00,
3RS18 00-.AQ00



3RS18 00-.BP00,
3RS18 00-.BQ00,
3RS18 00-.BW00

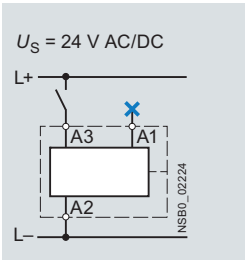


3RS18 00-.HP0.,
3RS18 00-.HQ0.,
3RS18 00-.HW0.

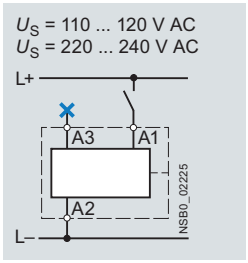


Connection of the control supply voltage U_s

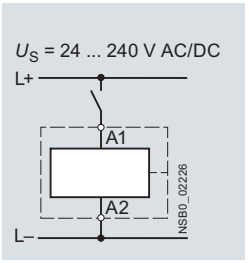
3RS18 00-..P0.,
3RS18 00-..Q0.



3RS18 00-..P0.,
3RS18 00-..Q0.



3RS18 00-..W0.



Note:

The position of the connection points on the device is based on the principle of logical separation, i.e. the coil terminals A1, A2, A3 are above and the terminals for the changeover contacts 11, 12, 14 etc. are below.

Selection and ordering data

Rated control supply voltage U_s at AC 50/60 Hz V	Connection U_s	Contacts Version W	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Coupling relays with industrial housing with screw terminals, 22.5 mm								
 3RS18 00-1. . . .	**Wide voltage range**			**Screw terminals**				
24 ... 240 AC/DC	A1 - A2	2	A	**3RS18 00-1BW00**		1	1 unit	41H
		3	A	**3RS18 00-1HW00**		1	1 unit	41H
		3 [1]	A	**3RS18 00-1HW01**		1	1 unit	41H
	Combination voltage							
24 AC/DC and 110 ... 120 AC	A3 - A2 or A1 - A2	1	A	**3RS18 00-1AQ00**		1	1 unit	41H
		2	A	**3RS18 00-1BQ00**		1	1 unit	41H
		3	C	**3RS18 00-1HQ00**		1	1 unit	41H
		3 [1]	C	**3RS18 00-1HQ01**		1	1 unit	41H
24 AC/DC and 220 ... 240 AC	A3 - A2 or A1 - A2	1	A	**3RS18 00-1AP00**		1	1 unit	41H
		2	A	**3RS18 00-1BP00**		1	1 unit	41H
		3	A	**3RS18 00-1HP00**		1	1 unit	41H
		3 [1]	A	**3RS18 00-1HP01**		1	1 unit	41H
Coupling relays with industrial housing with spring-type terminals, 22.5 mm								
	Wide voltage range			**Spring-type terminals**				
24 ... 240 AC/DC	A1 - A2	2	A	**3RS18 00-2BW00**		1	1 unit	41H
		3	A	**3RS18 00-2HW00**		1	1 unit	41H
		3 [1]	C	**3RS18 00-2HW01**		1	1 unit	41H
	Combination voltage							
24 AC/DC and 110 ... 120 AC	A3 - A2 or A1 - A2	1	C	**3RS18 00-2AQ00**		1	1 unit	41H
		2	C	**3RS18 00-2BQ00**		1	1 unit	41H
		3	C	**3RS18 00-2HQ00**		1	1 unit	41H
		3 [1]	C	**3RS18 00-2HQ01**		1	1 unit	41H
24 AC/DC and 220 ... 240 AC	A3 - A2 or A1 - A2	1	A	**3RS18 00-2AP00**		1	1 unit	41H
		2	A	**3RS18 00-2BP00**		1	1 unit	41H
		3	A	**3RS18 00-2HP00**		1	1 unit	41H
		3 [1]	C	**3RS18 00-2HP01**		1	1 unit	41H

[1] Hard gold-plated contacts.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Plug-in relay coupling links can be ordered as complete units or as individual modules for customer assembly.

Function

The semiconductor couplers have a low power consumption and are therefore particularly well suited for solid-state systems. In the versions equipped with LEDs, these indicate the switching state. The LZS:PT/MT plug-in relay couplers have a test button. This can be used to force the plug-in relay coupler into the switching state and to lock it. This is indicated by a raised petrol-colored lever.

Control with solid-state output

In the case of solid-state outputs (e.g. proximity switches) with overload and short-circuit protection, you must make allowance during configuration for the temporarily flowing capacitor charging currents! This is possible, for example, by using a suitable LZS plug-in relay coupler.

Surge suppression

The 24 V DC relays LZX:RT and LZX: PT with LEDs can be supplied with, all others without integral surge suppression (freewheel diode connected in parallel with A1/A2). The positive control supply voltage must be connected to coil terminal A1.

Mounting

The relays are plugged into the base and this is snapped onto a TH 35 standard mounting rail according to IEC 60715.

A retaining bracket can be ordered for the MT series that additionally fixes the relay into a plug-in base (under conditions of increased mechanical stress). For the RT and PT series, a combined retaining and ejection bracket is available which can be used to disassemble the relay where access is difficult, for example, when relays are mounted side-by-side.

They can be mounted as required.

Logical separation

The terminals for the contacts and the terminals for the coil are arranged on separate levels, e.g. above for contacts and below for coil. Logical separation is not necessarily protective separation.

Protective separation

For safe isolation, transfer of the voltage of one circuit to another circuit is prevented to a suitable degree of safety (requirements and tests are described in IEC 60947-1 in Appendix N).

Notes on the previous LZX series

The complete units and accessory parts of the LZX series are no longer listed in this catalog. The complete units of the LZS series are fully compatible with the corresponding units of the LZX series. Prices for the LZS series are lower than for the previous LZX series.

The LZX plug-in relays are available unchanged and are used accordingly in both the LZS and the LZX series.

Note:

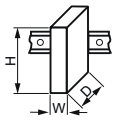
Due to differences in geometry the LED modules, plug-in bases, retaining brackets and labels can be combined and/or used in only the respective series, LZS or LZX.

The LZS series offers not only service-proven screw connections but also versions with plug-in terminals (push-in).

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Plug-in relay couplers

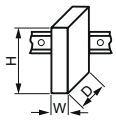
Technical specifications

Relay type		**LZX:RT print relay, 8-pole, (12.7 mm) 1 CO/2 CO**				**LZX:PT industrial relay, 8-, 11- and 14-pole, (22.5 mm) 2 CO/3 CO/4 CO**			
Dimensions (W x H x D)									
• LZX:RT.A4 / LZX:PT.A5	mm	15.5 x 78 x 71				28 x 74 x 72			
• LZX:RT.B4 / LZX:PT.B5	mm	15.5 x 77 x 71				28 x 77 x 79			
• LZX:RT.D4 / LZX:PT.D5	mm	15.5 x 98 x 71				28 x 98 x 79			
General technical specifications									
Rated control supply voltage U_s[1]	V	24 DC	24 AC	115 AC	230 AC	24 DC	24 AC	115 AC	230 AC
Rated insulation voltage U_i (pollution degree 3)	V	250				250			
Overvoltage category acc. to IEC 60664-1		III				III			
Protective separation between coil and contacts acc. to IEC 60947-1, Appendix N		Up to 250 V (with plug-in base LZS:RT78726) No (for complete units with standard socket)				No			
Degree of protection									
• Relays		IP67				IP50			
• Bases		IP20				IP20			
Permissible ambient temperature									
• During operation	°C	-40 ... +70				-40 ... +70			
• During storage	°C	-40 ... +80				-40 ... +80			
Conductor cross-sections									
		Screw terminals				**Screw terminals**			
• Solid	mm^2	2 x 2.5				2 x 2.5			
• Finely stranded with or without end sleeve	mm^2	2 x 1.5				2 x 1.5			
• Corresponding opening tool		Screwdriver, size 3.0 ... 3.5 mm x 0.5 mm (3RA29 08-1A)							
		Plug-in terminals				**Plug-in terminals**			
• Solid	mm^2	2 x 0.75 ... 1.5				2 x 0.75 ... 1.5			
• Finely stranded with or without end sleeve	mm^2	2 x 0.75 ... 1.5/1.0				2 x 0.75 ... 1.5/1.0			
Control side									
Operating range at 20 °C	V	16.8 ... 52	18 ... 52	86.3 ... 127	172 ... 264	18 ... 40.8	19.2 ... 39.6	92 ... 190	184 ... 380
Power consumption at U_s									
• AC	VA	--	0.75			--	1		
• DC	W	0.4	--			0.75	--		
Release voltage	V	2.4	7.2	34.5	69	3.6	7.2	34.5	69
Protection circuit		Freewheel diode for complete unit	--			Freewheel diode in LED module	--		
Load side									
Switching voltage AC/DC	V	24 ... 250				24 ... 250			
Rated currents[2]									
• Conventional thermal current I_{th}	A								
- 1 CO contact	A	16				--			
- 2 CO contacts	A	6				12			
- 3 CO contacts	A	--				10			
- 4 CO contacts	A	--				6			
• Rated operational current I_e AC-15 acc. to utilization categories (IEC 60947-5-1)	A	6/3				5/5/4			
• Rated operational current I_e DC-13 with suppressor diode acc. to utilization categories (IEC 60947-5-1)	A	2 at 24 V, 0.27 at 230 V				5 at 24 V, 0.5 at 230 V			
Short-circuit protection									
• Short-circuit test with fuse links of gG operational class: DIAZED, Type 5SB with short-circuit current I_k = 1 kA acc. to IEC 60947-5-1	A	10				6			
Min. contact load (reliability: 1 ppm)		Standard 17 V, 10 mA; hard gold-plated 17 V/0.1 mA				Standard 17 V, 10 mA; hard gold-plated 20 mV/1 mA			
Mechanical endurance	Operating cycles	30×10^6	10×10^6			10×10^6			
Electrical endurance (resistive load at 250 V AC)	Operating cycles	1×10^5				1×10^5			

1) AC voltages, 50 Hz; for 60 Hz operation, the lower response value must be increased by 10 %; the power loss will reduce slightly.

2) Capacitive loads can result in micro-weldings on the contacts.

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Relay type			**MT industrial relay, 11-pole (35.5 mm) 3 CO**			
Dimensions (W x H x D)		mm	36 x 69 x 36			
AC and DC operation						
Rated control supply voltage *Us* [1]		V	24 DC	24 AC	115 AC	230 AC
Rated insulation voltage U_i (pollution degree 3)		V	250			
Overvoltage category acc. to IEC 60664-1			III			
Protective separation between coil and contacts acc. to IEC 60947-1, Appendix N			No			
Degree of protection of relay/base						
• Relay			IP50			
• Base			IP20			
Permissible ambient temperature						
• During operation		°C	-40 ... +60	-45 ... +50	-45 ... +50	-45 ... +50
• During storage		°C	-45 ... +80	-45 ... +80	-45 ... +80	-45 ... +80
Conductor cross-sections						
Connection type			**Screw terminals**			
• Solid		mm^2	2 x 2.5			
• Finely stranded with or without end sleeve		mm^2	2 x 1.5			
• Corresponding opening tool			Screwdriver, size 1 or Pozidriv 1			
Control side						
Operating range at 20 °C		V	18 ... 38	19.2 ... 38	92 ... 137	184 ... 264
Power consumption						
• AC		VA	--	2.3		
• DC		W	1.2	--		
Release voltage		V	2.4	9.6	46	92
Protection circuit			--			
Load side						
Switching voltage						
• AC/DC		V	24 ... 250			
Rated currents [2]						
• Conventional thermal current I_{th}		A	10			
• Rated operational current I_e /DC-13 acc. to utilization categories (IEC 60947-5-1)		A	2 at 24 V, 0.27 at 230 V			
• Rated operational current I_e /AC-15 acc. to utilization categories (IEC 60947-5-1)		A	5 at 24 V and 230 V			
Short-circuit protection						
• Short-circuit test with fuse links of gG operational class: DIAZED, Type 5SB with short-circuit current I_k = 1 kA acc. to IEC 60947-5-1		A	10			
Min. contact load (reliability: 1 ppm)			12 V DC/10 mA			
Mechanical endurance		Operating cycles	20×10^6			
Electrical endurance (resistive load at 250 V AC)		Operating cycles	4×10^5			

[1] AC voltages, 50 Hz; for 60 Hz operation, the lower response value must be increased by 10 %; the power loss will reduce slightly.

[2] Capacitive loads can result in micro-weldings on the contacts.

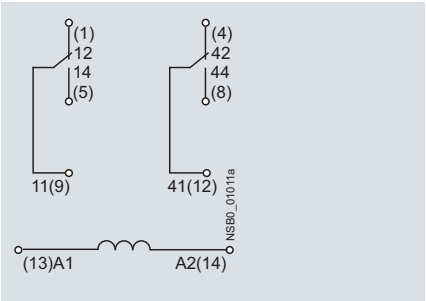
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Coupling Relays with LZS/LZX Plug-In Relays

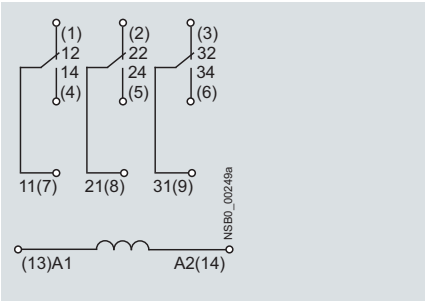
Plug-in relay couplers

Circuit diagrams

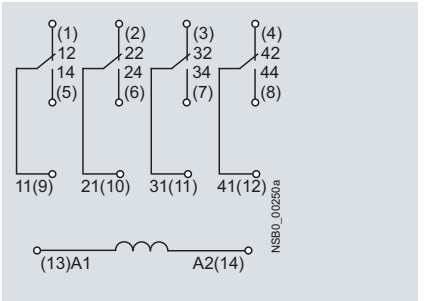
LZX:PT270
2-pole



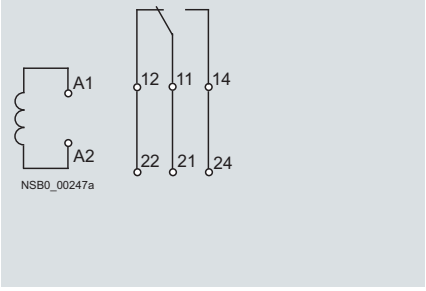
LZX:PT370
3-pole



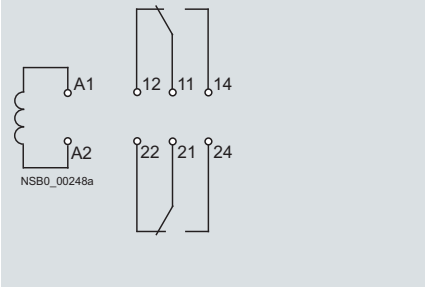
LZX:PT520, LZX:PT570, LZX:PT580
4-pole



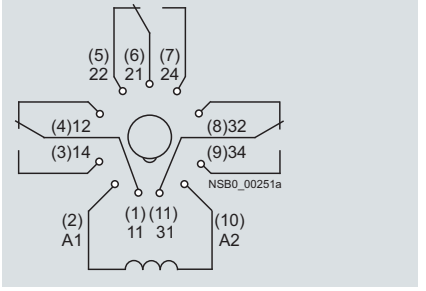
LZX:RT3
1-pole



LZX:RT4
2-pole



LZX:MT32
3-pole



Note:

Values in brackets: socket designations
Without brackets: contact/coil designations

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Selection and ordering data

	Version	Rated control supply voltage U_s at AC 50/60 Hz	Contacts, number of CO contacts	Width	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		V		mm						
Complete units, 11- and 14-pole, PT series										
 LZS:PT3A5L24	**Complete units with plug-in base** for snap-on mounting onto TH 35 standard mounting rail comprising: • Coupling relays with plug-in relays • Standard plug-in base with screw terminals • LED module (version 24 V DC: LED module with freewheel diode) • Fixing/ejection brackets • Labels					**Screw terminals**				
	3 CO contacts	24 DC	3	28	A	**LZS:PT3A5L24**		1	5 units	41H
		24 AC			A	**LZS:PT3A5R24**		1	5 units	41H
		115 AC			A	**LZS:PT3A5S15**		1	5 units	41H
		230 AC			A	**LZS:PT3A5T30**		1	5 units	41H
	4 CO contacts	24 DC	4	28	A	**LZS:PT5A5L24**		1	5 units	41H
		24 AC			A	**LZS:PT5A5R24**		1	5 units	41H
		115 AC			A	**LZS:PT5A5S15**		1	5 units	41H
		230 AC			A	**LZS:PT5A5T30**		1	5 units	41H
	Complete units with plug-in base with logical separation for snap-on mounting onto TH 35 standard mounting rail comprising: • Coupling relays with plug-in relays • Plug-in base with logical isolation and screw terminals • LED module (version 24 V DC: LED module with freewheel diode) • Fixing/ejection brackets • Labels									
	4 CO contacts	24 DC	4	28	A	**LZS:PT5B5L24**		1	5 units	41H
		24 AC			A	**LZS:PT5B5R24**		1	5 units	41H
		115 AC			A	**LZS:PT5B5S15**		1	5 units	41H
		230 AC			A	**LZS:PT5B5T30**		1	5 units	41H
Complete units, 8- and 14-pole, PT series										
 LZS:PT5D5L24	**Complete units with plug-in base with logical separation** for snap-on mounting onto TH 35 standard mounting rail comprising: • Coupling relays with plug-in relays • Plug-in base with logical separation and plug-in terminals (push-in) • LED module (version 24 V DC: LED module with freewheel diode) • Fixing/ejection brackets • Labels					**Plug-in terminals**				
	2 CO contacts	24 DC	2	28	A	**LZS:PT2D5L24**		1	5 units	41H
		230 AC			A	**LZS:PT2D5T30**		1	5 units	41H
	4 CO contacts	24 DC	4	28	A	**LZS:PT5D5L24**		1	5 units	41H
		24 AC			A	**LZS:PT5D5R24**		1	5 units	41H
		115 AC			A	**LZS:PT5D5S15**		1	5 units	41H
		230 AC			A	**LZS:PT5D5T30**		1	5 units	41H

Note:

Logical separation: The terminals for the contacts and the terminals for the coil are arranged on separate levels, e.g. above for contacts and below for the coil. Logical separation is not necessarily protective separation.

Protective separation: Protective separation prevents voltage of one circuit affecting another circuit with sufficient protection (IEC 61140).

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Plug-in relay couplers

	Version	Rated control supply voltage U_s at AC 50/60 Hz	Contacts, number of CO contacts	Width	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		V		mm						
Individual modules for customer assembly, PT series										
	Industrial relays, 8-, 11-, and 14-pole									
 LZX:PT370024	**Mini industrial relays**									
	• With test bracket and mechanical switch position indicator, without LED[1)]									
		24 DC	2	22.5	▶	**LZX:PT270024**		1	1 unit	41H
			3		▶	**LZX:PT370024**		1	1 unit	41H
			4		▶	**LZX:PT570024**		1	1 unit	41H
		24 AC	2	22.5	▶	**LZX:PT270524**		1	1 unit	41H
			3		A	**LZX:PT370524**		1	1 unit	41H
			4		▶	**LZX:PT570524**		1	1 unit	41H
		115 AC	2	22.5	C	**LZX:PT270615**		1	1 unit	41H
			3		A	**LZX:PT370615**		1	1 unit	41H
			4		▶	**LZX:PT570615**		1	1 unit	41H
		230 AC	2	22.5	▶	**LZX:PT270730**		1	1 unit	41H
			3		▶	**LZX:PT370730**		1	1 unit	41H
			4		▶	**LZX:PT570730**		1	1 unit	41H
	• With hard gold-plating									
		24 DC	4	22.5	▶	**LZX:PT580024**		1	1 unit	41H
		230 AC			▶	**LZX:PT580730**		1	1 unit	41H
	• Without test bracket									
		24 DC	4	22.5	▶	**LZX:PT520024**		1	1 unit	41H
		230 AC			C	**LZX:PT520730**		1	1 unit	41H
	Plug-in bases for PT relays									
 LZS:PT78740	**Standard plug-in bases** for mounting onto TH 35 standard mounting rail					**Screw terminals**				
		--	2	28	▶	**LZS:PT78720**		1	1 unit	41H
			3		▶	**LZS:PT78730**		1	1 unit	41H
			4		▶	**LZS:PT78740**		1	1 unit	41H
 LZS:PT78722	**Plug-in bases with logical separation** for mounting onto TH 35 standard mounting rail									
		--	2	28	▶	**LZS:PT78722**		1	1 unit	41H
			4		▶	**LZS:PT78742**		1	1 unit	41H
 LZS:PT7874P	**Plug-in bases with logical separation** for mounting onto TH 35 standard mounting rail					**Plug-in terminals**				
		--	2	28	▶	**LZS:PT7872P**		1	1 unit	41H
			4		▶	**LZS:PT7874P**		1	1 unit	41H

[1)] The test bracket is designed to be non-latching. If the test bracket is pressed further until 90° has been reached, two small lugs break off and the test bracket can be latched in position.

Note:

Logical separation: The terminals for the contacts and the terminals for the coil are arranged on separate levels, e.g. above for contacts and below for the coil. Logical separation is not necessarily a protective separation.

Protective separation: Protective separation prevents voltage of one circuit affecting another circuit with sufficient protection (IEC 61140).

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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	Version	Rated control supply voltage U_s at AC 50/60 Hz	Contacts, number of CO contacts	Width	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		V		mm						
Individual modules for customer assembly, PT series										
	More individual modules									
	LED modules									
	• Red									
LZS:PTML0024	With freewheel diode	24 DC	--	12.5	▶	**LZS:PTML0024**		1	1 unit	41H
	Without freewheel diode	24 AC/DC			▶	**LZS:PTML0524**		1	1 unit	41H
		110 … 230 AC/DC			▶	**LZS:PTML0730**		1	1 unit	41H
	• Green									
LZS:PT17021	With freewheel diode	24 DC	--	12.5	▶	**LZS:PTMG0024**		1	1 unit	41H
	Without freewheel diode	24 AC			▶	**LZS:PTMG0524**		1	1 unit	41H
		110 … 230 AC/DC			▶	**LZS:PTMG0730**		1	1 unit	41H
	Fixing/ejection brackets for PT base with logical separation									
LZS:PT17024	Screw terminals and plug-in terminals		--	26	▶	**LZS:PT17021**		100	10 units	41H
	Fixing/ejection brackets for standard plug-in base without logical separation									
	Screw terminals		--	26	▶	**LZS:PT17024**		100	10 units	41H
	Labels									
LZS:PT17040		--	--	26	▶	**LZS:PT17040**		100	10 units	41H
	RC elements									
		6 ... 60 AC	--	26	▶	**LZS:PTMU0524**		1	1 unit	41H
		110 … 230 AC			▶	**LZS:PTMU0730**		1	1 unit	41H
	Freewheel diodes with connection to A1									
LZS:PTMU0730		6 … 230 DC	--	26	▶	**LZS:PTMT00A0**		1	1 unit	41H
	Connecting cable, 24-pole									
	Current carrying capacity 12 A, with supply, blue				A	**3TX7 004-8BA00**		1	1 unit	41H
	Connecting combs for PT screw base									
3TX7 004-8BA00	6-pole, 10 A current carrying capacity, natural-colored				▶	**LZS:PT170R6**		1	10 units	41H
	Connecting brackets for PT push-in base									
	2-pole, 10 A current carrying capacity, natural-colored				▶	**LZS:PT170P1**		1	10 units	41H
Individual modules for customer assembly, MT series										
	Industrial relays, 11-pole									
	Industrial relays with test bracket									
LZX:MT326024	Without LED	24 DC	3	35.5	A	**LZX:MT321024**		1	1 unit	41H
	With LED				▶	**LZX:MT323024**		1	1 unit	41H
	Without LED	24 AC	3	35.5	A	**LZX:MT326024**		1	1 unit	41H
	With LED				C	**LZX:MT328024**		1	1 unit	41H
	Without LED	115 AC	3	35.5	C	**LZX:MT326115**		1	1 unit	41H
	With LED				C	**LZX:MT328115**		1	1 unit	41H
	Without LED	230 AC	3	35.5	A	**LZX:MT326230**		1	1 unit	41H
	With LED				A	**LZX:MT328230**		1	1 unit	41H
	Plug-in bases for mounting onto TH 35 standard mounting rail					**Screw terminals**	⏚			
LZS:MT78750			--	38	▶	**LZS:MT78750**		1	1 unit	41H
	Retaining brackets									
		--	--	38	▶	**LZS:MT28800**		1	1 unit	41H

Note:

Logical separation: The terminals for the contacts and the terminals for the coil are arranged on separate levels, e.g. above for contacts and below for the coil. Logical separation is not necessarily a protective separation.

Protective separation: Protective separation prevents voltage of one circuit affecting another circuit with sufficient protection (IEC 61140).

Note:

For coil voltages which are not listed, see "SITOP power DC Power Supplies", e.g. 6EP1 331-2BA10 and 6EP1 731-2BA00 (see Chapter 15, "Stabilized Power Supplies").

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Coupling Relays with LZS/LZX Plug-In Relays

Plug-in relay couplers

	Version	Rated control supply voltage U_s at AC 50/60 Hz	Contacts, number of CO contacts	Width	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		V		mm						
Complete units, 8-pole, 5 mm pinning, RT series										
 LZS:RT4A4T30	**Complete units with plug-in base** for snap-on mounting onto TH 35 standard mounting rail comprising: • Coupling relays with plug-in relays • Standard plug-in base with screw terminals • LED module (version 24 V DC: LED module with freewheel diode) • Fixing/ejection brackets • Labels					**Screw terminals**				
	1 CO contact	24 DC	1	15.5	A	**LZS:RT3A4L24**		1	5 units	41H
		24 AC			A	**LZS:RT3A4R24**		1	5 units	41H
		115 AC			A	**LZS:RT3A4S15**		1	5 units	41H
		230 AC			A	**LZS:RT3A4T30**		1	5 units	41H
	2 CO contacts	24 DC	2	15.5	A	**LZS:RT4A4L24**		1	5 units	41H
		24 AC			A	**LZS:RT4A4R24**		1	5 units	41H
		115 AC			A	**LZS:RT4A4S15**		1	5 units	41H
		230 AC			A	**LZS:RT4A4T30**		1	5 units	41H
 LZS:RT4B4T30	**Complete units with plug-in base with logical separation** for snap-on mounting onto TH 35 standard mounting rail comprising: • Coupling relays with plug-in relays • Plug-in base with logical isolation and screw terminals • LED module (version 24 V DC: LED module with freewheel diode) • Fixing/ejection brackets • Labels									
	1 CO contact	24 DC	1	15.5	A	**LZS:RT3B4L24**		1	5 units	41H
		24 AC			A	**LZS:RT3B4R24**		1	5 units	41H
		115 AC			A	**LZS:RT3B4S15**		1	5 units	41H
		230 AC			A	**LZS:RT3B4T30**		1	5 units	41H
	2 CO contacts	24 DC	2	15.5	A	**LZS:RT4B4L24**		1	5 units	41H
		24 AC			A	**LZS:RT4B4R24**		1	5 units	41H
		115 AC			A	**LZS:RT4B4S15**		1	5 units	41H
		230 AC			A	**LZS:RT4B4T30**		1	5 units	41H
 LZS:RT3D4L24	**Complete units with plug-in base with logical separation** for snap-on mounting onto TH 35 standard mounting rail comprising: • Coupling relays with plug-in relays • Plug-in base with logical separation and plug-in terminals (push-in) • LED module (version 24 V DC: LED module with freewheel diode) • Fixing/ejection brackets • Labels					**Plug-in terminals**				
	1 CO contact	24 DC	1	15.5	A	**LZS:RT3D4L24**		1	5 units	41H
		24 AC			A	**LZS:RT3D4R24**		1	5 units	41H
		115 AC			A	**LZS:RT3D4S15**		1	5 units	41H
		230 AC			A	**LZS:RT3D4T30**		1	5 units	41H
	2 CO contacts	24 DC	2	15.5	A	**LZS:RT4D4L24**		1	5 units	41H
		24 AC			A	**LZS:RT4D4R24**		1	5 units	41H
		115 AC			A	**LZS:RT4D4S15**		1	5 units	41H
		230 AC			A	**LZS:RT4D4T30**		1	5 units	41H

Note:

Logical separation: The terminals for the contacts and the terminals for the coil are arranged on separate levels, e.g. above for contacts and below for the coil. Logical separation is not necessarily protective separation.

Protective separation: Protective separation prevents voltage of one circuit affecting another circuit with sufficient protection (IEC 61140).

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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	Version	Rated control supply voltage U_s at AC 50/60 Hz	Contacts, number of CO contacts	Width	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		V		mm						
Individual modules for customer assembly, RT series										
	Print relays, 8-pole, 5 mm pinning									
 LZX:RT314024	**Print relays** with hard gold-plating									
	Version with 1 CO contact									
		24 DC	1	12.7	▶	**LZX:RT315024**		1	1 unit	41H
		230 AC			C	**LZX:RT315730**		1	1 unit	41H
	Print relays									
 LZS:RT78725	Version with 1 CO contact									
		24 DC	1	12.7	▶	**LZX:RT314024**		1	1 unit	41H
		24 AC			C	**LZX:RT314524**		1	1 unit	41H
		115 AC			C	**LZX:RT314615**		1	1 unit	41H
		230 AC			▶	**LZX:RT314730**		1	1 unit	41H
	Version with 2 CO contacts									
		12 DC	2	12.7	C	**LZX:RT424012**		1	1 unit	41H
		24 DC			▶	**LZX:RT424024**		1	1 unit	41H
		24 AC			▶	**LZX:RT424524**		1	1 unit	41H
		115 AC			▶	**LZX:RT424615**		1	1 unit	41H
		230 AC			▶	**LZX:RT424730**		1	1 unit	41H
 LZS:RT78726	**Standard plug-in bases** for mounting onto TH 35 standard mounting rail					**Screw terminals**				
		--	--	15.5	▶	**LZS:RT78725**		1	1 unit	41H
	Plug-in bases with logical separation for mounting onto TH 35 standard mounting rail									
		--	--	15.5	▶	**LZS:RT78726**		1	1 unit	41H
 LZS:RT7872P	**Plug-in bases with logical separation** for mounting onto TH 35 standard mounting rail					**Plug-in terminals**				
		--	--	15.5	▶	**LZS:RT7872P**		1	1 unit	41H
	LED modules									
	• Red									
	With freewheel diode	24 DC	--	15.5	▶	**LZS:PTML0024**		1	1 unit	41H
	Without freewheel diode	24 AC/DC	--		▶	**LZS:PTML0524**		1	1 unit	41H
		110 ... 230 AC/DC	--		▶	**LZS:PTML0730**		1	1 unit	41H
	• Green									
	With freewheel diode	24 DC	--	15.5	▶	**LZS:PTMG0024**		1	1 unit	41H
	Without freewheel diode	24 AC/DC	--		▶	**LZS:PTMG0524**		1	1 unit	41H
 LZS:PTML0024		110 ... 230 AC/DC	--		▶	**LZS:PTMG0730**		1	1 unit	41H
	Fixing/ejection brackets for RT base									
 LZS:RT17016		--	--	15.5	▶	**LZS:RT17016**		100	10 units	41H
	Labels									
 LZS:RT17040		--	--	15.5	▶	**LZS:RT17040**		100	10 units	41H
	RC elements									
		6 ... 60 AC	--	15.5	▶	**LZS:PTMU0524**		1	1 unit	41H
		110 ... 230 AC			▶	**LZS:PTMU0730**		1	1 unit	41H
	Freewheel diodes with connection to A1									
		6 ... 230 DC	--	15.5	▶	**LZS:PTMT00A0**		1	1 unit	41H
 LZS:PTMT0730	**Connecting cable,** 24-pole									
	Current carrying capacity 12 A, with supply, blue				A	**3TX7 004-8BA00**		1	1 unit	41H
	Connecting combs for RT screw base									
	8-pole, 10 A current carrying capacity, natural-colored				▶	**LZS:RT170R8**		1	10 units	41H
	Connecting brackets for PT push-in base									
 3TX7 004-8BA00	2-pole, 10 A current carrying capacity, natural-colored				▶	**LZS:RT170P1**		100	10 units	41H

Note:

For coil voltages which are not listed, see "SITOP power DC Power Supplies", e.g. 6EP1 331-2BA10 and 6EP1 731-2BA00 (see Chapter 15, "Stabilized Power Supplies").

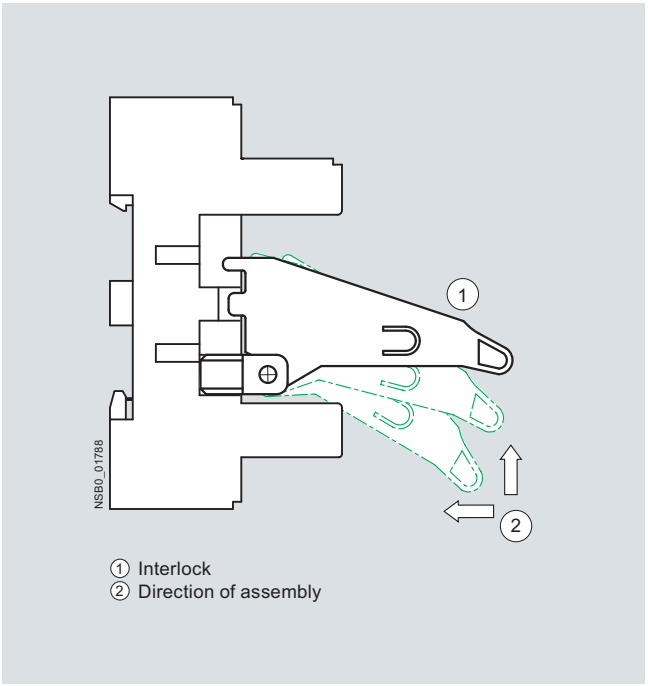
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More information

Configuration notes

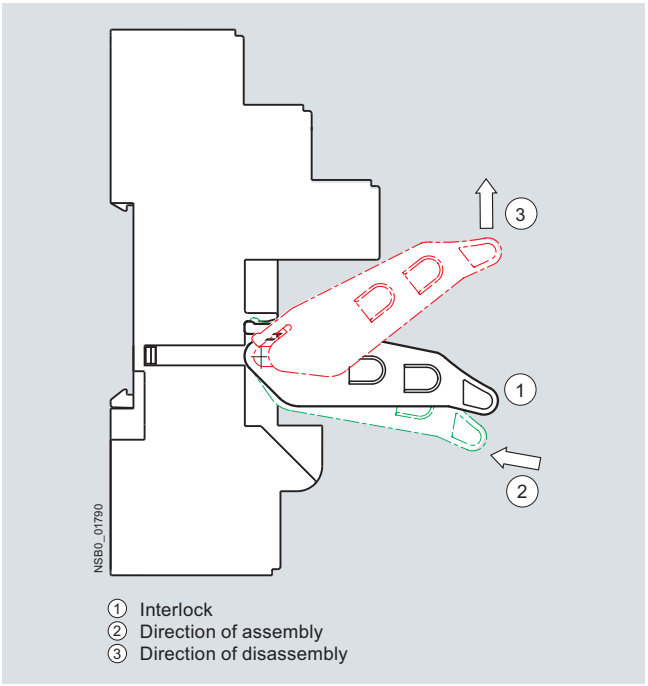
PT series

Mounting the LZS:PT17024 fixing/ejection bracket on the LZS:PT787.0 standard plug-in base with screw terminals

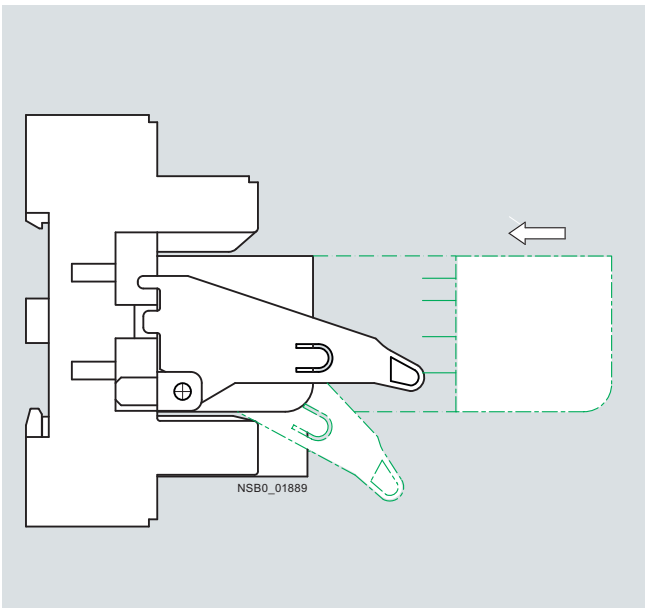


RT series

Mounting the LZS:RT17016 fixing/ejection bracket on the LZS:RT7872. plug-in base



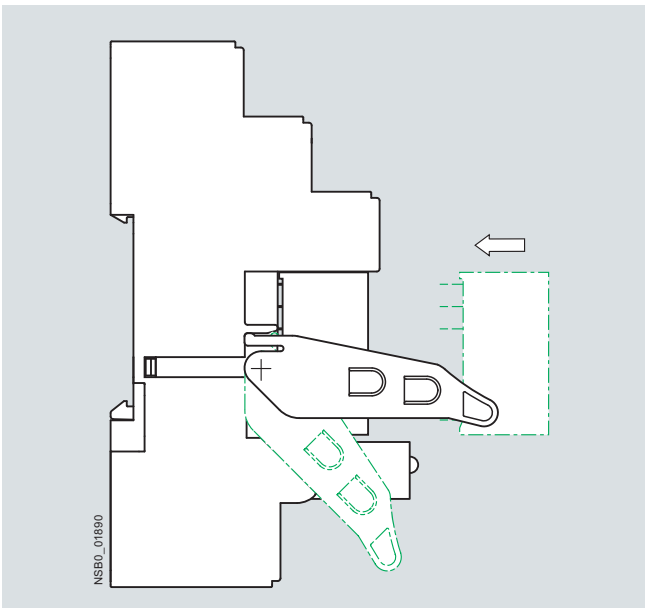
Mounting the coupling relay with plug-in relay



Note:

The LZS:PT17021 and LZS:PT17024 ejection brackets of the coupling relays with plug-in relay are not status displays!

Mounting the coupling relay with plug-in relay



Note:

The LZS:RT17016 ejection brackets of the coupling relays with plug-in relay are not status displays!

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Controls – Soft Starters and Solid-State Switching Devices



Price groups
PG 41B, 41C, 41E, 41F, 41H, 41J, 42G, 42H, 42J, 401

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More information can be found on the Internet: see the opening information, page 13

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Introduction

Overview



3RW30



3RW40



3RW44

		Order No.	Page
3RW Soft Starters			
3RW soft starters for standard applications			
3RW30 soft starters	• SIRIUS 3RW30 soft starters for soft starting of three-phase asynchronous motors • Performance range of up to 55 kW (at 400 V)	3RW30	6/8
3RW40 soft starters	• SIRIUS 3RW40 soft starters with the integral functions - solid-state motor overload and intrinsic device protection and - adjustable current limiting for the soft starting and stopping of three-phase asynchronous motors • Performance range of up to 250 kW (at 400 V)	3RW40	6/19
3RW soft starters for High-Feature applications			
3RW44 soft starters	• In addition to soft starting and soft ramp-down, the solid-state SIRIUS 3RW44 soft starters provide numerous functions for higher-level requirements • Performance range - up to 710 kW (at 400 V) in inline circuit and - up to 1200 kW (at 400 V) in inside-delta circuit	3RW44	6/37

SIRIUS 3RW soft starters

SIRIUS 3RW soft starters permit soft starting and smooth ramp-down of three-phase asynchronous motors. Depending on the required scope of functions it is possible to choose between:

- Soft starters for standard applications
- Soft starters for High-Feature applications

SIRIUS 3RW – Service-proven in many applications

Functions of the SIRIUS soft starters include:

- Soft starting and smooth ramp-down
- Stepless starting
- Torque control and limitation

Cost-efficient operation

The advantages of SIRIUS soft starters at a glance:

- Reduction of current peaks
- Avoidance of mains voltage fluctuations during starting
- Reduced load on the power supply network
- Reduction of the mechanical load in the operating mechanism
- Considerable space savings and reduced wiring compared with conventional starters
- Maintenance-free switching
- Very easy handling
- Fits perfectly in the SIRIUS modular system

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3RF21


3RF20


3RF22


3RF23


3RF24


3RF29


3RF34 (motor)

		Order No.	Page
SIRIUS solid-state switching devices for switching resistive loads			
Solid-state relays			
Solid-state relays	• Widths of 22.5 mm and 45 mm • Compact and space-saving design • "Zero-point switching" version • Mounting onto existing heat sinks	3RF21 3RF20 3RF22	6/73 6/78 6/82
Solid-state contactors			
Solid-state contactors	• Complete units comprising a solid-state relay and an optimized heat sink, "ready to use" • Compact and space-saving design • Versions for resistive loads "zero-point switching" and inductive loads "instantaneous switching" • Special versions "Low Noise" and "Short-Circuit Proof"	3RF23 3RF24	6/86 6/95
Function modules	For extending the functionality of the 3RF21 solid-state relays and the 3RF23 solid-state contactors for many different applications:		
Converters	• For converting an analog input signal into an on/off ratio; can also be used on 3RF22 and 3RF24 three-phase switching devices	3RF29 00-0EA18	6/106
Load monitoring	• For load monitoring of one or more loads (partial loads)	3RF29 ..-0FA08, 3RF29 .0-0GA..	6/107
Heating current monitoring	• For load monitoring of one or more loads (partial loads); remote teach	3RF29 ..-0JA..	6/108
Power controllers	• For supplying the current by means of a solid-state switching device depending on a setpoint value. There is a choice of full-wave control and generalized phase control.	3RF29 ..-0KA.	6/109
Power regulators	• For supplying the current by means of a solid-state switching device depending on a setpoint value. Closed-loop control: full-wave control or generalized phase control	3RF29 .0-0HA..	6/110
SIRIUS solid-state switching devices for switching motors			
Solid-state contactors			
Solid-state contactors, solid-state reversing contactors	• Complete units in the insulated enclosure with integrated heat sink, "ready to use" • Compact and space-saving design • Version for motors, "instantaneous switching"	3RF34 3RF34	6/114 6/118

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Introduction

SIRIUS 3RF2 solid-state switching devices



Three-phase solid-state contactor and single-phase solid-state relay

The SIRIUS 3RF2 solid-state switching devices reliably switch a wide range of different loads with alternating voltages in 50 and 60 Hz systems.

Solid-state switching devices for resistive loads:

- Solid-state relays
- Solid-state contactors
- Function modules

Solid-state switching devices for switching motors:

- Solid-state contactors
- Solid-state reversing contactors

SIRIUS 3RF2 – for almost unending activity

Conventional electromechanical controlgear is often overtaxed by the rise in the number of switching operations. A high switching frequency results in frequent failure and short replacement cycles. However, this does not have to be the case, because with the latest generation of our SIRIUS 3RF2 solid-state switching devices we provide you with solid-state relays and contactors with a particularly long endurance – for almost unending activity even under the toughest conditions and under high mechanical load, but also in noise-sensitive areas.

Proved time and again in service

SIRIUS 3RF2 solid-state switching devices have firmly established in industrial applications. They are used above all in applications where loads are switched frequently – mainly with resistive load controllers, with the control of electrical heat or the control of valves and motors in conveyor systems. In addition to its use in areas with high switching frequencies, their silent switching means that SIRIUS is also ideally suited for use in noise-sensitive areas, such as offices or hospitals.

The most reliable solution for any application

Compared to mechanical controlgear, our SIRIUS 3RF2 solid-state switching devices stand out due to their considerably longer service life. Thanks to the high product quality, their switching is extremely precise, reliable and, above all, insusceptible to faults. With its variable connection methods and a wide spread of control voltages, the SIRIUS 3RF2 family is universally applicable. Depending on the individual requirements of the application, our modular controlgears can also be quite easily expanded by the addition of standardized function modules.

Ideal for operation with heating control systems

The 3RF2 solid-state switching devices can be used for example in the SIPLUS HCS300I heating control system. They are optimally connected to the digital output module of the HCS300I by means of preassembled cables. This saves considerable wiring outlay in the control circuit and shortens mounting time.

The HCS300I is a modular heating control system for the optimization of plastic processing machines. It enables individual solutions for many different heating control applications. With each basic unit it is possible to use up to four 6-channel digital outputs to control solid-state switching devices and four 4-channel temperature measuring modules. Current or current-and-voltage measuring modules can be used to monitor the loads. Communication with the higher-level control system is through PROFIBUS DP.

See also Chapter 15, "Products for Specific Requirements" → "Heater Control System".



SIPLUS heating control system

Also for switching motors

In order to achieve higher productivity, the switching frequency is continuously increased. It is no problem for our SIRIUS solid-state contactors to switch motors. With induction motors up to 7.5 kW, they can reliably withstand even the highest switching frequencies. Even a continuous change in the direction of rotation is possible with the solid-state reversing contactors. Both versions can be perfectly combined with components from the SIRIUS modular system. Connecting with SIRIUS motor starter protectors or SIRIUS overload relay can be implemented without any further steps.

Always on the sunny side with SIRIUS

Because SIRIUS 3RF2 offers even more:

- The space-saving and compact side-by-side mounting ensure reliable operation up to an ambient temperature of +60 °C.
- Thanks to fast configuration and the ease of mounting and start-up, you save not only time but also expenses.

Connection methods

The solid-state switching devices are available with screw terminals (box terminals), spring-type terminals or ring terminal lugs.

	Screw terminals
	Spring-type terminals
	Ring terminal lug connections
	The terminals are indicated in the corresponding tables by the symbols shown on orange backgrounds.

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Overview






		SIRIUS 3RW30 Standard applications	SIRIUS 3RW40 Standard applications	SIRIUS 3RW44 High-Feature applications
Rated current at 40 °C	***A***	***3 ... 106***	***12.5 ... 432***	***29 ... 1 214***
Rated operational voltage	V	200 ... 480	200 ... 600	200 ... 690[8]
Motor rating at 400 V				
• Inline circuit	kW	1.5 ... 55	5.5 ... 250	15 ... 710
• Inside-delta circuit	kW	--	--	22 ... 1 200
Ambient temperature	°C	-25 ... +60	-25 ... +60	0 ... +60
Soft starting/ramp-down		✓[1]	✓	✓
Voltage ramp		✓	✓	✓
Starting/stopping voltage	%	40 ... 100	40 ... 100	20 ... 100
Starting and ramp-down time	s	0 ... 20[1]	0 ... 20	1 ... 360
Torque control		--	--	✓
Starting/stopping torque	%	--	--	20 ... 100
Torque limit	%	--	--	20 ... 200
Ramp time	s	--	--	1 ... 360
Integral bypass contact system		✓	✓	✓
Intrinsic device protection		--	✓	✓
Motor overload protection		--	✓[7]	✓
Thermistor motor protection		--	✓[2]	✓
Integrated remote RESET		--	✓[3]	✓
Adjustable current limiting		--	✓	✓
Inside-delta circuit		--	--	✓
Breakaway pulse		--	--	✓
Creep speed in both directions of rotation		--	--	✓
Pump ramp-down		--	--	✓[4]
DC braking		--	--	✓[4] [5]
Combined braking		--	--	✓[4] [5]
Motor heating		--	--	✓
Communications		--	--	With PROFIBUS DP (optional)
External display and operator module		--	--	(optional)
Operating measured value display		--	--	✓
Error logbook		--	--	✓
Event list		--	--	✓
Slave pointer function		--	--	✓
Trace function		--	--	✓[6]
Programmable control inputs and outputs		--	--	✓
Number of parameter sets		1	1	3
Parameterization software (Soft Starter ES)		--	--	✓
Power semiconductors (thyristors)		2 controlled phases	2 controlled phases	3 controlled phases
Screw terminals		✓	✓	✓
Spring-type terminals		✓	✓	✓
UL/CSA		✓	✓	✓
CE marking		✓	✓	✓
Soft starting under heavy starting conditions		--	--	✓[4]
Configuring support		Win-Soft Starter, electronic selection slider ruler, Technical Assistance +49 (911) 895-5900		

✓ Function is available

-- Function not available

1) Only soft starting available for 3RW30.
2) Optional up to size S3 (device version).
3) Available for 3RW40 2. to 3RW40 4.; optional for 3RW40 5. and 3RW40 7..
4) Calculate soft starter and motor with size allowance where required.
5) Not possible in inside-delta circuit.
6) Trace function with Soft Starter ES software.
7) When using the motor overload protection according to ATEX, an upstream contactor is required.
8) In inside-delta circuit up to 600 V.

More information is available on the Internet at:
www.siemens.com/softstarter

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General data

Selection aid for soft starters






Application	SIRIUS 3RW30 Standard applications	SIRIUS 3RW40 Standard applications	SIRIUS 3RW44 High-Feature applications
Normal starting (CLASS 10)			
Pumps	●	●	●
Pumps with special pump ramp-down (to prevent water hammer)			●
Heat pumps	●	●	●
Hydraulic pumps	❍	●	●
Presses	❍	●	●
Conveyor belts	❍	●	●
Roller conveyors	❍	●	●
Screw conveyors	❍	●	●
Escalators		●	●
Piston compressors		●	●
Screw compressors		●	●
Small fans[1]		●	●
Centrifugal blowers		●	●
Bow thrusters		●	●
Heavy starting (CLASS 20)			
Stirrers		❍	●
Extruders		❍	●
Lathes		❍	●
Milling machines		❍	●
Very heavy starting (CLASS 30)			
Large fans[2]			●
Circular saws/bandsaws			●
Centrifuges			●
Mills			●
Breakers			●

● Recommended soft starter

❍ Possible soft starter

[1] The mass inertia of the fan is <10 times the mass inertia of the motor.

[2] The mass inertia of the fan is ≥10 times the mass inertia of the motor.

Boundary conditions

Type	Maximum starting time s	Current loading %	Starts per hour 1/h
Normal starting (CLASS 10)			
• **3RW30**	3	300	20
• **3RW40/44**	10	300	5
Heavy starting (CLASS 20)			
• **3RW40 2., 3RW40 3., 3RW40 4.**	20	300	5
• **3RW40 5., 3RW40 7., 3RW44**	40	350	1
Very heavy starting (CLASS 30)			
• **3RW44**	60	350	1

The motor ratings listed in the Selection and Ordering Data are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor. The 3RW soft starters are designed for easy starting conditions. In the event of more exacting requirements, it may be necessary to choose a larger device. However, in some cases the designed-in safety reserves also permit the listed units to be used in boundary conditions which are slightly more demanding. For detailed technical information for a configuration which is tailored exactly to the application see "Manuals". Siemens recommends the use of the selection and simulation program Win-Soft Starter.

Motor rating data are based on DIN 42973 (kW) and NEC 96/UL 508 (hp).

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Order No. scheme

Digit of the Order No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th		13th	14th	15th	16th
	□□□	□	□	□	□	–	□	□	□	□	□	–	□	□	□	□
Soft starters	**3 R W**															
SIRIUS soft starter generation		□	□													
Size				□												
Rated operational current I_e					□											
Connection type (screw terminals / spring-type terminals)							□									
Soft starter functionality (bypass, thermistor, etc.)								□	□							
Rated control supply voltage U_s										□						
Rated operational voltage U_e											□					
Special versions													□	□	□	□
Example	**3 R W**	**4**	**0**	**2**	**4**	**–**	**1**	**B**	**B**	**1**	**4**					

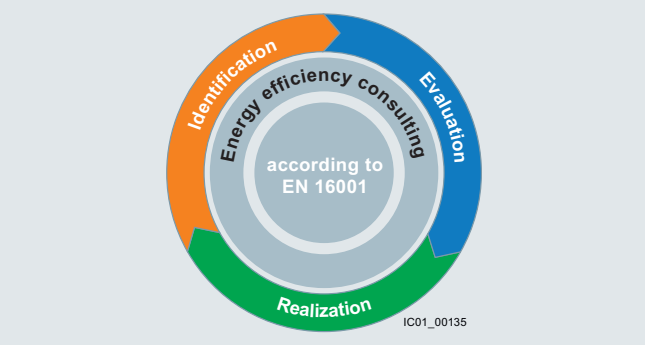
Note:

The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quoted in the catalog in the Selection and ordering data.

Benefits

Advantages through energy efficiency



Overview of the energy management process

We offer you a unique portfolio for industrial energy management, using an energy management system that helps to optimally define your energy needs. We split up our industrial energy management into three phases – Identification, Evaluation and Realization – and we support you with the appropriate hardware and software solutions in every process phase.

The innovative products of the SIRIUS industrial controls portfolio can also make a substantial contribution to a plant's energy efficiency (see www.siemens.com/sirius/energysaving).

The soft starters contribute to energy efficiency throughout the plant as follows:

- Energy management
  Provision of energy data such as current, voltage and power (3RW44) by bus to higher-level systems
- Current management
  Avoidance of current peaks, thus reducing the load on the grid and the mechanical system
- Reduced heating of the control cabinet
  Technology-reduced inherent power loss as speed-controlled drive systems, resulting in lower cooling costs and a more compact design. All sizes are equipped with bypass contactor, resulting in lower power losses after start-up.

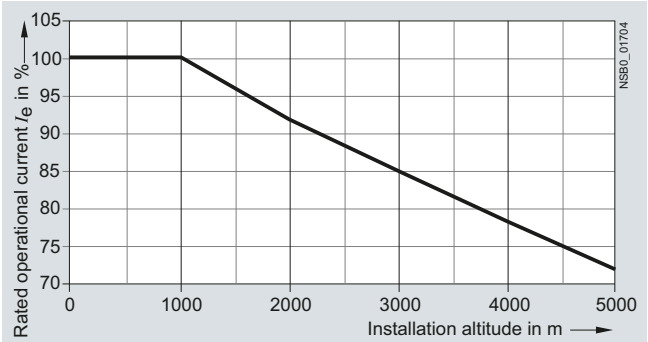
Product advantages

The advantages of the SIRIUS soft starters at a glance:

- Soft starting and smooth ramp-down (only soft starting available for 3RW30)
- Stepless starting
- Reduction of current peaks
- Avoidance of mains voltage fluctuations during starting
- Reduced load on the power supply network
- Reduction of the mechanical load in the operating mechanism
- Considerable space savings and reduced wiring compared with conventional starters
- Maintenance-free switching
- Very easy handling
- Fits perfectly in the SIRIUS modular system

Technical specifications

Permissible installation altitude



At an installation altitude above 2 000 m, the max. permissible operational voltage is reduced to 460 V.

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3RW30

Overview

The SIRIUS 3RW30 soft starters reduce the motor voltage through variable phase control and increase it in ramp-like mode from a selectable starting voltage up to mains voltage. During starting, these devices limit the torque as well as the current and prevent the shocks which arise during direct starts or wye-delta starts. In this way, mechanical loads and mains voltage dips can be reliably reduced.

Soft starting reduces the stress on the connected equipment and results in lower wear and therefore longer periods of trouble-free production. The selectable start value means that the soft starters can be adjusted individually to the requirements of the application in question and unlike wye-delta starters are not restricted to two-stage starting with fixed voltage ratios.

The SIRIUS 3RW30 soft starters are characterized above all by their small space requirements. Integrated bypass contacts mean that no power loss has to be taken into the bargain at the power semiconductors (thyristors) after the motor has started up. This cuts down on heat losses, enabling a more compact design and making external bypass circuits superfluous.

Various versions of the SIRIUS 3RW30 soft starters are available:

- Standard version for fixed-speed three-phase motors, sizes S00, S0, S2 and S3, with integrated bypass contact system
- Version for fixed-speed three-phase motors in a 22.5 mm enclosure without bypass

Soft starters rated up to 55 kW (at 400 V) for standard applications in three-phase networks are available. Extremely small sizes, low power losses and easy commissioning are just three of the many advantages of this soft starter.

Functionality

The space required by the compact SIRIUS 3RW30 soft starter is often only about one third of that required by a contactor assembly for wye-delta starting of comparable rating. This not only saves space in the control cabinet and on the standard mounting rail but also does away completely with the wiring work needed for wye-delta starters. This is notable in particular for higher motor ratings which are only rarely available as fully wired solutions.

At the same time the number of cables from the starter to the motor is reduced from six to three. Compact dimensions, short start-up times, easy wiring and fast commissioning make themselves felt as clear-cut cost advantages.

The bypass contacts of these soft starters are protected during operation by an integrated solid-state arc quenching system. This prevents damage to the bypass contacts in the event of a fault, e.g. brief disconnection of the control voltage, mechanical shocks or life-related component defects on the coil operating mechanism or main contact spring.

The new series of devices comes with the "polarity balancing" control method, which is designed to prevent direct current components in two-phase controlled soft starters. On two-phase controlled soft starters the current resulting from superimposition of the two controlled phases flows in the uncontrolled phase. This results for physical reasons in an asymmetric distribution of the three phase currents during the motor ramp-up. This phenomenon cannot be influenced, but in most applications it is non-critical.

Controlling the power semiconductors results not only in this asymmetry, however, but also in the previously mentioned direct current components which can cause severe noise generation on the motor at starting voltages of less than 50 %. The control method used for these soft starters eliminates these direct current components during the ramp-up phase and prevents the braking torque which they can cause.

It creates a motor ramp-up that is uniform in speed, torque and current rise, thus permitting a particularly gentle, two-phase starting of the motors. At the same time the acoustic quality of the starting operation comes close to the quality of a three-phase controlled soft starter. This is made possible by the on-going dynamic harmonizing and balancing of current half-waves of different polarity during the motor ramp-up. Hence the name "polarity balancing".

- Soft starting with voltage ramp; the starting voltage setting range U_s is 40 to 100 % and the ramp time t_R can be set from 0 to 20 s.
- Integrated bypass contact system to minimize power loss
- Setting with two potentiometers
- Simple mounting and commissioning
- Mains voltages 50/60 Hz, 200 to 480 V
- Two control voltage versions 24 V AC/DC and 110 to 230 V AC/DC
- Wide temperature range from -25 to +60 °C
- The built-in auxiliary contact ensures user-friendly control and possible further processing within the system (for status graphs see page 6/18).

Application

The 3RW30 soft starters are suitable for soft starting of three-phase asynchronous motors.

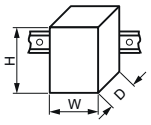
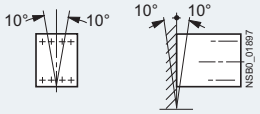
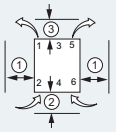
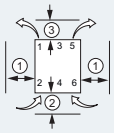
Due to two-phase control, the current is kept at minimum values in all three phases throughout the entire starting time. Due to continuous voltage influencing, the current and torque peaks which are unavoidable in the case of wye-delta starters for instance do not occur.

Application areas

See "Selection aid for soft starters" on page 6/6.

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Technical specifications

Type			3RW30 1.	3RW30 2.	3RW30 3.	3RW30 4.
Mechanics and environment						
Mounting dimensions (W x H x D)						
• Screw terminals		mm	45 x 95 x 151	45 x 125 x 151	55 x 144 x 168	70 x 160 x 186
• Spring-type terminals		mm	45 x 117.2 x 151	45 x 150 x 151	55 x 144 x 168	70 x 160 x 186
Permissible ambient temperature						
Operation		°C	-25 ... +60; (derating from +40)			
Storage		°C	-40 ... +80			
Weight		kg	0.58	0.69	1.20	1.71
Permissible mounting position[1] (auxiliary fan not available)						
Installation type[1]	Stand-alone installation		 ① ≥ 15 mm (≥ 0.59 in) ② ≥ 40 mm (≥ 1.56 in) ③ ≥ 60 mm (≥ 2.36 in)		 ① ≥ 30 mm (≥ 1.18 in) ② ≥ 40 mm (≥ 1.56 in) ③ ≥ 60 mm (≥ 2.36 in)	
Permissible installation altitude		m	5 000 (derating from 1000, see Characteristic Curves page 6/7); higher on request			
Degree of protection			IP20 for 3RW30 1. and 3RW30 2.; IP00 for 3RW30 3. and 3RW30 4.			

[1] In case of deviations, please note derating (see Manual in Chapter "Configuration").

Type			3RW30 1., 3RW30 2.		3RW30 3., 3RW30 4.	
Control electronics						
Rated values	Terminal					
Rated control supply voltage	A1/A2	V	24	110 ... 230	24	110 ... 230
• Tolerance		%	±20	-15/+10	±20	-15/+10
Rated frequency		Hz	50/60			
• Tolerance		%	±10			

Type		3RW30 1.	3RW30 2.	3RW30 3.	3RW30 4.
Power electronics					
Rated operational voltage	V AC	200 ... 480			
Tolerance	%	-15/+10			
Rated frequency	Hz	50/60			
Tolerance	%	±10			
Uninterrupted duty at 40 °C (% of I_e)	%	115			
Minimum load (% of I_e)	%	10 (at least 2 A)			
Maximum cable length between soft starter and motor	m	300			

Type		3RW30 13	3RW30 14	3RW30 16	3RW30 17	3RW30 18
Power electronics						
Load rating with rated operational current I_e						
• According to IEC and UL/CSA[1], for individual mounting, AC-53a						
- At 40 °C	A	3.6	6.5	9	12.5	17.6
- At 50 °C	A	3.3	6	8	12	17
- At 60 °C	A	3	5.5	7	11	14
Power loss						
• In operation after completed starting with uninterrupted rated operational current (40 °C) approx.	W	0.25	0.5	1	2	4
• During starting with 300 % I_M (40 °C)	W	24	52	80	80	116
Permissible rated motor current and starts per hour for normal starting (CLASS 10) at 40 °C / 50 °C						
- Rated motor current I_M[2], starting time 3 s	A	3.6 / 3.3	6.5 / 6.0	9 / 8	12.5 / 12.0	17.6 / 17.0
- Starts per hour[3]	1/h	200 / 150	87 / 60	50 / 50	85 / 70	62 / 46
- Rated motor current I_M[2], starting time 4 s	A	3.6 / 3.3	6.5 / 6.0	9 / 8	12.5 / 12.0	17.6 / 17.0
- Starts per hour[3]	1/h	150 / 100	64 / 46	35 /35	62 / 47	45 / 32

[1] Measurement at 60 °C according to UL/CSA not required.

[2] With 300 % I_M, T_u = 40 °C / 50 °C.

[3] For intermittent duty S4 with ON period = 30 %, T_u = 40 °C / 50 °C, stand-alone installation vertical. The quoted switching frequencies do not apply for automatic mode.

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3RW30

Type		3RW30 26	3RW30 27	3RW30 28
Power electronics				
Load rating with rated operational current I_e				
• According to IEC and UL/CSA[1], for individual mounting, AC-53a				
- At 40 °C	A	25.3	32.2	38
- At 50 °C	A	23	29	34
- At 60 °C	A	21	26	31
Power loss				
• In operation after completed starting with uninterrupted rated operational current (40 °C) approx.	W	8	13	19
• During starting with 300 % I_M (40 °C)	W	188	220	256
Permissible rated motor current and starts per hour for normal starting (CLASS 10) at 40 °C / 50 °C				
- Rated motor current I_M[2], starting time 3 s	A	25 / 23	32 / 29	38 / 34
- Starts per hour[3]	1/h	23 / 23	23 / 23	19 / 19
- Rated motor current I_M[2], starting time 4 s	A	25 / 23	32 / 29	38 / 34
- Starts per hour[3]	1/h	15 / 15	16 / 16	12 / 12

1) Measurement at 60 °C according to UL/CSA not required.

2) With 300 % I_M, T_u = 40 °C / 50 °C.

3) For intermittent duty S4 with ON period = 30 %, T_u = 40 °C / 50 °C, stand-alone installation vertical. The quoted switching frequencies do not apply for automatic mode. Factors for permissible switching frequency with deviating mounting position, direct mounting, side-by-side mounting see "Manuals" in Chapter "Configuration".

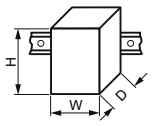
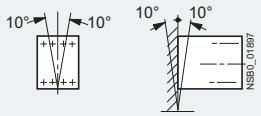
Type		3RW30 36	3RW30 37	3RW30 38	3RW30 46	3RW30 47
Power electronics						
Load rating with rated operational current I_e						
• According to IEC and UL/CSA[1], for individual mounting, AC-53a						
- At 40 °C	A	45	65	72	80	106
- At 50 °C	A	42	58	62.1	73	98
- At 60 °C	A	39	53	60	66	90
Power loss						
• In operation after completed starting with uninterrupted rated operational current (40 °C) approx.	W	6	12	15	12	21
• During starting with 300 % I_M (40 °C)	W	316	444	500	576	768
Permissible rated motor current and starts per hour for normal starting (CLASS 10) at 40 °C / 50 °C						
- Rated motor current I_M[2], starting time 3 s	A	45 / 42	63 / 58	72 / 62	80 / 73	106 / 108
- Starts per hour[3]	1/h	38 / 38	23 / 23	22 / 22	22 / 22	15 / 15
- Rated motor current I_M[2], starting time 4 s	A	45 / 42	63 / 58	72 / 62	80 / 73	106 / 98
- Starts per hour[3]	1/h	26 / 26	15 / 15	15 /15	15 / 15	10 / 10

1) Measurement at 60 °C according to UL/CSA not required.

2) With 300 % I_M, T_u = 40 °C / 50 °C.

3) For intermittent duty S4 with ON period = 70 %, T_u = 40 °C / 50 °C, stand-alone installation vertical. The quoted switching frequencies do not apply for automatic mode.

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Type		3RW30 03-1CB54	3RW30 03-2CB54
Mechanics and environment			
Mounting dimensions (W x H x D) 			
• Screw terminals	mm	22.5 x 100 x 120	--
• Spring-type terminals	mm	--	22.5 x 101.6 x 120
Permissible ambient temperature			
Operation	°C	-25 ... +60; (derating from +40)	
Storage	°C	-40 ... +80	
Weight	kg	0.207	0.188
Permissible mounting position			
Permissible installation altitude	m	5 000 (derating from 1000, see "Characteristic Curves", page 6/7); higher on request	
Degree of protection acc. to IEC 60529		IP20 (IP00 terminal compartment)	
Control electronics			
Rated values			
Rated control supply voltage	V	24 ... 230 AC/DC	
• Tolerance	%	± 10	
Rated frequency at AC	Hz	50/60	
• Tolerance	%	± 10	
Power electronics			
Rated operational voltage	V AC	200 ... 400	
Tolerance	%	± 10	
Rated frequency	Hz	50/60	
Tolerance	%	±10	
Uninterrupted duty (% of I_e)	%	100	
Minimum load[1] (% of I_e); at 40 °C	c	9	
Maximum conductor length between soft starter and motor	m	100[2]	
Load rating with rated operational current I_e			
• According to IEC and UL/CSA for individual mounting at 40 / 50 / 60 °C, AC-53a	A	3 / 2.6 / 2.2	
• According to IEC and UL/CSA for side-by-side-mounting at 40 / 50 / 60 °C, AC-53a	A	2.6 / 2.2 / 1.8	
Power loss			
• In operation after completed starting with uninterrupted rated operational current (40 °C) approx.	W	6.5	
• At utilization of maximum switching frequency	W	3	
Permissible starts per hour (cannot be increased by using a fan)			
• For intermittent duty S4 T_u = 40 °C, stand-alone installation vertical	1/h	1 500	
• ON period = 70 % for 300 % I_e	1/s	0.2	
Dead time after uninterrupted duty With I_e before restart	s	0	

[1] The rated motor current (specified on the motor's name plate) should at least amount to the specified percentage of the SIRIUS soft starter unit's rated operational current I_e.

[2] If this value is exceeded, problems with line capacities may arise, which can result in false firing.

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3RW30

Motor feeders with soft starters

The type of coordination to which the motor feeder with soft starter is mounted depends on the application-specific requirements. Normally, fuseless mounting (combination of motor starter protector/circuit breaker and soft starter) is sufficient.

If type of coordination "2" is to be fulfilled, semiconductor fuses must be fitted in the motor feeder.

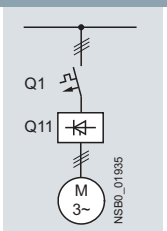
ToC 1 Type of coordination "1" according to IEC 60947-4-1: After a short-circuit incident the unit is defective therefore unsuitable for further use (protection of persons and system guaranteed).

ToC 2 Type of coordination "2" according to IEC 60947-4-1: After a short-circuit incident the unit is suitable for further use (protection of persons and system guaranteed).

The type of coordination refers to soft starters in combination with the stipulated protective device (motor starter protector/circuit breaker/fuse), not to any additional components in the feeder.

The types of coordination are indicated in the corresponding tables by the symbols shown on orange backgrounds.

Fuseless version

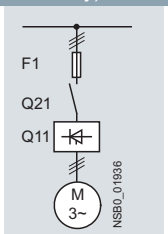


Soft starters		MSPs/circuit breakers[1]		
ToC 1	Nominal current	400 V +10 %		Rated current
Q11		Q1	$I_{q\ max}$	
Type	A	Type	kA	A
Type of coordination "1"				
3RW30 03	3	3RV20 11-1EA	50	4
3RW30 13	3.6	3RV20 11-1FA	5	5
3RW30 14	6.5	3RV20 11-1HA	5	8
3RW30 16	9	3RV20 11-1JA	5	10
3RW30 17	12.5	3RV20 11-1KA	5	12.5
3RW30 18	17.6	3RV20 21-4BA	5	20
3RW30 26	25	3RV20 21-4DA	55	25
3RW30 27	32	3RV20 21-4EA	55	32
3RW30 28	38	3RV20 21-4FA	55	40
3RW30 36	45	3RV10 31-4GA10	20	45
3RW30 37	63	3RV10 41-4JA10	20	63
3RW30 38	72	3RV10 41-4KA10	20	75
3RW30 46	80	3RV10 41-4LA10	11	90
3RW30 47	106	3RV10 41-4MA10	11	100

[1] The rated motor current must be considered when selecting the devices.

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Fused version (line protection only)



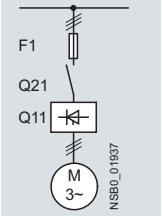
Soft starters ToC 1 Q11 Type	Nominal current A	Line protection, maximum F1 Type	Rated current A	Size	Line contactors (optional) Q21 Type
Type of coordination "1"[1]: I_q = 65 kA at 480 V + 10 %					
3RW30 03[2]	3	3NA3 805[3]	20	000	3RT20 15
3RW30 13	3.6	3NA3 803-6	10	000	3RT20 15
3RW30 14	6.5	3NA3 805-6	16	000	3RT20 15
3RW30 16	9	3NA3 807-6	20	000	3RT20 16
3RW30 17	12.5	3NA3 810-6	25	000	3RT20 18
3RW30 18	17.6	3NA3 814-6	35	000	3RT20 26
3RW30 26	25	3NA3 822-6	63	00	3RT20 26
3RW30 27	32	3NA3 824-6	80	00	3RT20 27
3RW30 28	38	3NA3 824-6	80	00	3RT20 28
3RW30 36	45	3NA3 130-6	100	1	3RT10 36
3RW30 37	63	3NA3 132-6	125	1	3RT10 44
3RW30 38	72	3NA3 132-6	125	1	3RT10 45
3RW30 46	80	3NA3 136-6	160	1	3RT10 45
3RW30 47	106	3NA3 136-6	160	1	3RT10 46

1) The type of coordination "1" refers to soft starters in combination with the stipulated protective device (motor starter protector/circuit breaker/fuse), not to any additional components in the feeder.

2) I_q = 50 kA at 400 V.

3) 3NA3 805-1 (NH00), 5SB2 61 (DIAZED), 5SE2 201-6 (NEOZED).

Fused version with 3NE1 SITOR fuses (semiconductor and line protection)



Matching fuse bases see
Catalog LV 10.1 --> "Switch Disconnectors" and
Catalog LV 10.1 --> "Fuse Systems"
--> "SITOR Semiconductor Fuses"
or at www.siemens.com/sitor

Soft starters ToC 2 Q11 Type	Nominal current A	All-range fuses F1 Type	Rated current A	Size	Line contactors (optional) Q21 Type
Type of coordination "2"[1]: I_q = 65 kA at 480 V + 10 %					
3RW30 03[2]	3	3NE1 813-0[3]	16	000	3RT20 15
3RW30 13	3.6	3NE1 813-0	16	000	3RT20 15
3RW30 14	6.5	3NE1 813-0	16	000	3RT20 15
3RW30 16	9	3NE1 813-0	16	000	3RT20 16
3RW30 17	12.5	3NE1 813-0	16	000	3RT20 18
3RW30 18	17.6	3NE1 814-0	20	000	3RT20 26
3RW30 26	25	3NE1 803-0	35	000	3RT20 26
3RW30 27	32	3NE1 020-2	80	00	3RT20 27
3RW30 28	38	3NE1 020-2	80	00	3RT20 28
3RW30 36	45	3NE1 020-2	80	00	3RT10 36
3RW30 37	63	3NE1 820-0	80	000	3RT10 44
3RW30 38	72	3NE1 820-0	80	000	3RT10 45
3RW30 46	80	3NE1 021-0	100	00	3RT10 45
3RW30 47	106	3NE1 022-0	125	00	3RT10 46

1) The type of coordination "2" refers to soft starters in combination with the stipulated protective device (motor starter protector/circuit breaker/fuse), not to any additional components in the feeder.

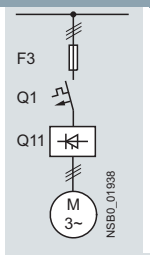
2) I_q = 50 kA at 400 V.

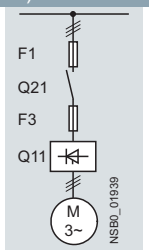
3) No SITOR fuse required!
Alternatively: 3NA3 803 (NH00), 5SB2 21 (DIAZED), 5SE2 206 (NEOZED).

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3RW30

Fused version with 3NE3 SITOR fuses (semiconductor protection by fuse, line and overload protection by motor starter protector; alternatively, installation with contactor and overload relay possible)





Matching fuse bases see Catalog LV 10.1 --> "Switch Disconnectors" and Catalog LV 10.1 --> "Fuse Systems" --> "SITOR Semiconductor Fuses" or at www.siemens.com/sitor

Soft starters		Semiconductor fuses, minimum			Semiconductor fuses, maximum			Semiconductor fuses, minimum		
ToC 2	Nominal current		Rated current	Size		Rated current	Size		Rated current	Size
Q11 Type	A	F3 Type	A		F3 Type	A		F3 Type	A	
Type of coordination "2"[1]: I_q = 65 kA at 480 V + 10 %										
3RW30 03[2]	3	--	--	--	--	--	--			
3RW30 13	3.6	--	--	--	--	--	--	3NE4 101	32	0
3RW30 14	6.5	--	--	--	--	--	--	3NE4 101	32	0
3RW30 16	9	--	--	--	--	--	--	3NE4 101	32	0
3RW30 17	12.5	--	--	--	--	--	--	3NE4 101	32	0
3RW30 18	17.6	--	--	--	3NE3 221	100	1	3NE4 101	32	0
3RW30 26	25	--	--	--	3NE3 221	100	1	3NE4 102	40	0
3RW30 27	32	--	--	--	3NE3 222	125	1	3NE4 118	63	0
3RW30 28	38	--	--	--	3NE3 222	125	1	3NE4 118	63	0
3RW30 36	45	--	--	--	3NE3 224	160	1	3NE4 120	80	0
3RW30 37	63	--	--	--	3NE3 225	200	1	3NE4 121	100	0
3RW30 38	72	3NE3 221	100	1	3NE3 227	250	1	--	--	--
3RW30 46	80	3NE3 222	125	1	3NE3 225	200	1	--	--	--
3RW30 47	106	3NE3 224	160	1	3NE3 231	350	1	--	--	--

Soft starters		Semiconductor fuses max.			Semiconductor fuses min.			Semiconductor fuses max.			Cylindrical fuses	
ToC 2	Nominal current		Rated current	Size		Rated current	Size		Rated current	Size		Rated current
Q11 Type	A	F3 Type	A		F3 Type	A		F3 Type	A		F3 Type	A
Type of coordination "2"[1]: I_q = 65 kA at 480 V + 10 %												
3RW30 03[2]	3	--	--	--	3NE8 015-1	25	00	3NE8 015-1	25	00	3NC1 010	10
3RW30 13	3.6	--	--	--	3NE8 015-1	25	00	3NE8 015-1	25	00	3NC2 220	20
3RW30 14	6.5	--	--	--	3NE8 015-1	25	00	3NE8 015-1	25	00	3NC2 220	20
3RW30 16	9	--	--	--	3NE8 015-1	25	00	3NE8 015-1	25	00	3NC2 220	20
3RW30 17	12.5	--	--	--	3NE8 015-1	25	00	3NE8 018-1	63	00	3NC2 250	50
3RW30 18	17.6	--	--	--	3NE8 003-1	35	00	3NE8 021-1	100	00	3NC2 263	63
3RW30 26	25	3NE4 117	50	0	3NE8 017-1	50	00	3NE8 021-1	100	00	3NC2 263	63
3RW30 27	32	3NE4 118	63	0	3NE8 018-1	63	00	3NE8 022-1	125	00	3NC2 280	80
3RW30 28	38	3NE4 118	63	0	3NE8 020-1	80	00	3NE8 022-1	125	00	3NC2 280	80
3RW30 36	45	3NE4 120	80	0	3NE8 020-1	80	00	3NE8 024-1	160	00	3NC2 280	80
3RW30 37	63	3NE4 121	100	0	3NE8 021-1	100	00	3NE8 024-1	160	00	--	--
3RW30 38	72	--	--	--	3NE8 022-1	125	00	3NE8 024-1	160	00	--	--
3RW30 46	80	--	--	--	3NE8 022-1	125	00	3NE8 024-1	160	00	--	--
3RW30 47	106	--	--	--	3NE8 024-1	160	00	3NE8 024-1	160	00	--	--

Soft starters		Line contactors	Motor starter protectors		Line protection, maximum		
ToC 2	Nominal current	(optional)	400 V +10 %	Rated current		Rated current	Size
Q11 Type	A	Q21	Q1 Type	A	F1 Type	A	
Type of coordination "2"[1]: I_q = 65 kA at 480 V + 10 %							
3RW30 03[2]	3	3RT20 15	3RV20 11-1EA	4	3NA3 805[3]	20	000
3RW30 13	3.6	3RT20 15	3RV20 11-1FA	5	3NA3 803-6	10	000
3RW30 14	6.5	3RT20 15	3RV20 11-1HA	8	3NA3 805-6	16	000
3RW30 16	9	3RT20 16	3RV20 11-1JA	10	3NA3 807-6	20	000
3RW30 17	12.5	3RT20 18	3RV20 11-1KA	12.5	3NA3 810-6	25	000
3RW30 18	17.6	3RT20 26	3RV20 21-4BA	20	3NA3 814-6	35	000
3RW30 26	25	3RT20 26	3RV20 21-4DA	25	3NA3 822-6	63	00
3RW30 27	32	3RT20 27	3RV20 21-4EA	32	3NA3 824-6	80	00
3RW30 28	38	3RT20 28	3RV20 21-4FA	40	3NA3 824-6	80	00
3RW30 36	45	3RT10 36	3RV10 31-4GA10	45	3NA3 130-6	100	1
3RW30 37	63	3RT10 44	3RV10 41-4JA10	63	3NA3 132-6	125	1
3RW30 38	72	3RT10 45	3RV10 41-4KA10	75	3NA3 132-6	125	1
3RW30 46	80	3RT10 45	3RV10 41-4LA10	90	3NA3 136-6	160	1
3RW30 47	106	3RT10 46	3RV10 41-4MA10	100	3NA3 136-6	160	1

[1] The type of coordination "2" refers to soft starters in combination with the stipulated protective device (motor starter protector/circuit breaker/fuse), not to any additional components in the feeder.

[2] I_q = 50 kA at 400 V.

[3] 3NA3 805-1 (NH00), 5SB2 61 (DIAZED).

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Selection and ordering data


3RW30 1.


3RW30 2.


3RW30 3.


3RW30 4.


3RW30 03-2CB54

3RW ambient temperature 40 °C[1]				3RW ambient temperature 50 °C[1]					Size	DT		PU (UNIT, SET, M)	PS*	PG
Rated values of induction motors				Rated values of induction motors										
Operational current I_e	Rating at operational voltage U_e 230 V	400 V	500 V	Operational current I_e	Rating at operational voltage U_e 200 V	230 V	460 V	575 V			Configurator / Order No.	Price per PU		
A	kW	kW	kW	A	hp	hp	hp	hp						
Rated operational voltage U_e 200 ... 480 V[2]														
• With screw terminals														
3.6	0.75	**1.5**	--	3	0.5	0.5	**1.5**	--	**S00**	▶	**3RW30 13-1BB□4**	1	1 unit	42G
6.5	1.5	**3**	--	4.8	1	1	**3**	--	**S00**	▶	**3RW30 14-1BB□4**	1	1 unit	42G
9	2.2	**4**	--	7.8	2	2	**5**	--	**S00**	▶	**3RW30 16-1BB□4**	1	1 unit	42G
12.5	3	**5.5**	--	11	3	3	**7.5**	--	**S00**	▶	**3RW30 17-1BB□4**	1	1 unit	42G
17.6	4	**7.5**	--	17	3	3	**10**	--	**S00**	▶	**3RW30 18-1BB□4**	1	1 unit	42G
• With spring-type terminals														
3.6	0.75	**1.5**	--	3	0.5	0.5	**1.5**	--	**S00**	B	**3RW30 13-2BB□4**	1	1 unit	42G
6.5	1.5	**3**	--	4.8	1	1	**3**	--	**S00**	B	**3RW30 14-2BB□4**	1	1 unit	42G
9	2.2	**4**	--	7.8	2	2	**5**	--	**S00**	B	**3RW30 16-2BB□4**	1	1 unit	42G
12.5	3	**5.5**	--	11	3	3	**7.5**	--	**S00**	B	**3RW30 17-2BB□4**	1	1 unit	42G
17.6	4	**7.5**	--	17	3	3	**10**	--	**S00**	B	**3RW30 18-2BB□4**	1	1 unit	42G
• With screw terminals														
25	5.5	**11**	--	23	5	5	**15**	--	**S0**	▶	**3RW30 26-1BB□4**	1	1 unit	42G
32	7.5	**15**	--	29	7.5	7.5	**20**	--	**S0**	▶	**3RW30 27-1BB□4**	1	1 unit	42G
38	11	**18.5**	--	34	10	10	**25**	--	**S0**	▶	**3RW30 28-1BB□4**	1	1 unit	42G
• With spring-type terminals														
25	5.5	**11**	--	23	5	5	**15**	--	**S0**	B	**3RW30 26-2BB□4**	1	1 unit	42G
32	7.5	**15**	--	29	7.5	7.5	**20**	--	**S0**	B	**3RW30 27-2BB□4**	1	1 unit	42G
38	11	**18.5**	--	34	10	10	**25**	--	**S0**	B	**3RW30 28-2BB□4**	1	1 unit	42G
• With screw or spring-type terminals														
45	11	**22**	--	42	10	15	**30**	--	**S2**	▶	**3RW30 36-□BB□4**	1	1 unit	42G
63	18.5	**30**	--	58	15	20	**40**	--	**S2**	▶	**3RW30 37-□BB□4**	1	1 unit	42G
72	22	**37**	--	62	20	20	**40**	--	**S2**	▶	**3RW30 38-□BB□4**	1	1 unit	42G
• With screw or spring-type terminals														
80	22	**45**	--	73	20	25	**50**	--	**S3**	▶	**3RW30 46-□BB□4**	1	1 unit	42G
106	30	**55**	--	98	30	30	**75**	--	**S3**	▶	**3RW30 47-□BB□4**	1	1 unit	42G
Order No. supplement for connection types														
• With screw terminals											**1**			
• With spring-type terminals[3]											**2**			
Order No. supplement for rated control supply voltage U_s														
• 24 V AC/DC											**0**			
• 110 ... 230 V AC/DC											**1**			
Soft starters for easy starting conditions and high switching frequency, rated operational voltage U_e 200 ... 400 V, rated control supply voltage U_s 24 ... 230 V AC/DC														
3	0.55	**1.1**	--	2.6	0.5	**0.5**	--	--	22.5 mm					
• With screw terminals										▶	**3RW30 03-1CB54**	1	1 unit	42G
• With spring-type terminals										▶	**3RW30 03-2CB54**	1	1 unit	42G

For online configurator see www.siemens.com/sirius/configurators.

1) Stand-alone installation.

2) Soft starter with screw terminals: delivery time class ▶ (preferred type).

3) Main circuit connection: screw terminals.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The SIRIUS 3RW30 solid-state soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in *s*: 3
- Maximum starting current in % of motor current I_e: 300
- Maximum number of starts per hour in 1/h: 20

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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3RW30

Accessories

	Conductor cross-section			Tightening torque	For soft starters size	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	Solid or stranded	Finely stranded with end sleeve	AWG cables, solid or stranded								
	mm²	mm²	AWG	Nm							
Three-phase feeder terminals											
 3RV29 25-5AB	2.5 ... 16	2.5 ... 16	10 ... 4	3 ... 4	S00 (3RW30 1.) S0 (3RW30 2.)	►	**3RV29 25-5AB**		1	1 unit	41E

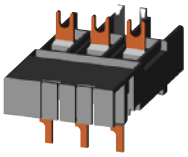
	For soft starters Type	Size	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Auxiliary terminals								
	Auxiliary terminals, 3-pole							
	3RW30 4.	**S3**	B	**3RT19 46-4F**		1	1 unit	41B
Covers for soft starters								
	**Terminal covers for box terminals** Additional touch protection to be fitted at the box terminals (2 units required per device)							
	3RW30 3.	**S2**	►	**3RT19 36-4EA2**		1	1 unit	41B
	3RW30 4.	**S3**	►	**3RT19 46-4EA2**		1	1 unit	41B
 3RT19 46-4EA1	**Terminal cover for cable lugs and busbar connections** For complying with the phase clearances and as touch protection if box terminal is removed (2 units required per device)							
	3RW30 4.	**S3**	►	**3RT19 46-4EA1**		1	1 unit	41B
Manual 3RW30/3RW40[1)]								
	3RW30 1. 3RW30 2. 3RW30 3. 3RW30 4.	**S00** **S0** **S2** **S3**						
		• German	C	**3ZX10 12-0RW30-1AB1**		1	1 unit	401
		• English	C	**3ZX10 12-0RW30-1AC1**		1	1 unit	401
		• French	C	**3ZX10 12-0RW30-1AD1**		1	1 unit	401
		• Spanish	C	**3ZX10 12-0RW30-1AE1**		1	1 unit	401

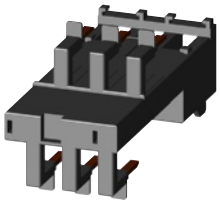
[1)] The operating instructions for 3RW30 (3ZX10 12-0RW30-2DA1) are included in the scope of supply of the soft starter or are available – like the manual – as a PDF download from the Service&Support portal at www.siemens.com/industrial-controls/support --> "Controls" --> "Soft Starters and Solid-State Switching Devices" --> "SIRIUS 3RW Soft Starters".

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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For soft starters Type	Size	Motor starter protectors Size	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Link modules to motor starter protectors[1]								
• With screw terminals								
3RW30 1.	**S00**	**S00**	A	**3RA29 21-1BA00**		1	1 unit	41B
3RW30 2.	**S0**	**S00/S0**	A	**3RA29 21-1BA00**		1	1 unit	41B
3RW30 36.	**S2**	**S2**	▶	**3RA19 31-1AA00**		1	1 unit	41B
3RW30 46., 3RW30 47.	**S3**	**S3**	▶	**3RA19 41-1AA00**		1	1 unit	41B
• With spring-type terminals								
3RW30 1.	**S00**	**S00**	▶	**3RA29 11-2GA00**		1	1 unit	41B
3RW30 2.	**S0**	**S0**	▶	**3RA29 21-2GA00**		1	1 unit	41B


3RA29 21-1BA00


3RA29 21-2GA00

[1] Can be used in size S0 up to maximum 32 A.
Can be used in size S00/S0 only for 3RV2 motor starter protectors.

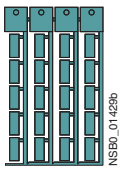
Version	Functionality Functions	Use	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Covers and push-in lugs (only for 3RW30 03)								
Sealable covers	For securing against unauthorized adjustment of setting knobs	For devices with 1 or 2 CO contacts	B	**3RP1 902**		1	5 units	41H
Push-in lugs For screw fixing		For devices with 1 or 2 CO contacts	B	**3RP1 903**		1	10 units	41H


3RP1 902


3RP1 903

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Tool for opening spring-type terminals for sizes S00 and S0						
		Spring-type terminals				
Screwdrivers For all SIRIUS devices with spring-type terminals length approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray/black, partially insulated	A	**3RA29 08-1A**		1	1 unit	41B
Blank labels						
Unit labeling plates[1] For SIRIUS devices 20 mm x 7 mm, pastel turquoise	D	**3RT19 00-1SB20**		100	340 units	41B


3RA29 08-1A



3RT19 00-1SB20

[1] PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH
(see Chapter 16, "Appendix" → "External Partners").

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More information

Application examples for normal starting (CLASS 10)

Normal starting CLASS 10 (up to 20 s with 300 % $I_{n\ motor}$)
The soft starter rating can be selected to be as high as the rating of the motor used

Application		Conveyor belt	Roller conveyor	Compressor	Small fans[1)]	Pump	Hydraulic pump
Starting parameters							
• Voltage ramp and current limiting							
- Starting voltage	%	70	60	50	40	40	40
- Starting time	s	10	10	20	20	10	10

[1)] The mass inertia of the fan is <10 times the mass inertia of the motor.

Note:
These tables present sample set values and device sizes. They are intended only for the purposes of information and are not binding. The set values depend on the application in question and must be optimized during commissioning.
The soft starter dimensions should be checked where necessary with the Win-Soft Starter software or with the help of Technical Assistance.

Configuration

The 3RW solid-state motor controllers are designed for easy starting conditions. In the event of deviating conditions or increased switching frequency, it may be necessary to choose a larger device. For accurate dimensioning, use the Win-Soft Starter selection and simulation program.

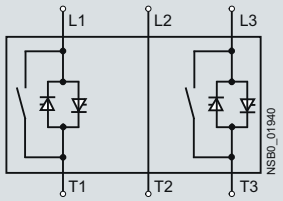
If necessary, an overload relay for heavy starting must be selected where long starting times are involved. PTC sensors are recommended.

No capacitive elements are permitted in the motor feeder between the SIRIUS 3RW soft starter and the motor (e.g. no reactive-power compensation equipment). In addition, neither static systems for reactive-power compensation nor dynamic PFC (Power Factor Correction) must be operated in parallel during starting and ramp-down of the soft starter. This is important to prevent faults arising on the compensation equipment and/or the soft starter.

All elements of the main circuit (such as fuses, controls and overload relays) should be dimensioned for direct starting, following the local short-circuit conditions. Fuses, controls and overload relays must be ordered separately. Please observe the maximum switching frequencies specified in the technical specifications.

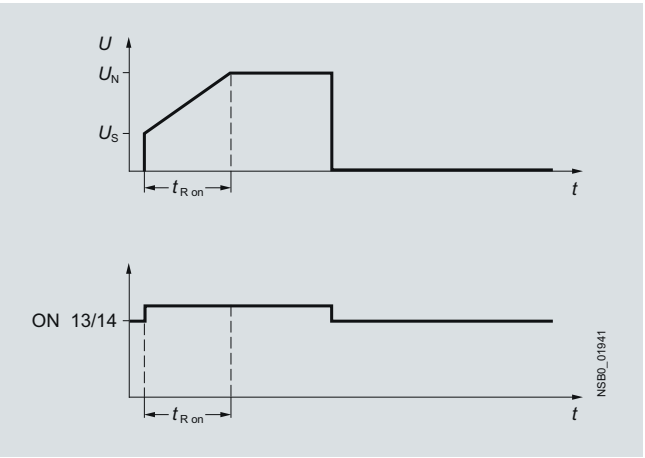
Note:
When induction motors are switched on, voltage drops occur as a rule on starters of all types (direct starters, wye-delta starters, softstarters). The infeed transformer must always be dimensioned such that the voltage dip when starting the motor remains within the permissible tolerance. If the infeed transformer is dimensioned with only a small margin, it is best for the control voltage to be supplied from a separate circuit (independently of the main voltage) in order to avoid the potential switching off of the soft starter.

Schematic circuit diagram of power electronics



A bypass contact system is already integrated in the 3RW30 soft starter and therefore does not have to be ordered separately.

Status graphs



Manual for SIRIUS 3RW30/40

Besides containing all important information on configuring, commissioning and servicing, the manual also contains example circuits and the technical specifications for all devices.

Win-Soft Starter selection and simulation program

With this software, you can simulate and select all Siemens soft starters, taking into account various parameters such as mains properties, motor and load data, and special application requirements.

The software is a valuable tool, which makes complicated, lengthy manual calculations for determining the required soft starters superfluous.

The Win-Soft Starter selection and simulation program can be downloaded from:
www.siemens.com/softstarter → Software

You can find more information about soft starters on the Internet likewise at:
www.siemens.com/softstarter

Training course for SIRIUS soft starters (SD-SIRIUSO)

Siemens offers a 2-day training course on the SIRIUS solid-state soft starters to keep customers and own personnel up-to-date on configuring, commissioning and maintenance issues.

You can find more information on our SITRAIN website:

www.siemens.com/sitrain
→ For course name select "SD-SIRIUSO"

See also Chapter 16, "Appendix" → "Training" .

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Overview

SIRIUS 3RW40 soft starters have all the same advantages as the 3RW30 soft starters.

The SIRIUS 3RW40 soft starters are characterized above all by their small space requirements. Integrated bypass contacts mean that no power loss has to be taken into the bargain at the power semiconductors (thyristors) after the motor has started up. This cuts down on heat losses, enabling a more compact design and making external bypass circuits superfluous.

At the same time this soft starter comes with additional integrated functions such as adjustable current limiting, motor overload and intrinsic device protection, and optional thermistor motor protection. The higher the motor rating, the more important these functions because they make it unnecessary to purchase and install protection equipment such as overload relays.

Internal intrinsic device protection prevents the thermal overloading of the thyristors and the power section defects this can cause. As an option the thyristors can also be protected by semiconductor fuses from short-circuiting.

Thanks to integrated status monitoring and fault monitoring, this compact soft starter offers many different diagnostics options. Up to four LEDs and relay outputs permit differentiated monitoring and diagnostics of the operating mechanism by indicating the operating state as well as for example mains or phase failure, missing load, non-permissible tripping time/CLASS setting, thermal overloading or device faults.

Soft starters rated up to 250 kW (at 400 V) for standard applications in three-phase networks are available. Extremely small sizes, low power losses and simple start-up are just three of the many advantages of the SIRIUS 3RW40 soft starters.

"Increased safety" type of protection EEx e according to ATEX directive 94/9/EC

The 3RW40 soft starter sizes S0 to S12 are suitable for the starting of explosion-proof motors with "increased safety" type of protection EEx e. See www.siemens.com/sirius/atex.

Functionality

The space required by the compact SIRIUS 3RW40 soft starter is often only about one third of that required by a contactor assembly for wye-delta starting of comparable rating. This not only saves space in the control cabinet and on the standard mounting rail but also does away completely with the wiring work needed for wye-delta starters. This is notable in particular for higher motor ratings which are only rarely available as fully wired solutions.

At the same time the number of cables from the starter to the motor is reduced from six to three. Compact dimensions, short start-up times, easy wiring and fast commissioning make themselves felt as clear-cut cost advantages.

The bypass contacts of these soft starters are protected during operation by an integrated solid-state arc quenching system. This prevents damage to the bypass contacts in the event of a fault, e.g. brief disconnection of the control voltage, mechanical shocks or life-related component defects on the coil operating mechanism or main contact spring.

The starting current of particularly powerful operating mechanisms can place an unjustifiable load on the local supply system. Soft starters reduce this starting current by means of their voltage ramp. Thanks to the adjustable current limiting, the SIRIUS 3RW40 soft starter takes even more pressure off the supply system. It leaves the set start ramp during the ramp-up – the ramp gradient is fixed by the starting voltage and the ramp time – as soon as the selected current limit is reached. From this moment the voltage of the soft starter is controlled so that the current supplied to the motor remains constant. This process is ended either by completion of the motor ramp-up or by tripping by the intrinsic device protection or the motor overload protection. As the result of this function the actual motor ramp-up can well take longer than the ramp time selected on the soft starter.

Thanks to the integrated motor overload protection according to IEC 60947-4-2 there is no need of an additional overload relay on the new soft starters. The rated motor current, the setting of the overload tripping time (CLASS times) and the reset of the motor overload protection function can be adjusted easily and quickly. Using a 4-step rotary potentiometer it is possible to set different overload tripping times on the soft starter. In addition to CLASS 10, 15 and 20 it is also possible to switch off the motor overload protection if a different motor management control device is to be used for this function, e.g. with connection to PROFIBUS.

Device versions with thermistor motor protection evaluation are available up to a rating of 55 kW (at 400 V). A "Thermoclick" measuring probe can be connected directly, as can a PTC of type A. Thermal overloading of the motor, open circuits and short circuits in the sensor circuit all result in the direct disconnection of the soft starter. And if ever the soft starter trips, various reset options are available the same as with intrinsic device protection and motor load protection: manually with the reset button, automatically or remotely through brief disconnection of the control voltage.

The new series of devices comes with the "polarity balancing" control method, which is designed to prevent direct current components in two-phase controlled soft starters. On two-phase controlled soft starters the current resulting from superimposition of the two controlled phases flows in the uncontrolled phase. This results for physical reasons in an asymmetric distribution of the three phase currents during the motor ramp-up. This phenomenon cannot be influenced, but in most applications it is non-critical.

Controlling the power semiconductors results not only in this asymmetry, however, but also in the previously mentioned direct current components which can cause severe noise generation on the motor at starting voltages of less than 50 %.

The control method used for these soft starters eliminates these direct current components during the ramp-up phase and prevents the braking torque which they can cause. It creates a motor ramp-up that is uniform in speed, torque and current rise, thus permitting a particularly gentle, two-phase starting of the motors. At the same time the acoustic quality of the starting operation comes close to the quality of a three-phase controlled soft starter. This is made possible by the on-going dynamic harmonizing and balancing of current half-waves of different polarity during the motor ramp-up. Hence the name "polarity balancing".

Application

The SIRIUS 3RW40 solid-state soft starters are used for the soft starting and stopping of three-phase asynchronous motors.

Due to two-phase control, the current is kept at minimum values in all three phases throughout the entire starting time and disturbing direct current components are eliminated in addition. This not only enables the two-phase starting of motors up to 250 kW (at 400 V) but also avoids the current and torque peaks which occur e.g. with wye-delta starters.

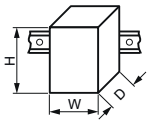
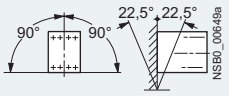
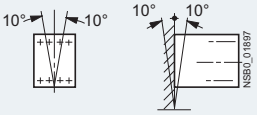
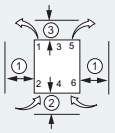
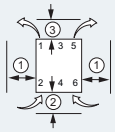
Application areas

See "Selection aid for soft starters" on page 6/6.

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3RW40

Technical specifications

Type			3RW40 2.	3RW40 3.	3RW40 4.	3RW40 5.	3RW40 7.
Mechanics and environment							
Mounting dimensions (W x H x D)							
• Screw terminals		mm	45 x 125 x 154	55 x 144 x 170	70 x 160 x188	120 x 198 x 250	160 x 230 x 278
• Spring-type terminals		mm	45 x 150 x 154	55 x 144 x 170	70 x 160 x188	120 x 198 x 250	160 x 230 x 278
Permissible ambient temperature							
Operation		°C	-25 ... +60; (derating from +40)				
Storage		°C	-40 ... +80				
Weight		kg	0.77	1.35	1.9	4.9 (.55.) 6.9 (.56.)	8.9
Permissible mounting position[1]							
• With auxiliary fan (for 3RW40 2. ... 3RW40 4.)							
• Without auxiliary fan (for 3RW40 2. ... 3RW40 4.)						-- (fan integrated in the soft starter)	
Installation type[1]	Stand-alone installation		3RW40 2.			3RW40 5., 3RW40 7.	
			① ≥ 15 mm (≥ 0.59 in) ② ≥ 40 mm (≥ 1.56 in) ③ ≥ 60 mm (≥ 2.36 in)			① ≥ 5 mm (≥ 0.2 in) ② ≥ 75 mm (≥ 3 in) ③ ≥ 100 mm (≥ 4 in)	
	3RW40 3., 3RW40 4.						
				① ≥ 30 mm (≥ 1.18 in) ② ≥ 40 mm (≥ 1.56 in) ③ ≥ 60 mm (≥ 2.36 in)			
Permissible installation altitude		m	5 000 (derating from 1000, see Characteristic Curves page 6/7); higher on request				
Degree of protection			IP20 for 3RW40 2.; all other IP00				

[1] In case of deviations, please note derating (see Manual in Chapter "Configuration").

Type			3RW40 2., 3RW40 3., 3RW40 4.		3RW40 5., 3RW40 7.
Control electronics					
Rated values	Terminal				
Rated control supply voltage	A1/A2	V	24 DC/AC	110 ... 230 AC/DC	115 AC 230 AC
• Tolerance		%	±20	-15/+10	-15/+10
Rated frequency		Hz	50/60		
• Tolerance		%	±10		

Type		3RW40 2.-..B.4, 3RW40 3.-..B.4, 3RW40 4.-..B.4	3RW40 2.-..B.5, 3RW40 3.-..B.5, 3RW40 4.-..B.5	3RW40 5.-.BB.4, 3RW40 7.-.BB.4	3RW40 5.-.BB.5, 3RW40 7.-.BB.5
Power electronics					
Rated operational voltage	V AC	200 ... 480	400 ... 600	200 ... 460	400 ... 600
Tolerance	%	-15/+10	-15/+10	-15/+10	-15/+10
Maximum blocking voltage (thyristor)	V AC	1 600		1 400	1 800
Rated frequency	Hz	50/60			
Tolerance	%	±10			
Uninterrupted duty at 40 °C (% of I_e)	%	115			
Minimum load (% of minimum selectable rated motor current I_M)	%	20 (at least 2 A)			
Maximum cable length between soft starter and motor	m	300			

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Type		3RW40 24	3RW40 26	3RW40 27	3RW40 28
Power electronics					
Load rating with rated operational current I_e					
• According to IEC and UL/CSA[1], for individual mounting, AC-53a					
- At 40 °C	A	12.5	25.3	32.2	38
- At 50 °C	A	11	23	29	34
- At 60 °C	A	10	21	26	31
Smallest adjustable rated motor current I_M					
For the motor overload protection	A	5	10	17	23
Power loss					
• In operation after completed starting with uninterrupted rated operational current (40 °C) approx.	W	2	8	13	19
• During starting with current limit set to 300 % I_M (40 °C)	W	68	188	220	256
Permissible rated motor current and starts per hour at 40 °C / 50 °C					
• **For normal starting (CLASS 10)**					
- Rated motor current I_M[2], starting time 3 s	A	12.5 / 11	25 / 23	32 / 29	38 / 34
- Starts per hour[3]	1/h	50 / 50	23 / 23	23 / 23	19 / 19
- Rated motor current I_M[2], starting time 4 s	A	12.5 / 11	25 / 23	32 / 29	38 / 34
- Starts per hour[3]	1/h	36 / 36	15 / 15	16 / 16	12 / 12
• **For heavy starting (CLASS 15)**					
- Rated motor current I_M[2], starting time 4.5 s	A	11 / 10	23 / 21	30 / 27	34 / 31
- Starts per hour[3]	1/h	49 / 49	21 / 21	18 / 18	18 / 18
- Rated motor current I_M[2], starting time 6 s	A	11 / 10	23 / 21	30 / 27	34 / 31
- Starts per hour[3]	1/h	36 / 36	14 / 14	13 / 13	13 / 13
• **For heavy starting (CLASS 20)**					
- Rated motor current I_M[2], starting time 6 s	A	10 / 9	21 / 19	27 / 24	31 / 28
- Starts per hour[3]	1/h	47 / 47	21 / 21	20 / 20	18 / 18
- Rated motor current I_M[2], starting time 8 s	A	10 / 9	21 / 19	27 / 24	31 / 28
- Starts per hour[3]	1/h	34 / 34	15 / 15	14 / 14	13 / 13

1) Measurement at 60 °C according to UL/CSA not required.

2) Current limit on soft starter set to 300 % I_M, T_u = 40 °C / 50 °C. Maximum adjustable rated motor current I_M dependent on CLASS setting.

3) For intermittent duty S4 with ON period = 30 %, T_u = 40 °C / 50 °C, stand-alone installation vertical. The quoted switching frequencies do not apply for automatic mode. Factors for permissible switching frequency with deviating mounting position, direct mounting, side-by-side mounting and use of an optional additional fan see "Manuals" in Chapter "Configuration".

Type		3RW40 36	3RW40 37	3RW40 38	3RW40 46	3RW40 47
Power electronics						
Load rating with rated operational current I_e						
• According to IEC and UL/CSA[1], for individual mounting, AC-53a						
- At 40 °C	A	45	63	72	80	106
- At 50 °C	A	42	58	62.1	73	98
- At 60 °C	A	39	53	60	66	90
Smallest adjustable rated motor current I_M						
For the motor overload protection	A	23	26	35	43	46
Power loss						
• In operation after completed starting with uninterrupted rated operational current (40 °C) approx.	W	6	12	15	12	21
• During starting with current limit set to 300 % I_M (40 °C)	W	316	444	500	576	768
Permissible rated motor current and starts per hour at 40 °C / 50 °C						
• **For normal starting (CLASS 10)**						
- Rated motor current I_M[2], starting time 3 s	A	45 / 42	63 / 58	72 / 62	80 / 73	106 / 98
- Starts per hour[3]	1/h	38 / 38	23 / 23	22 / 22	22 / 22	15 / 15
- Rated motor current I_M[2], starting time 4 s	A	45 / 42	63 / 58	72 / 62	80 / 73	106 / 98
- Starts per hour[3]	1/h	26 / 26	15 / 15	15 / 15	15 / 15	10 / 10
• **For heavy starting (CLASS 15)**						
- Rated motor current I_M[2], starting time 4.5 s	A	42 / 38	50 / 46	56 / 52	70 / 64	84 / 77
- Starts per hour[3]	1/h	30 / 30	34 / 34	34 / 34	24 / 24	23 / 23
- Rated motor current I_M[2], starting time 6 s	A	42 / 38	50 / 46	56 / 52	70 / 64	84 / 77
- Starts per hour[3]	1/h	21 / 21	24 / 24	24 / 24	16 / 16	17 / 17
• **For heavy starting (CLASS 20)**						
- Rated motor current I_M[2], starting time 6 s	A	38 / 34	46 / 42	50 / 46	64 / 58	77 / 70
- Starts per hour[3]	1/h	30 / 30	31 / 31	34 / 34	23 / 23	23 / 23
- Rated motor current I_M[2], starting time 8 s	A	38 / 34	46 / 42	50 / 46	64 / 58	77 / 70
- Starts per hour[3]	1/h	21 / 21	22 / 22	24 / 24	16 / 16	16 / 16

1) Measurement at 60 °C according to UL/CSA not required.

2) Current limit on soft starter set to 300 % I_M, T_u = 40 °C / 50 °C. Maximum adjustable rated motor current I_M dependent on CLASS setting.

3) For intermittent duty S4 with ON period = 30 %, T_u = 40 °C / 50 °C, stand-alone installation vertical. The quoted switching frequencies do not apply for automatic mode. Factors for permissible switching frequency with deviating mounting position, direct mounting, side-by-side mounting and use of an optional additional fan see "Manuals" in Chapter "Configuration".

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3RW40

Type		3RW40 55	3RW40 56	3RW40 73	3RW40 74	3RW40 75	3RW40 76
Power electronics							
Load rating with rated operational current I_e							
• According to IEC and UL/CSA[1], for individual mounting, AC-53a							
- At 40 °C	A	134	162	230	280	356	432
- At 50 °C	A	117	145	205	248	315	385
- At 60 °C	A	100	125	180	215	280	335
Smallest adjustable rated motor current I_M							
For the motor overload protection	A	59	87	80	130	131	207
Power loss							
• In operation after completed starting with uninterrupted rated operational current (40 °C) approx.	W	60	75	75	90	125	165
• During starting with current limit set to 350 %[2] I_M (40 °C)	W	1043	1355	2448	3257	3277	3600
Permissible rated motor current and starts per hour at 40 °C / 50 °C							
• **For normal starting (CLASS 10)**							
- Rated motor current I_M[2], starting time 10 s	A	134 / 117	162 / 145	230 / 205	280 / 248	356 / 315	432 / 385
- Starts per hour[3]	1/h	20 / 20	8 / 8	14 / 14	20 / 20	16 / 16	17 / 17
- Rated motor current I_M[2], starting time 20 s	A	134 / 117	162 / 145	230 / 205	280 / 248	356 / 315	432 / 385
- Starts per hour[3]	1/h	7 / 7	1.4 / 1.4	3 / 3	8 / 8	5 / 5	5 / 5
• **For heavy starting (CLASS 15)**							
- Rated motor current I_M[2], starting time 15 s	A	134 / 117	152 / 140	210 / 200	250 / 220	341 / 315	402 / 385
- Starts per hour[3]	1/h	11 / 11	8 / 8	11 / 11	13 / 13	11 / 11	12 / 12
- Rated motor current I_M[2], starting time 30 s	A	134 / 117	152 / 140	210 / 200	250 / 220	341 / 315	402 / 385
- Starts per hour[3]	1/h	1.2 / 1.2	1.7 / 1.7	1 / 1	6 / 6	2 / 2	2 / 2
• **For heavy starting (CLASS 20)**							
- Rated motor current I_M[2], starting time 20 s	A	124 / 112	142 / 132	200 / 185	230 / 205	311 / 280	372 / 340
- Starts per hour[3]	1/h	12 /12	9 / 9	10 / 10	10 / 10	10 / 10	10 / 10
- Rated motor current I_M[2], starting time 40 s	A	124 / 112	142 / 132	200 / 185	230 / 205	311 / 280	372 /340
- Starts per hour[3]	1/h	2 / 2	2 / 2	1 / 1	5 / 5	1 / 1	1 / 1

1) Measurement at 60 °C according to UL/CSA not required.

2) Current limit on soft starter set to 350 % I_M, T_u = 40 °C / 50 °C. Maximum adjustable rated motor current I_M dependent on CLASS setting.

3) For intermittent duty S4 with ON period = 70 %, T_u = 40 °C / 50 °C, stand-alone installation vertical. The quoted switching frequencies do not apply for automatic mode.

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Motor feeders with soft starters

The type of coordination to which the motor feeder with soft starter is mounted depends on the application-specific requirements. Normally, fuseless mounting (combination of motor starter protector/circuit breaker and soft starter) is sufficient.

If type of coordination "2" is to be fulfilled, semiconductor fuses must be fitted in the motor feeder.

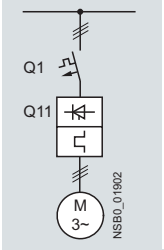
ToC 1 Type of coordination "1" according to IEC 60947-4-1: After a short-circuit incident the unit is defective therefore unsuitable for further use (protection of persons and system guaranteed).

ToC 2 Type of coordination "2" according to IEC 60947-4-1: After a short-circuit incident the unit is suitable for further use (protection of persons and system guaranteed).

The type of coordination refers to soft starters in combination with the stipulated protective device (motor starter protector/circuit breaker/fuse), not to any additional components in the feeder.

The types of coordination are indicated in the corresponding tables by the symbols shown on orange backgrounds.

Fuseless version

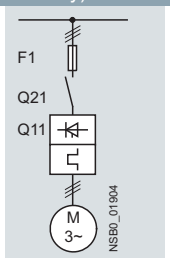


Soft starters		MSPs/circuit breakers[1]						
ToC 1	Nominal current	400 V +10 %	400 V +10 %		Rated current	575 V +10 %		Rated current
Q11		Q1	Q1	$I_{q\,max}$		Q1	$I_{q\,max}$	
Type	A	Type	Type	kA	A	Type	kA	A
Type of coordination "1"								
3RW40 24	12.5	3RV20 21-4AA/ 3RV20 11-4AA (in size S00)	3RV23 21-4AC/ 3RV23 11-4AC (in size S00)	55	16	--	--	--
3RW40 26	25	3RV20 21-4DA	3RV23 21-4DC	55	25	--	--	--
3RW40 27	32	3RV20 21-4EA	3RV23 21-4EC	55	32	--	--	--
3RW40 28	38	3RV20 21-4FA	3RV23 21-4FC	55	40	--	--	--
3RW40 36	45	3RV10 31-4GA10	3RV13 31-4GC10	20	45	--	--	--
3RW40 37	63	3RV10 41-4JA10	3RV13 41-4JC10	20	63	--	--	--
3RW40 38	72	3RV10 41-4KA10	3RV13 41-4KC10	20	75	--	--	--
3RW40 46	80	3RV10 41-4LA10	3RV13 41-4LC10	11	90	--	--	--
3RW40 47	106	3RV10 41-4MA10	3RV13 41-4MC10	11	100	--	--	--
3RW40 55	134	3VL3 720-2DC36		35	200	3VL3 720-1DC36	12	200
3RW40 56	162	3VL3 720-2DC36		35	200	3VL3 720-1DC36	12	200
3RW40 73	230	3VL4 731-2DC36		65	315	3VL5 731-3DC36	35	315
3RW40 74	280	3VL4 731-2DC36		65	315	3VL5 731-3DC36	35	315
3RW40 75	356	3VL4 740-2DC36		65	400	3VL5 740-3DC36	35	400
3RW40 76	432	3VL5 750-2DC36		65	500	3VL5 750-3DC36	35	500

[1] The rated motor current must be considered when selecting the devices. 3RV13/3RV23 motor starter protectors are designed for starter combinations (without motor protection). Motor protection is provided in this case by the 3RW40 soft starter.

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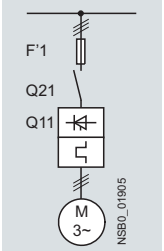
Fused version (line protection only)



Soft starters ToC 1 Q11 Type	Nominal current A	Line protection, maximum F1 Type	Rated current A	Size	Line contactors (optional) Q21 Type
Type of coordination "1"[1]: I_q = 65 kA at 600 V + 5 %					
3RW40 24	12.5	3NA3 820-6	50	00	3RT20 25/ 3RT20 18 (in size S00)
3RW40 26	25	3NA3 822-6	63	00	3RT20 26
3RW40 27	32	3NA3 824-6	80	00	3RT20 27
3RW40 28	38	3NA3 824-6	80	00	3RT20 28
3RW40 36	45	3NA3 130-6	100	1	3RT10 36
3RW40 37	63	3NA3 132-6	125	1	3RT10 44
3RW40 38	72	3NA3 132-6	125	1	3RT10 45
3RW40 46	80	3NA3 136-6	160	1	3RT10 45
3RW40 47	106	3NA3 136-6	160	1	3RT10 46
3RW40 55	134	3NA3 244-6	250	2	3RT10 55-6A.36
3RW40 56	162	3NA3 244-6	250	2	3RT10 56-6A.36
3RW40 73	230	2 x 3NA3 354-6	2 x 355	3	3RT10 65-6A.36
3RW40 74	280	2 x 3NA3 354-6	2 x 355	3	3RT10 66-6A.36
3RW40 75	356	2 x 3NA3 365-6	2 x 500	3	3RT10 75-6A.36
3RW40 76	432	2 x 3NA3 365-6	2 x 500	3	3RT10 76-6A.36

[1] The type of coordination "1" refers to soft starters in combination with the stipulated protective device (motor starter protector/circuit breaker/fuse), not to any additional components in the feeder.

Fused version with 3NE1 SITOR fuses (semiconductor and line protection)



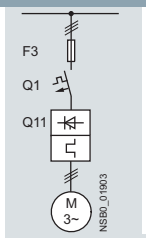
Matching fuse bases see
Catalog LV 10.1 --> "Switch Disconnectors" and
Catalog LV 10.1 --> "Fuse Systems"
--> "SITOR Semiconductor Fuses"
or at www.siemens.com/sitor

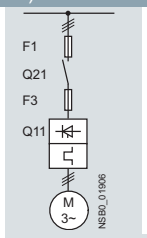
Soft starters ToC 2 Q11 Type	Nominal current A	All-range fuses F'1 Type	Rated current A	Size	Line contactors (optional) Q21 Type
Type of coordination "2"[1]: I_q = 65 kA at 600 V + 5 %					
3RW40 24	12.5	3NE1 814-0	20	000	3RT20 25/ 3RT20 18 (in size S00)
3RW40 26	25	3NE1 803-0	35	000	3RT20 26
3RW40 27	32	3NE1 020-2	80	00	3RT20 27
3RW40 28	38	3NE1 020-2	80	00	3RT20 28
3RW40 36	45	3NE1 020-2	80	00	3RT10 36
3RW40 37	63	3NE1 820-0	80	000	3RT10 44
3RW40 38	72	3NE1 820-0	80	000	3RT10 45
3RW40 46	80	3NE1 021-0	100	00	3RT10 45
3RW40 47	106	3NE1 022-0	125	00	3RT10 46
3RW40 55	134	3NE1 227-2	250	1	3RT10 55-6A.36
3RW40 56	162	3NE1 227-2	250	1	3RT10 56-6A.36
3RW40 73	230	3NE1 331-2	350	2	3RT10 65-6A.36
3RW40 74	280	3NE1 333-2	450	2	3RT10 66-6A.36
3RW40 75	356	3NE1 334-2	500	2	3RT10 75-6A.36
3RW40 76	432	3NE1 435-2	560	3	3RT10 76-6A.36

[1] The type of coordination "2" refers to soft starters in combination with the stipulated protective device (motor starter protector/circuit breaker/fuse), not to any additional components in the feeder.

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Fused version with 3NE3 SITOR fuses (semiconductor protection by fuse, line and overload protection by motor starter protector; alternatively, installation with contactor and overload relay possible)





Matching fuse bases see Catalog LV 10.1 --> "Switch Disconnectors" and Catalog LV 10.1 --> "Fuse Systems" --> "SITOR Semiconductor Fuses" or at www.siemens.com/sitor

Soft starters		Semiconductor fuses, minimum			Semiconductor fuses, maximum			Semiconductor fuses, minimum		
ToC 2	Nominal current		Rated current	Size		Rated current	Size		Rated current	Size
Q11 Type	A	F3 Type	A		F3 Type	A		F3 Type	A	
Type of coordination "2"[1]: I_q = 65 kA at 600 V + 5 % ([1] see previous page)										
3RW40 24	12.5	--	--	--	--	--	--	3NE4 101	32	0
3RW40 26	25	--	--	--	3NE3 221	100	1	3NE4 102	40	0
3RW40 27	32	--	--	--	3NE3 224	160	1	3NE4 118	63	0
3RW40 28	38	--	--	--	3NE3 224	160	1	3NE4 118	63	0
3RW40 36	45	--	--	--	3NE3 224	160	1	3NE4 120	80	0
3RW40 37	63	--	--	--	3NE3 225	200	1	3NE4 121	100	0
3RW40 38	72	3NE3 221	100	1	3NE3 227	250	1	--	--	--
3RW40 46	80	3NE3 222	125	1	3NE3 225	200	1	--	--	--
3RW40 47	106	3NE3 224	160	1	3NE3 231	350	1	--	--	--
3RW40 55	134	3NE3 227	250	1	3NE3 335	560	2	--	--	--
3RW40 56	162	3NE3 227	250	1	3NE3 335	560	2	--	--	--
3RW40 73	230	3NE3 232-0B	400	1	3NE3 333	450	2	--	--	--
3RW40 74	280	3NE3 233	450	1	3NE3 336	630	2	--	--	--
3RW40 75	356	3NE3 335	560	2	3NE3 336	630	2	--	--	--
3RW40 76	432	3NE3 337-8	710	2	3NE3 340-8	900	2	--	--	--

Soft starters		Semiconductor fuses max.			Semiconductor fuses min.			Semiconductor fuses max.			Cylindrical fuses	
ToC 2	Nominal current		Rated current	Size		Rated current	Size		Rated current	Size		Rated current
Q11 Type	A	F3 Type	A		F3 Type	A		F3 Type	A		F3 Type	A
Type of coordination "2"[1]: I_q = 65 kA at 600 V + 5 % ([1] see previous page)												
3RW40 24	12.5	3NE4 117	50	0	3NE8 015-1	25	00	3NE8 017-1	50	00	3NC2 240	40
3RW40 26	25	3NE4 117	50	0	3NE8 017-1	50	00	3NE8 021-1	100	00	3NC2 263	63
3RW40 27	32	3NE4 118	63	0	3NE8 018-1	63	00	3NE8 022-1	125	00	3NC2 280	80
3RW40 28	38	3NE4 118	63	0	3NE8 020-1	80	00	3NE8 024-1	160	00	3NC2 280	80
3RW40 36	45	3NE4 120	80	0	3NE8 020-1	80	00	3NE8 024-1	160	00	3NC2 280	80
3RW40 37	63	3NE4 121	100	0	3NE8 021-1	100	00	3NE8 024-1	160	00	--	--
3RW40 38	72	--	--	--	3NE8 022-1	125	00	3NE8 024-1	160	00	--	--
3RW40 46	80	--	--	--	3NE8 022-1	125	00	3NE8 024-1	160	00	--	--
3RW40 47	106	--	--	--	3NE8 024-1	160	00	3NE8 024-1	160	00	--	--
3RW40 55	134	--	--	--	--	--	--	--	--	--	--	--
3RW40 56	162	--	--	--	--	--	--	--	--	--	--	--
3RW40 73	230	--	--	--	--	--	--	--	--	--	--	--
3RW40 74	280	--	--	--	--	--	--	--	--	--	--	--
3RW40 75	356	--	--	--	--	--	--	--	--	--	--	--
3RW40 76	432	--	--	--	--	--	--	--	--	--	--	--

Soft starters		Line contactors	Motor starter protectors/circuit breakers				Line protection, maximum		
ToC 2	Nominal current	(optional)	400 V +10 %	Rated current	575 V +10 %	Rated current		Rated current	Size
Q11 Type	A	Q21 Type	Q1 Type	A	Q1 Type	A	F1 Type	A	
Type of coordination "2"[1]: I_q = 65 kA at 600 V + 5 % ([1] see previous page)									
3RW40 24	12.5	3RT20 25/ 3RT20 18 (in size S00)	3RV20 21-4AA/ 3RV20 11-4AA (in size S00)	55	--	--	3NA3 820-6	50	00
3RW40 26	25	3RT20 26	3RV20 21-4DA	55	--	--	3NA3 822-6	63	00
3RW40 27	32	3RT20 27	3RV20 21-4EA	55	--	--	3NA3 824-6	80	00
3RW40 28	38	3RT20 28	3RV20 21-4FA	55	--	--	3NA3 824-6	80	00
3RW40 36	45	3RT10 36	3RV10 31-4GA10	20	--	--	3NA3 130-6	100	1
3RW40 37	63	3RT10 44	3RV10 41-4JA10	20	--	--	3NA3 132-6	125	1
3RW40 38	72	3RT10 45	3RV10 41-4KA10	20	--	--	3NA3 132-6	125	1
3RW40 46	80	3RT10 45	3RV10 41-4LA10	11	--	--	3NA3 136-6	160	1
3RW40 47	106	3RT10 46	3RV10 41-4MA10	11	--	--	3NA3 136-6	160	1
3RW40 55	134	3RT10 55-6A.36	3VL3 720	200	3VL3 720	200	3NA3 244-6	250	2
3RW40 56	162	3RT10 56-6A.36	3VL3 720	200	3VL3 720	200	3NA3 244-6	250	2
3RW40 73	230	3RT10 65-6A.36	3VL4 731	315	3VL5 731	315	2 x 3NA3 354-6	2 x 355	3
3RW40 74	280	3RT10 66-6A.36	3VL4 731	315	3VL5 731	315	2 x 3NA3 354-6	2 x 355	3
3RW40 75	356	3RT10 75-6A.36	3VL4 740	400	3VL5 740	400	2 x 3NA3 365-6	2 x 500	3
3RW40 76	432	3RT10 76-6A.36	3VL5 750	500	3VL5 750	500	2 x 3NA3 365-6	2 x 500	3

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Selection and ordering data

SIRIUS 3RW40 for normal starting (CLASS 10)


3RW40 2.


3RW40 3.


3RW40 4.

3RW ambient temperature 40 °C[1]				3RW ambient temperature 50 °C[1]					Size	DT	Normal starting (CLASS 10)	PU (UNIT, SET, M)	PS*	PG
Rated values of induction motors				Rated values of induction motors							Configurator			
Operational current I_e	Rating at operational voltage U_e			Operational current I_e	Rating at operational voltage U_e						Order No. / Price per PU			
	230 V	400 V	500 V		200 V	230 V	460 V	575 V						
A	kW	kW	kW	A	hp	hp	hp	hp						
Rated operational voltage U_e 200 ... 480 V[2]														
• With screw terminals														
12.5	3	**5.5**	--	11	3	3	**7.5**	--	**S0**	▶	**3RW40 24-1BB□4**	1	1 unit	42G
25	5.5	**11**	--	23	5	5	**15**	--	**S0**	▶	**3RW40 26-1BB□4**	1	1 unit	42G
32	7.5	**15**	--	29	7.5	7.5	**20**	--	**S0**	▶	**3RW40 27-1BB□4**	1	1 unit	42G
38	11	**18.5**	--	34	10	10	**25**	--	**S0**	▶	**3RW40 28-1BB□4**	1	1 unit	42G
• With spring-type terminals														
12.5	3	**5.5**	--	11	3	3	**7.5**	--	**S0**	B	**3RW40 24-2BB□4**	1	1 unit	42G
25	5.5	**11**	--	23	5	5	**15**	--	**S0**	B	**3RW40 26-2BB□4**	1	1 unit	42G
32	7.5	**15**	--	29	7.5	7.5	**20**	--	**S0**	B	**3RW40 27-2BB□4**	1	1 unit	42G
38	11	**18.5**	--	34	10	10	**25**	--	**S0**	B	**3RW40 28-2BB□4**	1	1 unit	42G
• With screw or spring-type terminals														
45	11	**22**	--	42	10	15	**30**	--	**S2**	▶	**3RW40 36-□BB□4**	1	1 unit	42G
63	18.5	**30**	--	58	15	20	**40**	--	**S2**	▶	**3RW40 37-□BB□4**	1	1 unit	42G
72	22	**37**	--	62	20	20	**40**	--	**S2**	▶	**3RW40 38-□BB□4**	1	1 unit	42G
• With screw or spring-type terminals														
80	22	**45**	--	73	20	25	**50**	--	**S3**	▶	**3RW40 46-□BB□4**	1	1 unit	42G
106	30	**55**	--	98	30	30	**75**	--	**S3**	▶	**3RW40 47-□BB□4**	1	1 unit	42G
Rated operational voltage U_e 400 ... 600 V														
• With screw terminals														
12.5	--	5.5	**7.5**	11	--	--	7.5	**10**	**S0**	B	**3RW40 24-1BB□5**	1	1 unit	42G
25	--	11	**15**	23	--	--	15	**20**	**S0**	B	**3RW40 26-1BB□5**	1	1 unit	42G
32	--	15	**18.5**	29	--	--	20	**25**	**S0**	B	**3RW40 27-1BB□5**	1	1 unit	42G
38	--	18.5	**22**	34	--	--	25	**30**	**S0**	B	**3RW40 28-1BB□5**	1	1 unit	42G
• With spring-type terminals														
12.5	--	5.5	**7.5**	11	--	--	7.5	**10**	**S0**	B	**3RW40 24-2BB□5**	1	1 unit	42G
25	--	11	**15**	23	--	--	15	**20**	**S0**	B	**3RW40 26-2BB□5**	1	1 unit	42G
32	--	15	**18.5**	29	--	--	20	**25**	**S0**	B	**3RW40 27-2BB□5**	1	1 unit	42G
38	--	18.5	**22**	34	--	--	25	**30**	**S0**	B	**3RW40 28-2BB□5**	1	1 unit	42G
• With screw or spring-type terminals														
45	--	22	**30**	42	--	--	30	**40**	**S2**	B	**3RW40 36-□BB□5**	1	1 unit	42G
63	--	30	**37**	58	--	--	40	**50**	**S2**	B	**3RW40 37-□BB□5**	1	1 unit	42G
72	--	37	**45**	62	--	--	40	**60**	**S2**	B	**3RW40 38-□BB□5**	1	1 unit	42G
• With screw or spring-type terminals														
80	--	45	**55**	73	--	--	50	**60**	**S3**	B	**3RW40 46-□BB□5**	1	1 unit	42G
106	--	55	**75**	98	--	--	75	**75**	**S3**	B	**3RW40 47-□BB□5**	1	1 unit	42G

Order No. supplement for connection types

- With screw terminals **1**
- With spring-type terminals[3] **2**

Order No. supplement for rated control supply voltage U_s

- 24 V AC/DC **0**
- 110 ... 230 V AC/DC **1**

For online configurator see www.siemens.com/sirius/configurators.

[1] Stand-alone installation without auxiliary fan.

[2] Soft starter with screw terminals: delivery time class ▶ (preferred type).

[3] Main circuit connection: screw terminals.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The 3RW40 soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 10
- Maximum starting current in % of motor current I_e: 300
- Maximum number of starts per hour in 1/h: 5 (switching frequency can be increased by means of auxiliary fans)

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3RW40 2.


3RW40 3.


3RW40 4.

3RW ambient temperature 40 °C[1]				3RW ambient temperature 50 °C[1]					Size	DT	Normal starting (CLASS 10)	PU (UNIT, SET, M)	PS*	PG
Rated values of induction motors				Rated values of induction motors							Configurator			
Operational current I_e	Rating at operational voltage U_e			Operational current I_e	Rating at operational voltage U_e						Order No. / Price per PU			
	230 V	400 V	500 V		200 V	230 V	460 V	575 V						
A	kW	kW	kW	A	hp	hp	hp	hp						
Rated operational voltage U_e 200 ... 480 V[2], with thermistor motor protection, rated control supply voltage U_s 24 V AC/DC														
• With screw terminals														
12.5	3	**5.5**	--	11	3	3	**7.5**	--	**S0**	▶	**3RW40 24-1TB04**	1	1 unit	42G
25	5.5	**11**	--	23	5	5	**15**	--	**S0**	▶	**3RW40 26-1TB04**	1	1 unit	42G
32	7.5	**15**	--	29	7.5	7.5	**20**	--	**S0**	▶	**3RW40 27-1TB04**	1	1 unit	42G
38	11	**18.5**	--	34	10	10	**25**	--	**S0**	▶	**3RW40 28-1TB04**	1	1 unit	42G
• With spring-type terminals														
12.5	3	**5.5**	--	11	3	3	**7.5**	--	**S0**	B	**3RW40 24-2TB04**	1	1 unit	42G
25	5.5	**11**	--	23	5	5	**15**	--	**S0**	B	**3RW40 26-2TB04**	1	1 unit	42G
32	7.5	**15**	--	29	7.5	7.5	**20**	--	**S0**	B	**3RW40 27-2TB04**	1	1 unit	42G
38	11	**18.5**	--	34	10	10	**25**	--	**S0**	B	**3RW40 28-2TB04**	1	1 unit	42G
• With screw or spring-type terminals														
45	11	**22**	--	42	10	15	**30**	--	**S2**	▶	**3RW40 36-□TB04**	1	1 unit	42G
63	18.5	**30**	--	58	15	20	**40**	--	**S2**	▶	**3RW40 37-□TB04**	1	1 unit	42G
72	22	**37**	--	62	20	20	**40**	--	**S2**	▶	**3RW40 38-□TB04**	1	1 unit	42G
• With screw or spring-type terminals														
80	22	**45**	--	73	20	25	**50**	--	**S3**	▶	**3RW40 46-□TB04**	1	1 unit	42G
106	30	**55**	--	98	30	30	**75**	--	**S3**	▶	**3RW40 47-□TB04**	1	1 unit	42G
Rated operational voltage U_e 400 ... 600 V, with thermistor motor protection, rated control supply voltage U_s 24 V AC/DC														
• With screw terminals														
12.5	--	5.5	**7.5**	11	--	--	7.5	**10**	**S0**	B	**3RW40 24-1TB05**	1	1 unit	42G
25	--	11	**15**	23	--	--	15	**20**	**S0**	B	**3RW40 26-1TB05**	1	1 unit	42G
32	--	15	**18.5**	29	--	--	20	**25**	**S0**	B	**3RW40 27-1TB05**	1	1 unit	42G
38	--	18.5	**22**	34	--	--	25	**30**	**S0**	B	**3RW40 28-1TB05**	1	1 unit	42G
• With spring-type terminals														
12.5	--	5.5	**7.5**	11	--	--	7.5	**10**	**S0**	B	**3RW40 24-2TB05**	1	1 unit	42G
25	--	11	**15**	23	--	--	15	**20**	**S0**	B	**3RW40 26-2TB05**	1	1 unit	42G
32	--	15	**18.5**	29	--	--	20	**25**	**S0**	B	**3RW40 27-2TB05**	1	1 unit	42G
38	--	18.5	**22**	34	--	--	25	**30**	**S0**	B	**3RW40 28-2TB05**	1	1 unit	42G
• With screw or spring-type terminals														
45	--	22	**30**	42	--	--	30	**40**	**S2**	B	**3RW40 36-□TB05**	1	1 unit	42G
63	--	30	**37**	58	--	--	40	**50**	**S2**	B	**3RW40 37-□TB05**	1	1 unit	42G
72	--	37	**45**	62	--	--	40	**60**	**S2**	B	**3RW40 38-□TB05**	1	1 unit	42G
• With screw or spring-type terminals														
80	--	45	**55**	73	--	--	50	**60**	**S3**	B	**3RW40 46-□TB05**	1	1 unit	42G
106	--	55	**75**	98	--	--	75	**75**	**S3**	B	**3RW40 47-□TB05**	1	1 unit	42G

Order No. supplement for connection types

• With screw terminals	**1**
• With spring-type terminals[3]	**2**

For online configurator see www.siemens.com/sirius/configurators.

[1] Stand-alone installation without auxiliary fan.

[2] Soft starter with screw terminals: delivery time class ▶ (preferred type).

[3] Main circuit connection: screw terminals.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The 3RW40 soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 10
- Maximum starting current in % of motor current I_e: 300
- Maximum number of starts per hour in 1/h: 5 (switching frequency can be increased by means of auxiliary fans)

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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3RW40



3RW40 5.



3RW40 7.

3RW ambient temperature 40 °C[1]				3RW ambient temperature 50 °C[1]					Size	DT	Normal starting (CLASS 10)	PU (UNIT, SET, M)	PS*	PG
Rated values of induction motors				Rated values of induction motors										
Operational current I_e	Rating at operational voltage U_e			Operational current I_e	Rating at operational voltage U_e						Configurator			
	230 V	400 V	500 V		200 V	230 V	460 V	575 V			Order No.	Price per PU		
A	kW	kW	kW	A	hp	hp	hp	hp						
Rated operational voltage U_e 200 ... 460 V[2]														
• With screw or spring-type terminals														
134	37	**75**	--	117	30	40	**75**	--	**S6**	B	**3RW40 55-□BB□4**	1	1 unit	42G
162	45	**90**	--	145	40	50	**100**	--		B	**3RW40 56-□BB□4**	1	1 unit	42G
• With screw or spring-type terminals														
230	75	**132**	--	205	60	75	**150**	--	**S12**	B	**3RW40 73-□BB□4**	1	1 unit	42G
280	90	**160**	--	248	75	100	**200**	--		B	**3RW40 74-□BB□4**	1	1 unit	42G
356	110	**200**	--	315	100	125	**250**	--		B	**3RW40 75-□BB□4**	1	1 unit	42G
432	132	**250**	--	385	125	150	**300**	--		B	**3RW40 76-□BB□4**	1	1 unit	42G
Rated operational voltage U_e 400 ... 600 V[3]														
• With screw or spring-type terminals														
134	--	75	**90**	117	--	--	75	**100**	**S6**	B	**3RW40 55-□BB□5**	1	1 unit	42G
162	--	90	**110**	145	--	--	100	**150**		B	**3RW40 56-□BB□5**	1	1 unit	42G
• With screw or spring-type terminals														
230	--	132	**160**	205	--	--	150	**200**	**S12**	B	**3RW40 73-□BB□5**	1	1 unit	42G
280	--	160	**200**	248	--	--	200	**250**		B	**3RW40 74-□BB□5**	1	1 unit	42G
356	--	200	**250**	315	--	--	250	**300**		B	**3RW40 75-□BB□5**	1	1 unit	42G
432	--	250	**315**	385	--	--	300	**400**		B	**3RW40 76-□BB□5**	1	1 unit	42G

Order No. supplement for connection types[4]

- With spring-type terminals — **2**
- With screw terminals — **6**

Order No. supplement for the rated control supply voltage U_s[5]

- 115 V AC — **3**
- 230 V AC — **4**

For online configurator see www.siemens.com/sirius/configurators.

1) Stand-alone installation.
2) Soft starter with screw terminals: delivery time class ▶ (preferred type).
3) Soft starter with screw terminals: delivery time class A.
4) Main circuit connection: busbar connection.
5) Control by way of the internal 24 V DC supply and direct control by means of PLC possible.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The 3RW40 soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 10
- Maximum starting current in % of motor current I_e: 300
- Maximum number of starts per hour in 1/h: 5

In the event of more exacting requirements, it may be necessary to choose a larger device. However, in some cases the designed-in safety reserves also permit the listed units to be used in boundary conditions which are slightly more demanding. For detailed technical information for a configuration which is tailored exactly to the application see "Manuals". Siemens recommends the use of the selection and simulation program Win-Soft Starter.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RW40 for heavy starting (CLASS 20)


3RW40 2.


3RW40 3.


3RW40 4.

3RW ambient temperature 40 °C[1]				3RW ambient temperature 50 °C[1]					Size	DT	Heavy starting (CLASS 20)	PU (UNIT, SET, M)	PS*	PG
Rated values of induction motors				Rated values of induction motors							Configurator			
Operational current I_e	Rating at operational voltage U_e			Operational current I_e	Rating at operational voltage U_e						Order No. / Price per PU			
	230 V	400 V	500 V		200 V	230 V	460 V	575 V						
A	kW	kW	kW	A	hp	hp	hp	hp						
Rated operational voltage U_e 200 ... 480 V[2]														
• With screw terminals														
12.5	3	**5.5**	--	11	3	3	**7.5**	--	**S0**	▶	**3RW40 26-1BB□4**	1	1 unit	42G
25	5.5	**11**	--	23	5	5	**15**	--	**S0**	▶	**3RW40 27-1BB□4**	1	1 unit	42G
• With spring-type terminals														
12.5	3	**5.5**	--	11	3	3	**7.5**	--	**S0**	B	**3RW40 26-2BB□4**	1	1 unit	42G
25	5.5	**11**	--	23	5	5	**15**	--	**S0**	B	**3RW40 27-2BB□4**	1	1 unit	42G
• With screw or spring-type terminals														
32	7.5	**15**	--	29	7.5	7.5	**20**	--	**S2**	▶	**3RW40 36-□BB□4**	1	1 unit	42G
38	11	**18.5**	--	34	10	10	**25**	--	**S2**	▶	**3RW40 37-□BB□4**	1	1 unit	42G
45	11	**22**	--	42	10	15	**30**	--	**S2**	▶	**3RW40 37-□BB□4**	1	1 unit	42G
63	18.5	**30**	--	58	15	20	**40**	--	**S3**	▶	**3RW40 47-□BB□4**	1	1 unit	42G
72	22	**37**	--	62	20	20	**40**	--	**S3**	▶	**3RW40 47-□BB□4**	1	1 unit	42G
Rated operational voltage U_e 400 ... 600 V														
• With screw terminals														
12.5	--	5.5	**7.5**	11	--	--	7.5	**10**	**S0**	B	**3RW40 26-1BB□5**	1	1 unit	42G
25	--	11	**15**	23	--	--	15	**20**	**S0**	B	**3RW40 27-1BB□5**	1	1 unit	42G
• With spring-type terminals														
12.5	--	5.5	**7.5**	11	--	--	7.5	**10**	**S0**	B	**3RW40 26-2BB□5**	1	1 unit	42G
25	--	11	**15**	23	--	--	15	**20**	**S0**	B	**3RW40 27-2BB□5**	1	1 unit	42G
• With screw or spring-type terminals														
32	--	15	**18.5**	29	--	--	20	**25**	**S2**	B	**3RW40 36-□BB□5**	1	1 unit	42G
38	--	18.5	**22**	34	--	--	25	**30**	**S2**	B	**3RW40 37-□BB□5**	1	1 unit	42G
45	--	22	**30**	42	--	--	30	**40**	**S2**	B	**3RW40 37-□BB□5**	1	1 unit	42G
63	--	30	**37**	58	--	--	40	**50**	**S3**	B	**3RW40 47-□BB□5**	1	1 unit	42G
72	--	37	**45**	62	--	--	40	**60**	**S3**	B	**3RW40 47-□BB□5**	1	1 unit	42G

Order No. supplement for connection types

- With screw terminals **1**
- With spring-type terminals[3] **2**

Order No. supplement for rated control supply voltage U_s

- 24 V AC/DC **0**
- 110 ... 230 V AC/DC **1**

For online configurator see www.siemens.com/sirius/configurators.

1) Stand-alone installation without auxiliary fan.
2) Soft starter with screw terminals: delivery time class ▶ (preferred type).
3) Main circuit connection: screw terminals.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The 3RW40 soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 20
- Maximum starting current in % of motor current I_e: 300
- Maximum number of starts per hour in 1/h: 5 (switching frequency can be increased by means of auxiliary fans)

In the event of more exacting requirements, it may be necessary to choose a larger device. However, in some cases the designed-in safety reserves also permit the listed units to be used in boundary conditions which are slightly more demanding. For detailed technical information for a configuration which is tailored exactly to the application see "Manuals". Siemens recommends the use of the selection and simulation program Win-Soft Starter.

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3RW40


3RW40 2.


3RW40 3.


3RW40 4.

3RW ambient temperature 40 °C[1]				3RW ambient temperature 50 °C[1]					Size	DT	Heavy starting (CLASS 20)	PU (UNIT, SET, M)	PS*	PG
Rated values of induction motors				Rated values of induction motors							Configurator			
Operational current I_e	Rating at operational voltage U_e			Operational current I_e	Rating at operational voltage U_e						Order No. / Price per PU			
	230 V	400 V	500 V		200 V	230 V	460 V	575 V						
A	kW	kW	kW	A	hp	hp	hp	hp						
Rated operational voltage U_e 200 ... 480 V[2], with thermistor motor protection, rated control supply voltage U_s 24 V AC/DC														
• With screw terminals														
12.5	3	**5.5**	--	11	3	3	**7.5**	--	**S0**	▶	**3RW40 26-1TB04**	1	1 unit	42G
25	5.5	**11**	--	23	5	5	**15**	--	**S0**	▶	**3RW40 27-1TB04**	1	1 unit	42G
• With spring-type terminals														
12.5	3	**5.5**	--	11	3	3	**7.5**	--	**S0**	B	**3RW40 26-2TB04**	1	1 unit	42G
25	5.5	**11**	--	23	5	5	**15**	--	**S0**	B	**3RW40 27-2TB04**	1	1 unit	42G
• With screw or spring-type terminals														
32	7.5	**15**	--	29	7.5	7.5	**20**	--	**S2**	▶	**3RW40 36-☐TB04**	1	1 unit	42G
38	11	**18.5**	--	34	10	10	**25**	--	**S2**	▶	**3RW40 37-☐TB04**	1	1 unit	42G
45	11	**22**	--	42	10	15	**30**	--	**S2**	▶	**3RW40 37-☐TB04**	1	1 unit	42G
63	18.5	**30**	--	58	15	20	**40**	--	**S3**	▶	**3RW40 47-☐TB04**	1	1 unit	42G
72	22	**37**	--	62	20	20	**40**	--	**S3**	▶	**3RW40 47-☐TB04**	1	1 unit	42G
Rated operational voltage U_e 400 ... 600 V, with thermistor motor protection, rated control supply voltage U_s 24 V AC/DC														
• With screw terminals														
12.5	--	5.5	**7.5**	11	--	--	7.5	**10**	**S0**	B	**3RW40 26-1TB05**	1	1 unit	42G
25	--	11	**15**	23	--	--	15	**20**	**S0**	B	**3RW40 27-1TB05**	1	1 unit	42G
• With spring-type terminals														
12.5	--	5.5	**7.5**	11	--	--	7.5	**10**	**S0**	B	**3RW40 26-2TB05**	1	1 unit	42G
25	--	11	**15**	23	--	--	15	**20**	**S0**	B	**3RW40 27-2TB05**	1	1 unit	42G
• With screw or spring-type terminals														
32	--	15	**18.5**	29	--	--	20	**25**	**S2**	B	**3RW40 36-☐TB05**	1	1 unit	42G
38	--	18.5	**22**	34	--	--	25	**30**	**S2**	B	**3RW40 37-☐TB05**	1	1 unit	42G
45	--	22	**30**	42	--	--	30	**40**	**S2**	B	**3RW40 37-☐TB05**	1	1 unit	42G
63	--	30	**37**	58	--	--	40	**50**	**S3**	B	**3RW40 47-☐TB05**	1	1 unit	42G
72	--	37	**45**	62	--	--	40	**60**	**S3**	B	**3RW40 47-☐TB05**	1	1 unit	42G

Order No. supplement for connection types

- With screw terminals **1**
- With spring-type terminals[3] **2**

For online configurator see www.siemens.com/sirius/configurators.

1) Stand-alone installation without auxiliary fan.
2) Soft starter with screw terminals: delivery time class ▶ (preferred type).
3) Main circuit connection: screw terminals.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The 3RW40 soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 20
- Maximum starting current in % of motor current I_e: 300
- Maximum number of starts per hour in 1/h: 5 (switching frequency can be increased by means of auxiliary fans)

In the event of more exacting requirements, it may be necessary to choose a larger device. However, in some cases the designed-in safety reserves also permit the listed units to be used in boundary conditions which are slightly more demanding. For detailed technical information for a configuration which is tailored exactly to the application see "Manuals". Siemens recommends the use of the selection and simulation program Win-Soft Starter.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3RW40 5.



3RW40 7.

3RW ambient temperature 40 °C[1]				3RW ambient temperature 50 °C[1]					Size	DT	Heavy starting (CLASS 20)	PU (UNIT, SET, M)	PS*	PG
Rated values of induction motors				Rated values of induction motors							Configurator			
Operational current I_e	Rating at operational voltage U_e			Operational current I_e	Rating at operational voltage U_e						Order No. / Price per PU			
	230 V	400 V	500 V		200 V	230 V	460 V	575 V						
A	kW	kW	kW	A	hp	hp	hp	hp						
Rated operational voltage U_e 200 ... 460 V[2]														
• With screw or spring-type terminals														
80	22	**45**	--	73	20	25	**50**	--	**S6**	B	**3RW40 55-□BB□4**	1	1 unit	42G
106	30	**55**	--	98	25	30	**60**	--	**S6**	B	**3RW40 55-□BB□4**	1	1 unit	42G
134	37	**75**	--	117	30	40	**75**	--	**S6**	B	**3RW40 56-□BB□4**	1	1 unit	42G
162	45	**90**	--	145	40	50	**100**	--	**S12**	B	**3RW40 73-□BB□4**	1	1 unit	42G
230	75	**132**	--	205	60	75	**150**	--	**S12**	B	**3RW40 74-□BB□4**	1	1 unit	42G
280	90	**160**	--	248	75	100	**200**	--	**S12**	B	**3RW40 75-□BB□4**	1	1 unit	42G
356	110	**200**	--	315	100	125	**250**	--	**S12**	B	**3RW40 76-□BB□4**	1	1 unit	42G
Rated operational voltage U_e 400 ... 600 V[3]														
• With screw or spring-type terminals														
80	--	45	**55**	73	--	--	50	**60**	**S6**	B	**3RW40 55-□BB□5**	1	1 unit	42G
106	--	55	**75**	98	--	--	60	**75**	**S6**	B	**3RW40 55-□BB□5**	1	1 unit	42G
134	--	75	**90**	117	--	--	75	**100**	**S6**	B	**3RW40 56-□BB□5**	1	1 unit	42G
162	--	90	**110**	145	--	--	100	**150**	**S12**	B	**3RW40 73-□BB□5**	1	1 unit	42G
230	--	132	**160**	205	--	--	150	**200**	**S12**	B	**3RW40 74-□BB□5**	1	1 unit	42G
280	--	160	**200**	248	--	--	200	**250**	**S12**	B	**3RW40 75-□BB□5**	1	1 unit	42G
356	--	200	**250**	315	--	--	250	**300**	**S12**	B	**3RW40 76-□BB□5**	1	1 unit	42G

Order No. supplement for connection types[4]

- With spring-type terminals **2 6**
- With screw terminals

Order No. supplement for the rated control supply voltage U_s[5]

- 115 V AC **3 4**
- 230 V AC

For online configurator see www.siemens.com/sirius/configurators.

1) Stand-alone installation.
2) Soft starter with screw terminals: delivery time class ▶ (preferred type).
3) Soft starter with screw terminals: delivery time class A.
4) Main circuit connection: busbar connection.
5) Control by way of the internal 24 V DC supply and direct control by means of PLC possible.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The 3RW40 soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 40
- Maximum starting current in % of motor current I_e: 350
- Maximum number of starts per hour in 1/h: 1

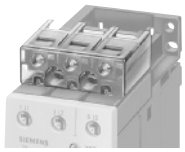
In the event of more exacting requirements, it may be necessary to choose a larger device. However, in some cases the designed-in safety reserves also permit the listed units to be used in boundary conditions which are slightly more demanding. For detailed technical information for a configuration which is tailored exactly to the application see "Manuals". Siemens recommends the use of the selection and simulation program Win-Soft Starter.

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3RW40

Accessories

	Conductor cross-section: Solid or stranded	Conductor cross-section: Finely stranded with end sleeve	Conductor cross-section: AWG cables, solid or stranded	Tightening torque	For soft starters size	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	mm²	mm²	AWG	Nm							
Three-phase feeder terminals											
 3RV29 25-5AB	2.5 ... 16	2.5 ... 16	10 ... 4	3 ... 4	S0 (3RW40 2.)	►	**3RV29 25-5AB**		1	1 unit	41E

	For soft starters: Type	Size	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Box terminal blocks for soft starters									
	**For round and ribbon cables** (2 units required for each device)								
	3RW40 5.	**S6**	• Up to 70 mm²	►	**3RT19 55-4G**		1	1 unit	41B
			• Up to 120 mm²	►	**3RT19 56-4G**		1	1 unit	41B
			Auxiliary conductor connection for box terminals	B	**3TX7 500-0A**		1	1 unit	41B
	3RW40 7.	**S12**	• Up to 240 mm² (with auxiliary conductor connection)	►	**3RT19 66-4G**		1	1 unit	41B
Auxiliary terminals									
	Auxiliary terminals, 3-pole								
	3RW40 4.	**S3**		B	**3RT19 46-4F**		1	1 unit	41B
Covers for soft starters									
	**Terminal covers for box terminals** Additional touch protection to be fitted at the box terminals (2 units required per device)								
	3RW40 3.	**S2**		►	**3RT19 36-4EA2**		1	1 unit	41B
	3RW40 4.	**S3**		►	**3RT19 46-4EA2**		1	1 unit	41B
	3RW40 5.	**S6**		►	**3RT19 56-4EA2**		1	1 unit	41B
	3RW40 7.	**S12**		►	**3RT19 66-4EA2**		1	1 unit	41B
	**Terminal cover for cable lugs and busbar connections**								
	3RW40 4.	**S3**	For complying with the phase clearances and as touch protection if box terminal is removed (2 units required per device)	►	**3RT19 46-4EA1**		1	1 unit	41B
	3RW40 5.	**S6**		►	**3RT19 56-4EA1**		1	1 unit	41B
	3RW40 7.	**S12**		►	**3RT19 66-4EA1**		1	1 unit	41B
	Also fits in case of S6 and S12 on mounted box terminals								
	**Sealing covers**								
	3RW40 2. to 3RW40 4.	**S0, S2, S3**		►	**3RW49 00-0PB10**		1	1 unit	42G
	3RW40 5. and 3RW40 7.	**S6, S12**		►	**3RW49 00-0PB00**		1	1 unit	42G

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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For soft starters Type	Size	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Modules for RESET[1)]								
 **Modules for remote RESET, electrical** Operating range 0.85 ... 1.1 x U_S, power consumption AC 80 VA, DC 70 W, ON period 0.2 ... 4 s, switching frequency 60/h								
3RW40 5. and 3RW40 7.	**S6, S12**	• 24 ... 30 V AC/DC	►	**3RU19 00-2AB71**		1	1 unit	41F
		• 110 ... 127 V AC/DC	►	**3RU19 00-2AF71**		1	1 unit	41F
		• 220 ... 250 V AC/DC	►	**3RU19 00-2AM71**		1	1 unit	41F
 **Mechanical RESET comprising**								
3RW40 5. and 3RW40 7.	**S6, S12**	• Resetting plungers, holders and formers	►	**3RU19 00-1A**		1	1 unit	41F
		• Suitable pushbutton IP65, Ø 22 mm, 12 mm stroke	B	**3SB30 00-0EA11**		1	1 unit	41J
		• Extension plungers	A	**3SX13 35**		1	1 unit	41J
 **Cable releases with holder for RESET** For Ø 6.5 mm holes in the control panel; max. control panel thickness 8 mm								
3RW40 5. and 3RW40 7.	**S6, S12**	• Length 400 mm	►	**3RU19 00-1B**		1	1 unit	41F
		• Length 600 mm	►	**3RU19 00-1C**		1	1 unit	41F

[1)] Remote RESET already integrated in the 3RW40 2. to 3RW40 4. soft starters.

For soft starters Type	Size	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Fans (to increase switching frequency and for device mounting in positions different from the normal position)							
 3RW40 2.	**S0**	►	**3RW49 28-8VB00**		1	1 unit	42G
3RW40 3., 3RW40 4.	**S2, S3**	►	**3RW49 47-8VB00**		1	1 unit	42G
Manual 3RW30/3RW40[1)]							
3RW40 2. 3RW40 3. 3RW40 4. 3RW40 5. 3RW40 7.	**S0 S2 S3 S6 S12**						
	• German	C	**3ZX10 12-0RW30-1AB1**		1	1 unit	401
	• English	C	**3ZX10 12-0RW30-1AC1**		1	1 unit	401
	• French	C	**3ZX10 12-0RW30-1AD1**		1	1 unit	401
	• Spanish	C	**3ZX10 12-0RW30-1AE1**		1	1 unit	401

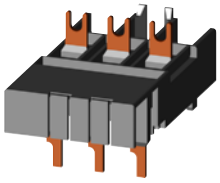
[1)] The operating instructions for 3RW40 2./3./4. (3ZX10 12-0RW40-2DA1) and 3RW40 5./7. (3ZX10 12-0RW40-1AA1) are included in the scope of supply of the soft starter or are available – like the manual – as a PDF download from the Service&Support portal at www.siemens.com/industrial-controls/support --> "Controls" --> "Soft Starters and Solid-State Switching Devices" --> "SIRIUS 3RW Soft Starters".

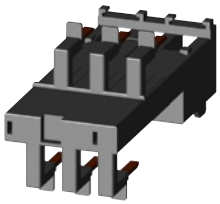
*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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3RW40

For soft starters Type	Size	Motor starter protectors Size	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Link modules to motor starter protectors[1]								
• With screw terminals								
3RW40 2.	**S0**	**S00/S0**	A	**3RA29 21-1BA00**		1	1 unit	41B
3RW40 36.	**S2**	**S2**	▶	**3RA19 31-1AA00**		1	1 unit	41B
3RW40 46., 3RW40 47.	**S3**	**S3**	▶	**3RA19 41-1AA00**		1	1 unit	41B
• With spring-type terminals								
3RW40 2.	**S0**	**S0**	▶	**3RA29 21-2GA00**		1	1 unit	41B

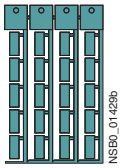

3RA29 21-1BA00


3RA29 21-2GA00

[1] Can be used in size S0 up to maximum 32 A.
Can be used in size S0 only for 3RV2 motor starter protectors.

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Tool for opening spring-type terminals for sizes S00 and S0						
		Spring-type terminals				
Screwdrivers for all SIRIUS devices with spring-type terminals length approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray/black, partially insulated	A	**3RA29 08-1A**		1	1 unit	41B
Blank labels						
Unit labeling plates[1] for SIRIUS devices 20 mm x 7 mm, pastel turquoise	D	**3RT19 00-1SB20**		100	340 units	41B


3RA29 08-1A



3RT19 00-1SB20

[1] PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH
(see Chapter 16, "Appendix" ➞ "External Partners").

Spare parts

For soft starters Type	Size	Version Rated control supply voltage U_s	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Fans								
Fans								
3RW40 5.-.BB3.	**S6**	115 V AC	▶	**3RW49 36-8VX30**		1	1 unit	42G
3RW40 5.-.BB4.	**S6**	230 V AC	▶	**3RW49 36-8VX40**		1	1 unit	42G
3RW40 7.-.BB3.	**S12**	115 V AC	▶	**3RW49 47-8VX30**		1	1 unit	42G
3RW40 7.-.BB4.	**S12**	230 V AC	▶	**3RW49 47-8VX40**		1	1 unit	42G



* You can order this quantity or a multiple thereof.
Illustrations are approximate

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More information

Application examples for normal starting (CLASS 10)

Normal starting CLASS 10 (up to 20 s with 350 % $I_{n\ motor}$)
The soft starter rating can be selected to be as high as the rating of the motor used.

Application		Conveyor belt	Roller conveyor	Compressor	Small fans[1)]	Pump	Hydraulic pump
Starting parameters							
• Voltage ramp and current limiting							
- Starting voltage	%	70	60	50	40	40	40
- Starting time	s	10	10	10	10	10	10
- Current limit value		5 x I_M	5 x I_M	4 x I_M	4 x I_M	4 x I_M	4 x I_M
Ramp-down time	s	5	5	0	0	10	0

1) The mass inertia of the fan is <10 times the mass inertia of the motor.

Application examples for heavy starting (CLASS 20)

Heavy starting CLASS 20 (up to 40 s with 350 % $I_{n\ motor}$)
The soft starter has to be selected at least one performance class higher than the motor used.

Application		Stirrer	Centrifuge
Starting parameters			
• Voltage ramp and current limiting			
- Starting voltage	%	40	40
- Starting time	s	20	20
- Current limit value		4 x I_M	4 x I_M
Ramp-down time		0	0

Note:

These tables present sample set values and device sizes. They are intended only for the purposes of information and are not binding. The set values depend on the application in question and must be optimized during commissioning.

The soft starter dimensions should be checked where necessary with the Win-Soft Starter software or with the help of Technical Assistance.

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3RW40

Configuration

The 3RW solid-state soft starters are designed for easy starting conditions. In the event of deviating conditions or increased switching frequency, it may be necessary to choose a larger device. For accurate dimensioning, use the Win-Soft Starter selection and simulation program.

Where long starting times are involved, the integrated solid-state overload relay for heavy starting should not be disconnected. PTC sensors are recommended. This also applies for the smooth ramp-down because during the ramp-down time an additional current loading applies in contrast to free ramp-down.

In the case of high switching frequencies in S4 mode, Siemens recommends the use of PTC sensors. For corresponding device versions with integrated thermistor motor protection or separate thermistor evaluation devices see Chapter 10 "Monitoring and Control Devices".

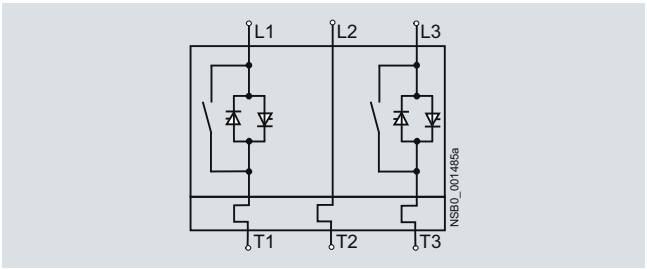
No capacitive elements are permitted in the motor feeder between the SIRIUS 3RW soft starter and the motor (e.g. no reactive-power compensation equipment). In addition, neither static systems for reactive-power compensation nor dynamic PFC (Power Factor Correction) must be operated in parallel during starting and ramp-down of the soft starter. This is important to prevent faults arising on the compensation equipment and/or the soft starter.

All elements of the main circuit (such as fuses and controls) should be dimensioned for direct starting, following the local short-circuit conditions. Fuses, controls and overload relays must be ordered separately. Please observe the maximum switching frequencies specified in the technical specifications.

Note:

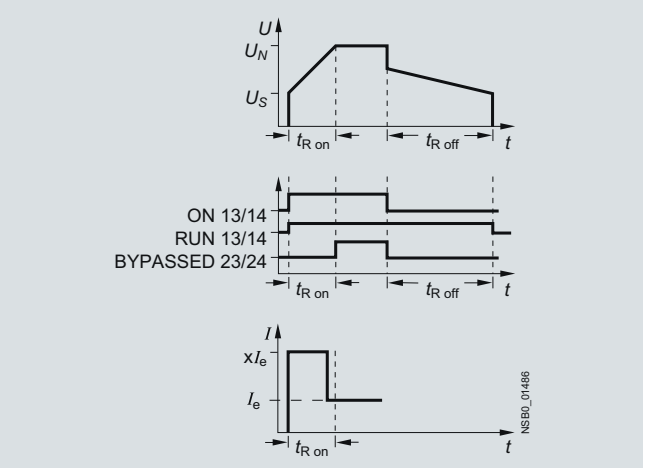
When induction motors are switched on, voltage drops occur as a rule on starters of all types (direct starters, wye-delta starters, softstarters). The infeed transformer must always be dimensioned such that the voltage dip when starting the motor remains within the permissible tolerance. If the infeed transformer is dimensioned with only a small margin, it is best for the control voltage to be supplied from a separate circuit (independently of the main voltage) in order to avoid the potential switching off of the soft starter.

Schematic circuit diagram of power electronics



A bypass contact system and solid-state overload relay are already integrated in the 3RW40 soft starter and therefore do not have to be ordered separately.

Status graphs



Manual for SIRIUS 3RW30/40

Besides containing all important information on configuring, commissioning and servicing, the manual also contains example circuits and the technical specifications for all devices.

Win-Soft Starter selection and simulation program

With this software, you can simulate and select all Siemens soft starters, taking into account various parameters such as mains properties, motor and load data, and special application requirements.

The software is a valuable tool, which makes complicated, lengthy manual calculations for determining the required soft starters superfluous.

The Win-Soft Starter selection and simulation program can be downloaded from:
www.siemens.com/softstarter → Software

You can find more information about soft starters on the Internet at:
www.siemens.com/softstarter

Training course for SIRIUS soft starters (SD-SIRIUSO)

Siemens offers a 2-day training course on the SIRIUS solid-state soft starters to keep customers and own personnel up-to-date on configuring, commissioning and maintenance issues.

You can find more information on our SITRAIN website:

www.siemens.com/sitrain
→ For course name select "SD-SIRIUSO"

See also Chapter 16, "Appendix" → "Training" .

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Overview

In addition to soft starting and soft ramp-down, the solid-state SIRIUS 3RW44 soft starters provide numerous functions for higher-level requirements. They cover a performance range up to 710 kW (at 400 V) in the inline circuit and up to 1200 kW (at 400 V) in the inside-delta circuit.

The 3RW44 soft starters are characterized by a compact design for space-saving and clearly arranged control cabinet layouts. For optimized motor starting and stopping the innovative SIRIUS 3RW44 soft starters are an attractive alternative with considerable savings potential compared to applications with a frequency converter. The new torque control and adjustable current limiting enable the High-Feature soft starters to be used in nearly every conceivable task. They guarantee the reliable avoidance of sudden torque applications and current peaks during motor starting and stopping. This creates savings potential when calculating the size of the switchgear and when servicing the machinery installed. Be it for inline circuits or inside-delta circuits – the SIRIUS 3RW44 soft starter offers savings especially in terms of size and equipment costs.

The bypass contacts already integrated in the soft starter bypass the thyristors after a motor ramp-up is detected. This results in a further great reduction in the heat loss occuring during operation of the soft starter at rated value.

Combinations of various starting, operating and ramp-down possibilities ensure an optimum adaptation to the application-specific requirements. Operation and commissioning can be performed with the menu-controlled keypad and a menu-prompted, multi-line graphic display with background lighting. The optimized motor ramp-up and ramp-down can be effected quickly, easily and reliably by means of just a few settings with a previously selected language. Four-key operation and plain-text displays for each menu point guarantee full clarity at every moment of the parameterization and operation.

Applicable standards

- IEC 60947-4-2
- UL/CSA

Functionality

Equipped with modern, ergonomic user prompting the 3RW44 soft starters can be commissioned quickly and easily using a keypad and a menu-prompted, multi-line graphic display with background lighting. The optimized motor ramp-up and ramp-down can be effected quickly, easily and reliably by means of just a few settings with a selectable language. Four-key operation and plain-text displays for each menu point guarantee full clarity at every moment of the parameterization and operation. During operation and when control voltage is applied, the display field continuously presents measured values and operating values as well as warnings and fault messages. An external display and operator module can be connected by means of a connection cable to the soft starter, thus enabling active indications and the like to be read directly from the control cabinet door.

The SIRIUS 3RW44 soft starters are equipped with optimum functionality. An integral bypass contact system reduces the power loss of the soft starter during operation. This reliably prevents heating of the switchgear environment. The SIRIUS 3RW44 soft starters have internal intrinsic device protection. This prevents thermal overloading of the power section's thyristors, e.g. due to unacceptably high closing operations.

Wiring outlay for installing an additional motor overload relay is no longer needed as the SIRIUS 3RW44 soft starters perform this function too. In addition they offer adjustable trip classes and a thermistor motor protection function. As an option the thyristors can also be protected by SITOR semiconductor fuses from short-circuiting so that the soft starter is still functional after a short circuit (type of coordination "2"). And even inrush current peaks are reliably avoided thanks to adjustable current limiting.

As a further option the SIRIUS 3RW44 soft starters can be upgraded with a PROFIBUS DP module. Thanks to their communication capability and their programmable control inputs and relay outputs the SIRIUS 3RW44 soft starters can be very easily and quickly integrated in higher-level controllers.

In addition a creep speed function is available for positioning and setting jobs. With this function the motor can be controlled in both directions of rotation with reduced torque and an adjustable, low speed.

On the other hand the SIRIUS 3RW44 soft starters offer a new, combined DC braking function for the fast stopping of driving loads.

Highlights

- Soft starting with breakaway pulse, torque control or voltage ramp, adjustable torque or current limiting as well as any combination of these, depending on load type
- Integrated bypass contact system to minimize power loss
- Various setting options for the starting parameters such as starting torque, starting voltage, ramp-up and ramp-down time, and much more in three separate parameter sets
- Start-up detection
- Inside-delta circuit for savings in terms of size and equipment costs
- Various ramp-down modes selectable: free ramp-down, torque-controlled pump ramp-down, combined DC braking
- Solid-state motor overload and intrinsic device protection
- Thermistor motor protection
- Keypad with a menu-prompted, multi-line graphic display with background lighting
- Interface for communication with the PC for more accurate setting of the parameters as well as for control and monitoring
- Simple integration to the motor feeder
- Simple mounting and commissioning
- Display of operating states and fault messages
- Connection to PROFIBUS with optional PROFIBUS DP module
- External display and operator module
- Mains voltages from 200 to 690 V, 50 to 60 Hz
- Can be used up to 60 °C (derating from 40 °C)

Soft Starter ES parameterization software[1)]

Soft Starter ES software is used for the parameterization, monitoring and service diagnostics of SIRIUS 3RW44 High-Feature soft starters.

SIRIUS 3RW44 soft starter block library for SIMATIC PCS 7[1)]

The SIRIUS 3RW44 soft starter PCS 7 block library can be used for simple and easy integration of SIRIUS 3RW44 soft starters into the SIMATIC PCS 7 process control system.

1) See Chapter 14 "Parametrization, Configuration and Visualization with SIRIUS".

Application

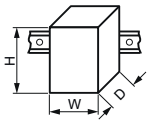
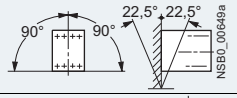
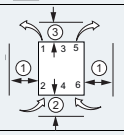
The SIRIUS 3RW44 solid-state soft starters are suitable for the torque-controlled soft starting and smooth ramp-down as well as braking of three-phase asynchronous motors.

Application areas

See "Selection aid for soft starters" on page 6/6.

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Technical specifications

Type			3RW44 2.	3RW44 3.	3RW44 4.	3RW44 5.	3RW44 6.
Mechanics and environment							
Mounting dimensions (W x H x D) 							
• Screw terminals		mm	170 x 184 x 270	170 x 198 x 270	210 x 230 x 298	510 x 638.5 x 290	576 x 667 x 290
• Spring-type terminals		mm	170 x 184 x 270	170 x 198 x 270	210 x 230 x 298	510 x 638.5 x 290	576 x 667 x 290
Permissible ambient temperature							
Operation		°C	0 ... +60; (derating from +40)				
Storage		°C	-25 ... +80				
Weight		kg	6.5	7.9	11.5	50	78
Permissible mounting position							
Installation type			Stand-alone installation  ① ≥ 5 mm (≥ 0.2 in) ② ≥ 75 mm (≥ 3 in) ③ ≥ 100 mm (≥ 4 in)				
Permissible installation altitude		m	5 000 (derating from 1000, see Characteristic Curves page 6/7); higher on request				
Degree of protection			IP00				

Type	Terminal		3RW44 ..-.BC3.	3RW44 ..-.BC4.
Control electronics				
Rated values				
Rated control supply voltage	A1/A2/PE	V	115 AC	230 AC
• Tolerance		%	-15/+10	-15/+10
Rated frequency		Hz	50 ... 60	50 ... 60
• Tolerance		%	±10	±10

Type		3RW44 ..-.BC.4	3RW44 ..-.BC.5	3RW44 ..-.BC.6
Power electronics				
Rated operational voltage for inline circuit	V AC	200 ... 460	400 ... 600	400 ... 690
Tolerance	%	-15/+10	-15/+10	-15/+10
Maximum blocking voltage (thyristor)	V AC	1 400	1 800	1 800
Rated operational voltage for inside-delta circuit	V AC	200 ... 460	400 ... 600	400 ... 600
Tolerance	%	-15/+10	-15/+10	-15/+10
Rated frequency	Hz	50 ... 60		
Tolerance	%	±10		
Uninterrupted duty at 40 °C (% of I_e)	%	115		
Minimum load (% of set motor current I_M)	%	8		
Maximum cable length between soft starter and motor	m	500[1)]		

1) At the project configuration stage, it is important to make allowance for the voltage drop on the motor cable up to the motor connection. If necessary, higher values for the rated operational voltage or current must be calculated accordingly for the soft starter.

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Type		3RW44 22	3RW44 23	3RW44 24	3RW44 25	3RW44 26	3RW44 27
Power electronics							
Rated operational current I_e		29	36	47	57	77	93
Load rating with rated operational current I_e							
• According to IEC and UL/CSA[1], for individual mounting, AC-53a							
- At 40 / 50 / 60 °C	A	29 / 26 / 23	36 / 32 / 29	47 / 42 / 37	57 / 51 / 45	77 / 68 / 59	93 / 82 / 72
Smallest adjustable rated motor current I_M For the motor overload protection	A	5	7	9	11	15	18
Power loss							
• In operation after completed starting with uninterrupted rated operational current (40 / 50 / 60 °C) approx.	W	8 / 7.5 / 7	10 / 9 / 8.5	32 / 31 / 29	36 / 34 / 31	45 / 41 / 37	55 / 51 / 47
• During starting with current limit set to 350 % I_M (40 / 50 / 60 °C)	W	400/345/290	470/410/355	600/515/440	725/630/525	940/790/660	1160/980/830
Permissible rated motor current and starts per hour at 40 °C / 50 °C / 60 °C							
• For normal starting (CLASS 5)							
- Rated motor current I_M[2], starting time 5 s	A	29 / 26 / 23	36 / 32.5 / 29	47 / 42 / 37	57 / 51 / 45	77 / 68 / 59	93 / 82 / 72
- Starts per hour[3]	1/h	41	34	41	41	41	41
- Rated motor current I_M[2], starting time 10 s	A	29 / 26 / 23	36 / 32.5 / 29	47 / 42 / 37	57 / 51 / 45	77 / 68 / 59	93 / 82 / 72
- Starts per hour[3]	1/h	20	15	20	20	20	20
• For normal starting (CLASS 10)							
- Rated motor current I_M[2], starting time 10 s	A	29 / 26 / 23	36 / 32.5 / 29	47 / 42 / 37	57 / 51 / 45	77 / 68 / 59	93 / 82 / 72
- Starts per hour[3]	1/h	20	15	20	20	20	20
- Rated motor current I_M[2], starting time 20 s	A	29 / 26 / 23	36 / 32.5 / 29	47 / 42 / 37	57 / 51 / 45	77 / 68 / 59	93 / 82 / 72
- Starts per hour[3]	1/h	10	6	10	10	8	8
• For normal starting (CLASS 15)							
- Rated motor current I_M[2], starting time 15 s	A	29 / 26 / 23	36 / 32.5 / 29	47 / 42 / 37	57 / 51 / 45	77 / 68 / 59	93 / 82 / 72
- Starts per hour[3]	1/h	13	9	13	13	13	13
- Rated motor current I_M[2], starting time 30 s	A	29 / 26 / 23	36 / 32.5 / 29	47 / 42 / 37	57 / 51 / 45	77 / 68 / 59	93 / 82 / 72
- Starts per hour[3]	1/h	6	4	6	6	6	6
• For heavy starting (CLASS 20)							
- Rated motor current I_M[2], starting time 20 s	A	29 / 26 / 23	36 / 32.5 / 29	47 / 42 / 37	57 / 51 / 45	77 / 68 / 59	88 / 80 / 72
- Starts per hour[3]	1/h	10	6	10	10	10	10
- Rated motor current I_M[2], starting time 40 s	A	29 / 26 / 23	36 / 32.5 / 29	47 / 42 / 37	57 / 51 / 45	77 / 68 / 59	88 / 80 / 72
- Starts per hour[3]	1/h	4	2	4	5	1.8	0.8
• For very heavy starting (CLASS 30)							
- Rated motor current I_M[2], starting time 30 s	A	29 / 26 / 23	36 / 32.5 / 29	47 / 42 / 37	57 / 51 / 45	65 / 60 / 54	77 / 70 / 63
- Starts per hour[3]	1/h	6	4	6	6	6	6
- Rated motor current I_M[2], starting time 60 s	A	29 / 26 / 23	36 / 32.5 / 29	47 / 42 / 37	57 / 51 / 45	65 / 60 / 54	77 / 70 / 63
- Starts per hour[3]	1/h	1.8	0.8	3.3	1.5	2	1

1) Measurement at 60 °C according to UL/CSA not required.

2) Current limit on soft starter set to 350 % I_M, ON period = 70 %. Maximum adjustable rated motor current I_M, dependent on CLASS setting.

3) For intermittent duty S4 with ON period = 70 %, T_u = 40 / 50 / 60 °C, stand-alone installation vertical. The quoted switching frequencies do not apply for automatic mode.

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3RW44

Type		3RW44 34	3RW44 35	3RW44 36
Power electronics				
Rated operational current I_e		113	134	162
Load rating with rated operational current I_e • According to IEC and UL/CSA[1], for individual mounting, AC-53a - At 40 / 50 / 60 °C	A	113 / 100 / 88	134 / 117 / 100	162 /145 / 125
Smallest adjustable rated motor current I_M For the motor overload protection	A	22	26	32
Power loss • In operation after completed starting with uninterrupted rated operational current (40 / 50 / 60 °C) approx. • During starting with current limit set to 350 % I_M (40 / 50 / 60 °C)	W W	64 / 58 / 53 1350 / 1140 / 970	76 / 67 / 58 1700 / 1400 / 1140	95 / 83 / 71 2460 / 1980 / 1620
Permissible rated motor current and starts per hour at 40 °C / 50 °C / 60 °C				
• For normal starting (CLASS 5)				
- Rated motor current I_M[2], starting time 5 s	A	113 / 100 / 88	134 / 117 / 100	162 / 145 / 125
- Starts per hour[3]	1/h	41	39	41
- Rated motor current I_M[2], starting time 10 s	A	113 / 100 / 88	134 / 117 / 100	162 / 145 / 125
- Starts per hour[3]	1/h	20	15	20
• For normal starting (CLASS 10)				
- Rated motor current I_M[2], starting time 10 s	A	113 / 100 / 88	134 / 117 / 100	162 / 145 / 125
- Starts per hour[3]	1/h	20	15	20
- Rated motor current I_M[2], starting time 20 s	A	113 / 100 / 88	134 / 117 / 100	162 / 145 / 125
- Starts per hour[3]	1/h	9	6	7
• For normal starting (CLASS 15)				
- Rated motor current I_M[2], starting time 15 s	A	113 / 100 / 88	134 / 117 / 100	162 / 145 / 125
- Starts per hour[3]	1/h	13	9	12
- Rated motor current I_M[2], starting time 30 s	A	113 / 100 / 883	134 / 117 / 100	162 / 145 / 125
- Starts per hour[3]	1/h	6	6	1
• For heavy starting (CLASS 20)				
- Rated motor current I_M[2], starting time 20 s	A	106 / 97 / 88	125 / 113 / 100	147 / 134 / 122
- Starts per hour[3]	1/h	9	9	10
- Rated motor current I_M[2], starting time 40 s	A	106 / 97 / 88	125 / 113 / 100	147 / 134 / 122
- Starts per hour[3]	1/h	1.5	2	1
• For very heavy starting (CLASS 30)				
- Rated motor current I_M[2], starting time 30 s	A	91 / 84 / 76	110 / 100 / 90	120 / 110 / 100
- Starts per hour[3]	1/h	6	6	6
- Rated motor current I_M[2], starting time 60 s	A	91 / 84 / 76	110 / 100 / 90	120 / 110 / 100
- Starts per hour[3]	1/h	2	2	2

1) Measurement at 60 °C according to UL/CSA not required.

2) Current limit on soft starter set to 350 % I_M, ON period = 70 %. Maximum adjustable rated motor current I_M, dependent on CLASS setting.

3) For intermittent duty S4 with ON period = 70 %, T_u = 40 / 50 / 60 °C, stand-alone installation vertical. The quoted switching frequencies do not apply for automatic mode.

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Type		3RW44 43	3RW44 44	3RW44 45	3RW44 46	3RW44 47
Power electronics						
Rated operational current I_e		203	250	313	356	432
Load rating with rated operational current I_e						
• According to IEC and UL/CSA[1], for individual mounting, AC-53a						
- At 40 / 50 / 60 °C	A	203 / 180 / 156	250 / 215 / 185	313 / 280 / 250	356 / 315 / 280	432 / 385 / 335
Smallest adjustable rated motor current I_M	A	40	50	62	71	86
For the motor overload protection						
Power loss						
• In operation after completed starting with uninterrupted rated operational current (40 / 50 / 60 °C) approx.	W	89 / 81 / 73	110 / 94 / 83	145 / 126 / 110	174 /147 / 126	232 / 194 / 159
• During starting with current limit set to 350 % I_M (40 / 50 / 60 °C)	W	3350/2600/2150	4000/2900/2350	4470/4000/3400	5350/4050/3500	5860/5020/4200
Permissible rated motor current and starts per hour at 40 °C / 50 °C / 60 °C						
• For normal starting (CLASS 5)						
- Rated motor current I_M[2], starting time 5 s	A	203 / 180 / 156	250 / 215 / 185	313 / 280 / 250	356 / 315 / 280	432 / 385 / 335
- Starts per hour[3]	1/h	41	41	41	41	39
- Rated motor current I_M[2], starting time 10 s	A	203 / 180 / 156	250 / 215 / 185	313 / 280 / 250	356 / 315 / 280	432 / 385 / 335
- Starts per hour[3]	1/h	20	20	19	17	16
• For normal starting (CLASS 10)						
- Rated motor current I_M[2], starting time 10 s	A	203 / 180 / 156	250 / 215 / 185	313 / 280 / 250	356 / 315 / 280	432 / 385 / 335
- Starts per hour[3]	1/h	20	20	19	17	16
- Rated motor current I_M[2], starting time 20 s	A	203 / 180 / 156	250 / 215 / 185	313 / 280 / 250	356 / 315 / 280	432 / 385 / 335
- Starts per hour[3]	1/h	9	10	6	4	5
• For normal starting (CLASS 15)						
- Rated motor current I_M[2], starting time 15 s	A	203 / 180 / 156	240 / 215 / 185	313 / 280 / 250	325 / 295 / 265	402 / 385 / 335
- Starts per hour[3]	1/h	13	13	10	13	11
- Rated motor current I_M[2], starting time 30 s	A	203 / 180 / 156	240 / 215 / 185	313 / 280 / 250	325 / 295 / 265	402 / 385 / 335
- Starts per hour[3]	1/h	3	6	1	2	1
• For heavy starting (CLASS 20)						
- Rated motor current I_M[2], starting time 20 s	A	195 / 175 / 155	215 / 195 / 180	275 / 243 / 221	285 / 263 / 240	356 / 326 / 295
- Starts per hour[3]	1/h	10	10	10	10	10
- Rated motor current I_M[2], starting time 40 s	A	195 / 175 / 155	215 / 195 / 180	275 / 243 / 221	285 / 263 / 240	356 / 326 / 295
- Starts per hour[3]	1/h	1	5	1	3	1
• For very heavy starting (CLASS 30)						
- Rated motor current I_M[2], starting time 30 s	A	162 / 148 / 134	180 / 165 / 150	220 / 201 / 182	240 / 223 / 202	285 / 260 /235
- Starts per hour[3]	1/h	6	6	6	6	6
- Rated motor current I_M[2], starting time 60 s	A	162 / 148 / 134	180 / 165 / 150	220 / 201 / 182	240 / 223 / 202	285 / 260 /235
- Starts per hour[3]	1/h	3	3	3	2	1

1) Measurement at 60 °C according to UL/CSA not required.

2) Current limit on soft starter set to 350 % I_M, ON period = 70 %. Maximum adjustable rated motor current I_M, dependent on CLASS setting.

3) For intermittent duty S4 with ON period = 70 %, T_U = 40 / 50 / 60 °C, stand-alone installation vertical. The quoted switching frequencies do not apply for automatic mode.

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3RW44

Type		3RW44 53	3RW44 54	3RW44 55	3RW44 56	3RW44 57	3RW44 58	3RW44 65	3RW44 66
Power electronics									
Rated operational current I_e		551	615	693	780	880	970	1076	1214
Load rating with rated operational current I_e									
• According to IEC and UL/CSA[1], for individual mounting, AC-53a									
- At 40 / 50 / 60 °C	A	551/494/438	615/551/489	693/615/551	780/693/615	880/780/693	970/850/760	1076/970/880	1214/1076/970
Smallest adjustable rated motor current I_M For the motor overload protection	A	110	123	138	156	176	194	215	242
Power loss									
• In operation after completed starting with uninterrupted rated operational current (40 / 50 / 60 °C) approx.	W	159/135/113	186/156/130	220/181/152	214/176/146	250/204/168	270/215/179	510/420/360	630/510/420
• During starting with current limit set to 350 % I_M									
- At 40 °C	W	7 020	8 100	9 500	11 100	13 100	15 000	15 000	17 500
- At 50 °C	W	6 111	7 020	8 100	9 500	11 000	12 500	13 000	15 000
- At 60 °C	W	5 263	5 996	7 020	8 100	8 100	10 700	11 500	13 000
Permissible rated motor current and starts per hour at 40 °C / 50 °C / 60 °C									
• For normal starting (CLASS 5)									
- Rated motor current I_M[2], starting time 5 s	A	551/494/438	615/551/489	693/615/551	780/693/615	880/780/693	970/850/760	1076/970/880	1214/1076/970
- Starts per hour[3]	1/h	41	41	37	33	22	17	30	20
- Rated motor current I_M[2], starting time 10 s	A	551/494/438	615/551/489	693/615/551	780/693/615	880/780/693	970/850/760	1076/970/880	1214/1076/970
- Starts per hour[3]	1/h	20	20	16	13	8	5	10	6
• For normal starting (CLASS 10)									
- Rated motor current I_M[2], starting time 10 s	A	551/494/438	615/551/489	693/615/551	780/693/615	880/780/693	970/850/760	1076/970/880	1214/1076/970
- Starts per hour[3]	1/h	20	20	16	13	8	5	11	6
- Rated motor current I_M[2], starting time 20 s	A	551/494/438	615/551/489	693/615/551	780/693/615	880/780/693	970/850/760	1076/970/880	1214/1076/970
- Starts per hour[3]	1/h	10	9	6	4	0.3	0.3	3	0.5
• For normal starting (CLASS 15)									
- Rated motor current I_M[2], starting time 15 s	A	551/494/438	615/551/489	666/615/551	723/693/615	780/710/650	821/755/693	1020/950/850	1090/1000/920
- Starts per hour[3]	1/h	13	13	11	9	8	8	7	5
- Rated motor current I_M[2], starting time 30 s	A	551/494/438	615/551/489	666/615/551	723/693/615	780/710/650	821/755/693	1020/950/850	1090/1000/920
- Starts per hour[3]	1/h	6	4	3	1	0.4	0.5	1	1
• For heavy starting (CLASS 20)									
- Rated motor current I_M[2], starting time 20 s	A	551/494/438	591/551/489	633/615/551	670/634/576	710/650/590	740/685/630	970/880/810	1030/940/860
- Starts per hour[3]	1/h	10	10	7	8	8	9	7	5
- Rated motor current I_M[2], starting time 40 s	A	551/494/438	591/551/489	633/615/551	670/634/576	710/650/590	740/685/630	970/880/810	1030/940/860
- Starts per hour[3]	1/h	4	2	1	1	0.4	1	1	1
• For very heavy starting (CLASS 30)									
- Rated motor current I_M[2], starting time 30 s	A	500/480/438	525/489/455	551/520/480	575/540/490	600/550/500	630/580/530	880/810/740	920/850/780
- Starts per hour[3]	1/h	6	6	6	6	6	6	6	6
- Rated motor current I_M[2], starting time 60 s	A	500/480/438	525/489/455	551/520/480	575/540/490	600/550/500	630/580/530	880/810/740	920/850/780
- Starts per hour[3]	1/h	2	1	1	1	1.5	1	1	1

[1] Measurement at 60 °C according to UL/CSA not required.

[2] Current limit on soft starter set to 350 % I_M, ON period = 70 %. Maximum adjustable rated motor current I_M, dependent on CLASS setting.

[3] For intermittent duty S4 with ON period = 70 %, T_u = 40 / 50 / 60 °C, stand-alone installation vertical. The quoted switching frequencies do not apply for automatic mode.

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Motor feeders with soft starters

The type of coordination to which the motor feeder with soft starter is mounted depends on the application-specific requirements. Normally, fuseless mounting (combination of motor starter protector/circuit breaker and soft starter) is sufficient.

If type of coordination "2" is to be fulfilled, semiconductor fuses must be fitted in the motor feeder.

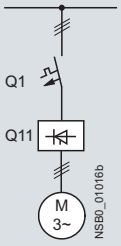
ToC 1 Type of coordination "1" according to IEC 60947-4-1: After a short-circuit incident the unit is defective therefore unsuitable for further use (protection of persons and system guaranteed).

ToC 2 Type of coordination "2" according to IEC 60947-4-1: After a short-circuit incident the unit is suitable for further use (protection of persons and system guaranteed).

The type of coordination refers to soft starters in combination with the stipulated protective device (motor starter protector/circuit breaker/fuse), not to any additional components in the feeder.

The types of coordination are indicated in the corresponding tables by the symbols shown on orange backgrounds.

Inline circuit fuseless version



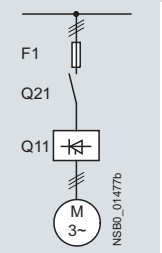
Soft starters		MSPs/circuit breakers[1]	
ToC 1 Q11 Type	Nominal current A	440 V +10 % Q1 Type	Rated current A
Type of coordination "1": 3RW44 22 ... 3RW44 27: I_q = 32 kA; 3RW44 34 and 3RW44 35: I_q = 16 kA; 3RW44 36 ... 3RW44 66: I_q = 65 kA			
3RW44 22	29	3RV10 42-4HA10	50
3RW44 23	36	3RV10 42-4JA10	63
3RW44 24	47	3RV10 42-4KA10	75
3RW44 25	57	3RV10 42-4LA10	90
3RW44 26	77	3RV10 42-4MA10	100
3RW44 27	93	3RV10 42-4MA10	100
3RW44 34	113	3VL17 16-2DD36	160
3RW44 35	134	3VL17 16-2DD36	160
3RW44 36	162	3VL37 25-2DC36	250
3RW44 43	203	3VL47 31-3DC36	315
3RW44 44	250	3VL47 31-3DC36	315
3RW44 45	313	3VL47 40-3DC36	400
3RW44 46	356	3VL47 40-3DC36	400
3RW44 47	432	3VL57 50-3DC36	500
3RW44 53	551	3VL67 80-3SB36	800
3RW44 54	615	3VL67 80-3SB36	800
3RW44 55	693	3VL67 80-3SB36	800
3RW44 56	780	3VL77 10-3SB36	1 000
3RW44 57	880	3VL77 10-3SB36	1 000
3RW44 58	970	3VL77 12-3SB36	1 250
3RW44 65	1 076	3VL77 12-3SB36	1 250
3RW44 66	1 214	3VL77 12-3SB36	1 250

[1] The rated motor current must be considered when selecting the devices.

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3RW44

Inline circuit fused version (line protection only)



Soft starters		Line protection, maximum			Line contactor up to 400 V	Braking contactors[1)2)]	
ToC 1	Nominal current	690 V +5 %	Rated current	Size	(optional)	(example circuit see manual for 3RW44)	
Q11 Type	A	F1 Type	A		Q21 Type	Q91 Type	Q92 Type
Type of coordination "1"[3]: I_q = 65 kA							
3RW44 22	29	3NA3 820-6	50	00	3RT10 34	3RT25 26	--
3RW44 23	36	3NA3 822-6	63	00	3RT10 35	3RT25 26	--
3RW44 24	47	3NA3 824-6	80	00	3RT10 36	3RT15 35	--
3RW44 25	57	3NA3 830-6	100	00	3RT10 44	3RT15 35	--
3RW44 26	77	3NA3 132-6	125	1	3RT10 45	3RT20 24	3RT10 35
3RW44 27	93	3NA3 136-6	160	1	3RT10 46	3RT20 25	3RT10 36
3RW44 34	113	3NA3 244-6	250	2	3RT10 54	3RT10 34	3RT10 44
3RW44 35	134	3NA3 244-6	250	2	3RT10 55	3RT10 36	3RT10 45
3RW44 36	162	3NA3 365-6	500	3	3RT10 56	3RT10 44	3RT10 45
3RW44 43	203	2 x 3NA3 354-6	2 x 355	3	3RT10 64	3RT10 44	3RT10 54
3RW44 44	250	2 x 3NA3 354-6	2 x 355	3	3RT10 65	3RT10 44	3RT10 55
3RW44 45	313	2 x 3NA3 365-6	2 x 500	3	3RT10 75	3RT10 54	3RT10 56
3RW44 46	356	2 x 3NA3 365-6	2 x 500	3	3RT10 75	3RT10 54	3RT10 56
3RW44 47	432	2 x 3NA3 365-6	2 x 500	3	3RT10 76	3RT10 55	3RT10 64
3RW44 53	551	2 x 3NA3 365-6	2 x 500	3	3TF68	3RT10 64	3RT10 66
3RW44 54	615	2 x 3NA3 365-6	2 x 500	3	3TF68	3RT10 64	3RT10 75
3RW44 55	693	2 x 3NA3 365-6	2 x 500	3	3TF69	3RT10 65	3RT10 75
3RW44 56	780	2 x 3NA3 365-6	2 x 500	3	3TF69	3RT10 65	3RT10 75
3RW44 57	880	2 x 3NA3 365-6	2 x 500	3		3RT10 75	3RT10 76
3RW44 58	970	3 x 3NA3 365-6	3 x 500	3		3RT10 75	3RT10 76
3RW44 65	1 076	3 x 3NA3 365-6	3 x 500	3		3RT10 75	3TF68
3RW44 66	1 214	3 x 3NA3 365-6	3 x 500	3		3RT10 76	3TF68

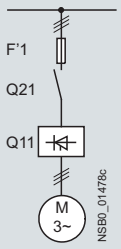
1) If the ramp-down function "Combined braking" is selected, no braking contactor is required.
If the ramp-down function "DC braking" is selected, a braking contactor must be used in addition (see table for type).
For applications with large centrifugal masses ($J_{Load} > J_{Motor}$) we recommend the function "DC braking".

2) Additional auxiliary relay K4:
LZX:RT4A4T30
(3RW44 soft starter with rated control supply voltage 230 V AC),
LZX:RT4A4S15
(3RW44 soft starter with rated control supply voltage 115 V AC).

3) The type of coordination "1" refers to soft starters in combination with the stipulated protective device (motor starter protector/circuit breaker/fuse), not to any additional components in the feeder.

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Inline circuit fused version with 3NE1 SITOR all-range fuse (semiconductor and line protection)



Matching fuse bases see Catalog LV 10.1 --> "Switch Disconnectors" and Catalog LV 10.1 --> "Fuse Systems" --> "SITOR Semiconductor Fuses" or at www.siemens.com/sitor

Soft starters		All-range fuses				Line contactor up to 400 V	Braking contactors[1)2)]	
ToC 2	Nominal current		Rated current	Voltage	Size	(optional)	(example circuit see manual for 3RW44)	
Q11 Type	A	F'1 Type	A	V		Q21 Type	Q91 Type	Q92 Type
Type of coordination "2"[3)]: I_q = 65 kA								
3RW44 22	29	3NE1 020-2	80	690 +5 %	00	3RT10 34	3RT25 26	--
3RW44 23	36	3NE1 020-2	80	690 +5 %	00	3RT10 35	3RT25 26	--
3RW44 24	47	3NE1 021-2	100	690 +5 %	00	3RT10 36	3RT15 35	--
3RW44 25	57	3NE1 022-2	125	690 +5 %	00	3RT10 44	3RT15 35	--
3RW44 26	77	3NE1 022-2	125	690 +5 %	00	3RT10 45	3RT20 24	3RT10 35
3RW44 27	93	3NE1 224-2	160	690 +5 %	1	3RT10 46	3RT20 25	3RT10 36
3RW44 34	113	3NE1 225-2	200	690 +5 %	1	3RT10 54	3RT10 34	3RT10 44
3RW44 35	134	3NE1 227-2	250	690 +5 %	1	3RT10 55	3RT10 36	3RT10 45
3RW44 36	162	3NE1 227-2	250	690 +5 %	1	3RT10 56	3RT10 44	3RT10 45
3RW44 43	203	3NE1 230-2	315	600 +10 %	1	3RT10 64	3RT10 44	3RT10 54
3RW44 44	250	3NE1 331-2	350	460 +10 %	2	3RT10 65	3RT10 44	3RT10 55
3RW44 45	313	3NE1 333-2	450	690 +5 %	2	3RT10 75	3RT10 54	3RT10 56
3RW44 46	356	3NE1 334-2	500	690 +5 %	2	3RT10 75	3RT10 54	3RT10 56
3RW44 47	432	3NE1 435-2	560	690 +5 %	3	3RT10 76	3RT10 55	3RT10 64
3RW44 53	551	2 x 3NE1 334-2	500	690 +10 %	2	3TF68	3RT10 64	3RT10 66
3RW44 54	615	2 x 3NE1 334-2	500	690 +10 %	2	3TF68	3RT10 64	3RT10 75
3RW44 55	693	2 x 3NE1 334-2	500	690 +10 %	2	3TF69	3RT10 65	3RT10 75
3RW44 56	780	2 x 3NE1 435-2	560	690 +10 %	3	3TF69	3RT10 65	3RT10 75
3RW44 57	880	2 x 3NE1 435-2	560	690 +10 %	3		3RT10 75	3RT10 76
3RW44 58	970	2 x 3NE1 435-2	560	690 +10 %	3		3RT10 75	3RT10 76
3RW44 65	1 076	3 x 3NE1 334-2	500	690 +10 %	2		3RT10 75	3TF68
3RW44 66	1 214	3 x 3NE1 435-2	560	690 +10 %	3		3RT10 76	3TF68

1) If the ramp-down function "Combined braking" is selected, no braking contactor is required.
If the ramp-down function "DC braking" is selected, a braking contactor must be used in addition (see table for type).
For applications with larger centrifugal masses ($J_{Load} > J_{Motor}$) we recommend the function "DC braking".

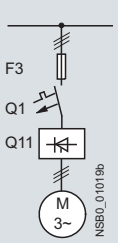
2) Additional auxiliary relay K4:
LZX:RT4A4T30
(3RW44 soft starter with rated control supply voltage 230 V AC),
LZX:RT4A4S15
(3RW44 soft starter with rated control supply voltage 115 V AC).

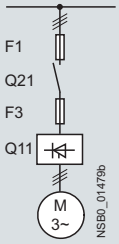
3) The type of coordination "2" refers to soft starters in combination with the stipulated protective device (motor starter protector/circuit breaker/fuse), not to any additional components in the feeder.

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3RW44

Inline circuit fused version with 3NE or 3NC SITOR semiconductor fuse
(semiconductor protection by fuse, line and overload protection by motor starter protector/circuit breaker)





Matching fuse bases see Catalog LV 10.1 --> "Switch Disconnectors" and Catalog LV 10.1 --> "Fuse Systems" --> "SITOR Semiconductor Fuses" or at www.siemens.com/sitor

Soft starters		Semiconductor fuses, minimum			Semiconductor fuses, maximum			Semiconductor fuses (cylinder)		
ToC 2	Nominal current	690 V +10 %	Rated current	Size	690 V +10 %	Rated current	Size		Rated current	Size
Q11 Type	A	F3 Type	A		F3 Type	A		F3 Type	A	
Type of coordination "2"[3]: I_q = 65 kA										
3RW44 22	29	3NE4 120	80	0	3NE4 121	100	0	3NC2 280	80	22 x 58
3RW44 23	36	3NE4 121	100	0	3NE4 121	100	0	3NC2 200	100	22 x 58
3RW44 24	47	3NE4 121	100	0	3NE4 122	125	0	3NC2 200	100	22 x 58
3RW44 25	57	3NE4 122	125	0	3NE4 124	160	0			
3RW44 26	77	3NE4 124	160	0	3NE4 124	160	0			
3RW44 27	93	3NE3 224	160	1	3NE3 332-0B	400	2			
3RW44 34	113	3NE3 225	200	1	3NE3 335	560	2			
3RW44 35	134	3NE3 225	200	1	3NE3 335	560	2			
3RW44 36	162	3NE3 227	250	1	3NE3 333	450	2			
3RW44 43	203	3NE3 230-0B	315	1	3NE3 333	450	2			
3RW44 44	250	3NE3 230-0B	315	1	3NE3 333	450	2			
3RW44 45	313	3NE3 233	450	1	3NE3 336	630	2			
3RW44 46	356	3NE3 333	450	2	3NE3 336	630	2			
3RW44 47	432	3NE3 335	560	2	3NE3 338-8	800	2			
3RW44 53	551	2 x 3NE3 335	560	2	3 x 3NE3 334-0B	500	2			
3RW44 54	615	2 x 3NE3 335	560	2	3 x 3NE3 334-0B	500	2			
3RW44 55	693	2 x 3NE3 335	560	2	3 x 3NE3 334-0B	500	2			
3RW44 56	780	2 x 3NE3 336	630	2	2 x 3NE3 340-8	900	2			
3RW44 57	880	2 x 3NE3 336	630	2	2 x 3NE3 340-8	900	2			
3RW44 58	970	2 x 3NE3 336	630	2	2 x 3NE3 340-8	900	2			
3RW44 65	1 076	2 x 3NE3 340-8	900	2	3 x 3NE3 338-8	800	2			
3RW44 66	1 214	2 x 3NE3 340-8	900	2	3 x 3NE3 338-8	800	2			

Soft starters		Line contactor up to 400 V	Braking contactors[1)2)]		Motor starter protectors/ circuit breakers		Line protection, maximum		
ToC 2	Nominal current	(optional)	(example circuit see manual for 3RW44)		440 V +10 %	Rated current	690 V +5 %	Rated current	Size
Q11 Type	A	Q21 Type	Q91 Type	Q92 Type	Q1 Type	A	F1 Type	A	
Type of coordination "2"[3]: I_q = 65 kA									
3RW44 22	29	3RT10 34	3RT25 26	--	3RV10 41-4HA10	50	3NA3 820-6	50	00
3RW44 23	36	3RT10 35	3RT25 26	--	3RV10 41-4JA10	63	3NA3 822-6	63	00
3RW44 24	47	3RT10 36	3RT15 35	--	3RV10 41-4KA10	75	3NA3 824-6	80	00
3RW44 25	57	3RT10 44	3RT15 35	--	3RV10 41-4LA10	90	3NA3 830-6	100	00
3RW44 26	77	3RT10 45	3RT20 24	3RT10 35	3RV10 41-4MA10	100	3NA3 132-6	125	1
3RW44 27	93	3RT10 46	3RT20 25	3RT10 36	3RV10 41-4MA10	100	3NA3 136-6	160	1
3RW44 34	113	3RT10 54	3RT10 34	3RT10 44	3VL17 16	160	3NA3 244-6	250	2
3RW44 35	134	3RT10 55	3RT10 36	3RT10 45	3VL17 16	160	3NA3 244-6	250	2
3RW44 36	162	3RT10 56	3RT10 44	3RT10 45	3VL37 25	250	3NA3 365-6	500	3
3RW44 43	203	3RT10 64	3RT10 44	3RT10 54	3VL47 31	315	2 x 3NA3 354-6	2 x 355	3
3RW44 44	250	3RT10 65	3RT10 44	3RT10 55	3VL47 31	315	2 x 3NA3 354-6	2 x 355	3
3RW44 45	313	3RT10 75	3RT10 54	3RT10 56	3VL47 40	400	2 x 3NA3 365-6	2 x 500	3
3RW44 46	356	3RT10 75	3RT10 54	3RT10 56	3VL47 40	400	2 x 3NA3 365-6	2 x 500	3
3RW44 47	432	3RT10 76	3RT10 55	3RT10 64	3VL57 50	500	2 x 3NA3 365-6	2 x 500	3
3RW44 53	551	3TF68	3RT10 64	3RT10 66	3VL67 80	800	2 x 3NA3 365-6	2 x 500	3
3RW44 54	615	3TF68	3RT10 64	3RT10 75	3VL67 80	800	2 x 3NA3 365-6	2 x 500	3
3RW44 55	693	3TF69	3RT10 65	3RT10 75	3VL67 80	800	2 x 3NA3 365-6	2 x 500	3
3RW44 56	780	3TF69	3RT10 65	3RT10 75	3VL77 10	1 000	2 x 3NA3 365-6	2 x 500	3
3RW44 57	880		3RT10 75	3RT10 76	3VL77 10	1 000	2 x 3NA3 365-6	2 x 500	3
3RW44 58	970		3RT10 75	3RT10 76	3VL77 12	1 250	3 x 3NA3 365-6	3 x 500	3
3RW44 65	1 076		3RT10 75	3TF68	3VL77 12	1 250	3 x 3NA3 365-6	3 x 500	3
3RW44 66	1 214		3RT10 76	3TF68	3VL77 12	1 250	3 x 3NA3 365-6	3 x 500	3

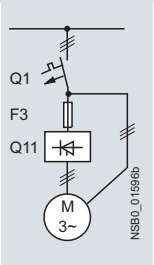
1) If the ramp-down function "Combined braking" is selected, no braking contactor is required. If the ramp-down function "DC braking" is selected, a braking contactor must be used in addition (see table for type).
For applications with large centrifugal masses ($J_{Load} > J_{Motor}$) we recommend the function "DC braking".

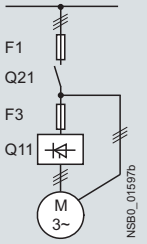
2) Additional auxiliary relay K4:
LZX:RT4A4T30
(3RW44 soft starter with rated control supply voltage 230 V AC),
LZX:RT4A4S15
(3RW44 soft starter with rated control supply voltage 115 V AC).

3) The type of coordination "2" refers to soft starters in combination with the stipulated protective device (motor starter protector/circuit breaker/fuse), not to any additional components in the feeder.

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Inside-delta circuit fused version with 3NE or 3NC SITOR fuses
(semiconductor protection by fuse, line and overload protection by motor starter protector/circuit breaker)





Matching fuse bases see Catalog LV 10.1 --> "Switch Disconnectors" and Catalog LV 10.1 --> "Fuse Systems" --> "SITOR Semiconductor Fuses" or at www.siemens.com/sitor

Soft starters		Semiconductor fuses, minimum			Semiconductor fuses, maximum			Semiconductor fuses (cylinder)		
ToC 2 Q11 Type	Nominal current A	690 V +10 % F3 Type	Rated current A	Size	690 V +10 % F3 Type	Rated current A	Size	F3 Type	Rated current A	Size
Type of coordination "2"[1)]										
3RW44 22	50	3NE4 120	80	0	3NE4 121	100	0	3NC2 280	80	22 x 58
3RW44 23	62	3NE4 121	100	0	3NE4 121	100	0	3NC2 200	100	22 x 58
3RW44 24	81	3NE4 121	100	0	3NE4 122	125	0	3NC2 200	100	22 x 58
3RW44 25	99	3NE4 122	125	0	3NE4 124	160	0			
3RW44 26	133	3NE4 124	160	0	3NE4 124	160	0			
3RW44 27	161	3NE3 224	160	1	3NE3 332-0B	400	2			
3RW44 34	196	3NE3 225	200	1	3NE3 335	560	2			
3RW44 35	232	3NE3 225	200	1	3NE3 335	560	2			
3RW44 36	281	3NE3 227	250	1	3NE3 333	450	2			
3RW44 43	352	3NE3 230-0B	315	1	3NE3 333	450	2			
3RW44 44	433	3NE3 230-0B	315	1	3NE3 333	450	2			
3RW44 45	542	3NE3 233	450	1	3NE3 336	630	2			
3RW44 46	617	3NE3 333	450	2	3NE3 336	630	2			
3RW44 47	748	3NE3 335	560	2	3NE3 338-8	800	2			
3RW44 53	954	2 x 3NE3 335	560	2	3 x 3NE3 334-0B	500	2			
3RW44 54	1 065	2 x 3NE3 335	560	2	3 x 3NE3 334-0B	500	2			
3RW44 55	1 200	2 x 3NE3 335	560	2	3 x 3NE3 334-0B	500	2			
3RW44 56	1 351	2 x 3NE3 336	630	2	2 x 3NE3 340-8	900	2			
3RW44 57	1 524	2 x 3NE3 336	630	2	3 x 3NE3 340-8	900	2			
3RW44 58	1 680	2 x 3NE3 336	630	2	3 x 3NE3 340-8	900	2			
3RW44 65	1 864	2 x 3NE3 340-8	900	2	3 x 3NE3 338-8	800	2			
3RW44 66	2 103	2 x 3NE3 340-8	900	2	3 x 3NE3 338-8	800	2			

Soft starters		Line contactor up to 400 V	Motor starter protectors/ circuit breakers		Line protection, maximum		
ToC 2 Q11 Type	Nominal current A	(optional) Q21 Type	440 V +10 % Q1 Type	Rated current A	690 V +5 % F1 Type	Rated current A	Size
Type of coordination "2"[1)]							
3RW44 22	50	3RT10 36-1AP04	3RV10 42-4KA10	75	3NA3 824-6	80	00
3RW44 23	62	3RT10 44-1AP04	3RV10 42-4LA10	90	3NA3 830-6	100	00
3RW44 24	81	3RT10 46-1AP04	3RV10 42-4MA10	100	3NA3 132-6	125	1
3RW44 25	99	3RT10 54-1AP36	3VL27 16	160	3NA3 136-6	160	1
3RW44 26	133	3RT10 55-6AP36	3VL27 16	160	3NA3 240-6	200	2
3RW44 27	161	3RT10 56-6AP36	3VL37 20	200	3NA3 244-6	250	2
3RW44 34	196	3RT10 64-6AP36	3VL37 25	250	3NA3 360-6	400	3
3RW44 35	232	3RT10 65-6AP36	3VL47 31	315	3NA3 360-6	400	3
3RW44 36	281	3RT10 66-6AP36	3VL47 40	400	2 x 3NA3 360-6	2 x 400	3
3RW44 43	352	3RT10 75-6AP36	3VL47 40	400	2 x 3NA3 365-6	2 x 500	3
3RW44 44	433	3RT10 76-6AP36	3VL57 50	500	2 x 3NA3 365-6	2 x 500	3
3RW44 45	542	3TF68 44-0CM7	3VL57 63	800	3 x 3NA3 365-6	3 x 500	3
3RW44 46	617	3TF68 44-0CM7	3VL67 80	800	3 x 3NA3 365-6	3 x 500	3
3RW44 47	748	3TF69	3VL67 80	800	3 x 3NA3 365-6	3 x 500	3
3RW44 53	954		3VL77 10	1 000	3 x 3NA3 365-6	3 x 500	3
3RW44 54	1 065		3VL77 12	1 250	3 x 3NA3 365-6	3 x 500	3
3RW44 55	1 200		3VL87 16	1 600	3 x 3NA3 365-6	3 x 500	3
3RW44 56	1 351		3VL87 16	1 600	3 x 3NA3 372	3 x 630	3
3RW44 57	1 524		3VL87 16	1 600	3 x 3NA3 372	3 x 630	3
3RW44 58	1 680		3WL12 20	2 000	2 x 3NA3 480	2 x 1000	4
3RW44 65	1 864		3WL12 25	2 500	2 x 3NA3 482	2 x 1250	4
3RW44 66	2 103		3WL12 25	2 500	2 x 3NA3 482	2 x 1250	4

[1)] The type of coordination "2" refers to soft starters in combination with the stipulated protective device (motor starter protector/circuit breaker/fuse), not to any additional components in the feeder.
If the F3 semiconductor fuse is not used, the type of coordination "2" is reduced to type of coordination "1" for soft starters in combination with the stipulated protective device.

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Selection and ordering data

SIRIUS 3RW44 for normal starting (CLASS 10) in inline circuit


3RW44 2.


3RW44 3.


3RW44 4.


3RW44 5.


3RW44 6.

3RW ambient temperature 40 °C[1]						3RW ambient temperature 50 °C[1]					DT	Normal starting (CLASS 10) in inline circuit	PU (UNIT, SET, M)	PS*	PG
Rated values of induction motors						Rated values of induction motors						Configurator			
Operational current I_e	Rating at operational voltage U_e					Operational current I_e	Rating at operational voltage U_e					Order No. / Price per PU			
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V					
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp					
Inline circuit, rated operational voltage 200 ... 460 V[1]															
29	5.5	**15**	--	--	--	26	7.5	7.5	**15**	--	▶	**3RW44 22-□BC□4**	1	1 unit	42H
36	7.5	**18.5**	--	--	--	32	10	10	**20**	--	▶	**3RW44 23-□BC□4**	1	1 unit	42H
47	11	**22**	--	--	--	42	10	15	**25**	--	▶	**3RW44 24-□BC□4**	1	1 unit	42H
57	15	**30**	--	--	--	51	15	15	**30**	--	▶	**3RW44 25-□BC□4**	1	1 unit	42H
77	18.5	**37**	--	--	--	68	20	20	**50**	--	▶	**3RW44 26-□BC□4**	1	1 unit	42H
93	22	**45**	--	--	--	82	25	25	**60**	--	▶	**3RW44 27-□BC□4**	1	1 unit	42H
Order No. supplement for connection types															
• With screw terminals												**1**			
• With spring-type terminals												**3**			
113	30	**55**	--	--	--	100	30	30	**75**	--	B	**3RW44 34-□BC□4**	1	1 unit	42H
134	37	**75**	--	--	--	117	30	40	**75**	--	B	**3RW44 35-□BC□4**	1	1 unit	42H
162	45	**90**	--	--	--	145	40	50	**100**	--	B	**3RW44 36-□BC□4**	1	1 unit	42H
203	55	**110**	--	--	--	180	50	60	**125**	--	B	**3RW44 43-□BC□4**	1	1 unit	42H
250	75	**132**	--	--	--	215	60	75	**150**	--	B	**3RW44 44-□BC□4**	1	1 unit	42H
313	90	**160**	--	--	--	280	75	100	**200**	--	B	**3RW44 45-□BC□4**	1	1 unit	42H
356	110	**200**	--	--	--	315	100	125	**250**	--	B	**3RW44 46-□BC□4**	1	1 unit	42H
432	132	**250**	--	--	--	385	125	150	**300**	--	B	**3RW44 47-□BC□4**	1	1 unit	42H
551	160	**315**	--	--	--	494	150	200	**400**	--	C	**3RW44 53-□BC□4**	1	1 unit	42H
615	200	**355**	--	--	--	551	150	200	**450**	--	C	**3RW44 54-□BC□4**	1	1 unit	42H
693	200	**400**	--	--	--	615	200	250	**500**	--	C	**3RW44 55-□BC□4**	1	1 unit	42H
780	250	**450**	--	--	--	693	200	250	**600**	--	C	**3RW44 56-□BC□4**	1	1 unit	42H
880	250	**500**	--	--	--	780	250	300	**700**	--	C	**3RW44 57-□BC□4**	1	1 unit	42H
970	315	**560**	--	--	--	850	300	350	**750**	--	C	**3RW44 58-□BC□4**	1	1 unit	42H
1 076	355	**630**	--	--	--	970	350	400	**850**	--	C	**3RW44 65-□BC□4**	1	1 unit	42H
1 214	400	**710**	--	--	--	1 076	350	450	**950**	--	C	**3RW44 66-□BC□4**	1	1 unit	42H
Order No. supplement for connection types															
• With spring-type terminals												**2**			
• With screw terminals												**6**			
Order No. supplement for the rated control supply voltage U_s[2]															
• 115 V AC												**3**			
• 230 V AC												**4**			

For online configurator see www.siemens.com/sirius/configurators.

[1] 3RW44 2 soft starters. ... 3RW44 4. with screw terminals: delivery time class ▶ (preferred type).

[2] Control by way of the internal 24 V DC supply and direct control by means of PLC possible.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The SIRIUS 3RW44 solid-state soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 10
- Maximum starting current in % of motor current I_e: 300
- Maximum number of starts per hour in 1/h: 5

In the event of more exacting requirements, it may be necessary to choose a larger device. However, in some cases the designed-in safety reserves also permit the listed units to be used in boundary conditions which are slightly more demanding. For detailed technical information for a configuration which is tailored exactly to the application see "Manuals". Siemens recommends the use of the selection and simulation program Win-Soft Starter.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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3RW ambient temperature 40 °C[1]						3RW ambient temperature 50 °C[1]					DT	Normal starting (CLASS 10) in inline circuit	PU (UNIT, SET, M)	PS*	PG
Rated values of induction motors						Rated values of induction motors						Configurator			
Operational current I_e	Rating at operational voltage U_e					Operational current I_e	Rating at operational voltage U_e					Order No. / Price per PU			
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V					
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp					
Inline circuit, rated operational voltage 400 ... 600 V[1]															
29	--	15	**18.5**	--	--	26	--	--	15	**20**	A	**3RW44 22-□BC□5**	1	1 unit	42H
36	--	18.5	**22**	--	--	32	--	--	20	**25**	A	**3RW44 23-□BC□5**	1	1 unit	42H
47	--	22	**30**	--	--	42	--	--	25	**30**	A	**3RW44 24-□BC□5**	1	1 unit	42H
57	--	30	**37**	--	--	51	--	--	30	**40**	A	**3RW44 25-□BC□5**	1	1 unit	42H
77	--	37	**45**	--	--	68	--	--	50	**50**	A	**3RW44 26-□BC□5**	1	1 unit	42H
93	--	45	**55**	--	--	82	--	--	60	**75**	A	**3RW44 27-□BC□5**	1	1 unit	42H
Order No. supplement for connection types															
• With screw terminals												**1**			
• With spring-type terminals												**3**			
113	--	55	**75**	--	--	100	--	--	75	**75**	B	**3RW44 34-□BC□5**	1	1 unit	42H
134	--	75	**90**	--	--	117	--	--	75	**100**	B	**3RW44 35-□BC□5**	1	1 unit	42H
162	--	90	**110**	--	--	145	--	--	100	**125**	B	**3RW44 36-□BC□5**	1	1 unit	42H
203	--	110	**132**	--	--	180	--	--	125	**150**	B	**3RW44 43-□BC□5**	1	1 unit	42H
250	--	132	**160**	--	--	215	--	--	150	**200**	B	**3RW44 44-□BC□5**	1	1 unit	42H
313	--	160	**200**	--	--	280	--	--	200	**250**	B	**3RW44 45-□BC□5**	1	1 unit	42H
356	--	200	**250**	--	--	315	--	--	250	**300**	B	**3RW44 46-□BC□5**	1	1 unit	42H
432	--	250	**315**	--	--	385	--	--	300	**400**	B	**3RW44 47-□BC□5**	1	1 unit	42H
551	--	315	**355**	--	--	494	--	--	400	**500**	C	**3RW44 53-□BC□5**	1	1 unit	42H
615	--	355	**400**	--	--	551	--	--	450	**600**	C	**3RW44 54-□BC□5**	1	1 unit	42H
693	--	400	**500**	--	--	615	--	--	500	**700**	C	**3RW44 55-□BC□5**	1	1 unit	42H
780	--	450	**560**	--	--	693	--	--	600	**750**	C	**3RW44 56-□BC□5**	1	1 unit	42H
880	--	500	**630**	--	--	780	--	--	700	**850**	C	**3RW44 57-□BC□5**	1	1 unit	42H
970	--	560	**710**	--	--	850	--	--	750	**900**	C	**3RW44 58-□BC□5**	1	1 unit	42H
1076	--	630	**800**	--	--	970	--	--	850	**1 100**	C	**3RW44 65-□BC□5**	1	1 unit	42H
1 214	--	710	**900**	--	--	1 076	--	--	950	**1 200**	C	**3RW44 66-□BC□5**	1	1 unit	42H
Order No. supplement for connection types															
• With spring-type terminals												**2**			
• With screw terminals												**6**			
Order No. supplement for the rated control supply voltage U_s[2]															
• 115 V AC												**3**			
• 230 V AC												**4**			

For online configurator see www.siemens.com/sirius/configurators.

1) Soft starter with screw terminals:
3RW44 2. ... 3RW44 4. Delivery time class A,
3RW44 5. ... 3RW44 6. Delivery time class B.

2) Control by way of the internal 24 V DC supply and direct control by means of PLC possible.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The SIRIUS 3RW44 solid-state soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 10
- Maximum starting current in % of motor current I_e: 300
- Maximum number of starts per hour in 1/h: 5

In the event of more exacting requirements, it may be necessary to choose a larger device. However, in some cases the designed-in safety reserves also permit the listed units to be used in boundary conditions which are slightly more demanding. For detailed technical information for a configuration which is tailored exactly to the application see "Manuals". Siemens recommends the use of the selection and simulation program Win-Soft Starter.

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3RW44

3RW ambient temperature 40 °C[1]						3RW ambient temperature 50 °C[1]					DT	Normal starting (CLASS 10) in inline circuit	PU (UNIT, SET, M)	PS*	PG
Rated values of induction motors						Rated values of induction motors						Configurator			
Operational current I_e	Rating at operational voltage U_e					Operational current I_e	Rating at operational voltage U_e								
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V		Order No. Price per PU			
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp					
Inline circuit, rated operational voltage 400 ... 690 V															
29	--	15	18.5	**30**	--	26	--	--	15	**20**	B	**3RW44 22-□BC□6**	1	1 unit	42H
36	--	18.5	22	**37**	--	32	--	--	20	**25**	B	**3RW44 23-□BC□6**	1	1 unit	42H
47	--	22	30	**45**	--	42	--	--	25	**30**	B	**3RW44 24-□BC□6**	1	1 unit	42H
57	--	30	37	**55**	--	51	--	--	30	**40**	B	**3RW44 25-□BC□6**	1	1 unit	42H
77	--	37	45	**75**	--	68	--	--	50	**50**	B	**3RW44 26-□BC□6**	1	1 unit	42H
93	--	45	55	**90**	--	82	--	--	60	**75**	B	**3RW44 27-□BC□6**	1	1 unit	42H
Order No. supplement for connection types															
• With screw terminals												**1**			
• With spring-type terminals												**3**			
113	--	55	75	**110**	--	100	--	--	75	**75**	B	**3RW44 34-□BC□6**	1	1 unit	42H
134	--	75	90	**132**	--	117	--	--	75	**100**	B	**3RW44 35-□BC□6**	1	1 unit	42H
162	--	90	110	**160**	--	145	--	--	100	**125**	B	**3RW44 36-□BC□6**	1	1 unit	42H
203	--	110	132	**200**	--	180	--	--	125	**150**	B	**3RW44 43-□BC□6**	1	1 unit	42H
250	--	132	160	**250**	--	215	--	--	150	**200**	B	**3RW44 44-□BC□6**	1	1 unit	42H
313	--	160	200	**315**	--	280	--	--	200	**250**	B	**3RW44 45-□BC□6**	1	1 unit	42H
356	--	200	250	**355**	--	315	--	--	250	**300**	B	**3RW44 46-□BC□6**	1	1 unit	42H
432	--	250	315	**400**	--	385	--	--	300	**400**	B	**3RW44 47-□BC□6**	1	1 unit	42H
551	--	315	355	**560**	--	494	--	--	400	**500**	C	**3RW44 53-□BC□6**	1	1 unit	42H
615	--	355	400	**630**	--	551	--	--	450	**600**	C	**3RW44 54-□BC□6**	1	1 unit	42H
693	--	400	500	**710**	--	615	--	--	500	**700**	C	**3RW44 55-□BC□6**	1	1 unit	42H
780	--	450	560	**800**	--	693	--	--	600	**750**	C	**3RW44 56-□BC□6**	1	1 unit	42H
880	--	500	630	**900**	--	780	--	--	700	**850**	C	**3RW44 57-□BC□6**	1	1 unit	42H
970	--	560	710	**1 000**	--	850	--	--	750	**900**	C	**3RW44 58-□BC□6**	1	1 unit	42H
1 076	--	630	800	**1 100**	--	970	--	--	850	**1 100**	C	**3RW44 65-□BC□6**	1	1 unit	42H
1 214	--	710	900	**1 200**	--	1 076	--	--	950	**1 200**	C	**3RW44 66-□BC□6**	1	1 unit	42H
Order No. supplement for connection types															
• With spring-type terminals												**2**			
• With screw terminals												**6**			
Order No. supplement for the rated control supply voltage U_s[1]															
• 115 V AC												**3**			
• 230 V AC												**4**			

For online configurator see www.siemens.com/sirius/configurators.

[1] Control by way of the internal 24 V DC supply and direct control by means of PLC possible.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The SIRIUS 3RW44 solid-state soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 10
- Maximum starting current in % of motor current I_e: 300
- Maximum number of starts per hour in 1/h: 5

In the event of more exacting requirements, it may be necessary to choose a larger device. However, in some cases the designed-in safety reserves also permit the listed units to be used in boundary conditions which are slightly more demanding. For detailed technical information for a configuration which is tailored exactly to the application see "Manuals". Siemens recommends the use of the selection and simulation program Win-Soft Starter.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RW44 for heavy starting (CLASS 20) in inline circuit


3RW44 2.


3RW44 3.


3RW44 4.


3RW44 5.


3RW44 6.

3RW ambient temperature 40 °C[1]						3RW ambient temperature 50 °C[1]					DT	Heavy starting (CLASS 20) in inline circuit	PU (UNIT, SET, M)	PS*	PG
Rated values of induction motors						Rated values of induction motors						Configurator			
Operational current I_e	Rating at operational voltage U_e					Operational current I_e	Rating at operational voltage U_e								
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V		Order No. Price per PU			
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp					
Inline circuit, rated operational voltage 200 ... 460 V[1]															
29	5.5	**15**	--	--	--	26	7.5	7.5	**15**	--	▶	**3RW44 22-□BC□4**	1	1 unit	42H
36	7.5	**18.5**	--	--	--	32	10	10	**20**	--	▶	**3RW44 23-□BC□4**	1	1 unit	42H
47	11	**22**	--	--	--	42	10	15	**25**	--	▶	**3RW44 24-□BC□4**	1	1 unit	42H
57	15	**30**	--	--	--	51	15	15	**30**	--	▶	**3RW44 25-□BC□4**	1	1 unit	42H
77	18.5	**37**	--	--	--	68	20	20	**50**	--	▶	**3RW44 27-□BC□4**	1	1 unit	42H
Order No. supplement for connection types															
• With screw terminals												**1**			
• With spring-type terminals												**3**			
93	22	**45**	--	--		82	25	25	**60**	--	B	**3RW44 34-□BC□4**	1	1 unit	42H
113	30	**55**	--	--	--	100	30	30	**75**	--	B	**3RW44 35-□BC□4**	1	1 unit	42H
134	37	**75**	--	--	--	117	30	40	**75**	--	B	**3RW44 36-□BC□4**	1	1 unit	42H
162	45	**90**	--	--	--	145	40	50	**100**	--	B	**3RW44 43-□BC□4**	1	1 unit	42H
203	55	**110**	--	--	--	180	50	60	**125**	--	B	**3RW44 45-□BC□4**	1	1 unit	42H
250	75	**132**	--	--	--	215	60	75	**150**	--	B	**3RW44 46-□BC□4**	1	1 unit	42H
313	90	**160**	--	--	--	280	75	100	**200**	--	B	**3RW44 47-□BC□4**	1	1 unit	42H
356	110	**200**	--	--	--	315	100	125	**250**	--	B	**3RW44 47-□BC□4**	1	1 unit	42H
432	132	**250**	--	--	--	385	125	150	**300**	--	C	**3RW44 53-□BC□4**	1	1 unit	42H
551	160	**315**	--	--	--	494	150	200	**400**	--	C	**3RW44 53-□BC□4**	1	1 unit	42H
615	200	**355**	--	--	--	551	150	200	**450**	--	C	**3RW44 55-□BC□4**	1	1 unit	42H
693	200	**400**	--	--	--	615	200	250	**500**	--	C	**3RW44 57-□BC□4**	1	1 unit	42H
780	250	**450**	--	--	--	693	200	250	**600**	--	C	**3RW44 65-□BC□4**	1	1 unit	42H
880	250	**500**	--	--	--	780	250	300	**700**	--	C	**3RW44 65-□BC□4**	1	1 unit	42H
970	315	**560**	--	--	--	850	300	350	**750**	--	C	**3RW44 65-□BC□4**	1	1 unit	42H
Order No. supplement for connection types															
• With spring-type terminals												**2**			
• With screw terminals												**6**			
Order No. supplement for the rated control supply voltage U_s[2]															
• 115 V AC												**3**			
• 230 V AC												**4**			

For online configurator see www.siemens.com/sirius/configurators.

1) 3RW44 2. to 3RW44 4. soft starters with screw terminals: delivery time class ▶ (preferred type).

2) Control by way of the internal 24 V DC supply and direct control by means of PLC possible.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The SIRIUS 3RW44 solid-state soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 40
- Maximum starting current in % of motor current I_e: 350
- Maximum number of starts per hour in 1/h: 1

In the event of more exacting requirements, it may be necessary to choose a larger device. However, in some cases the designed-in safety reserves also permit the listed units to be used in boundary conditions which are slightly more demanding. For detailed technical information for a configuration which is tailored exactly to the application see "Manuals". Siemens recommends the use of the selection and simulation program Win-Soft Starter.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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3RW44

3RW ambient temperature 40 °C[1]						3RW ambient temperature 50 °C[1]					DT	Heavy starting (CLASS 20) in inline circuit	PU (UNIT, SET, M)	PS*	PG
Rated values of induction motors						Rated values of induction motors						Configurator			
Operational current I_e	Rating at operational voltage U_e					Operational current I_e	Rating at operational voltage U_e					Order No. / Price per PU			
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V					
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp					
Inline circuit, rated operational voltage 400 ... 600 V[1]															
29	--	15	**18.5**	--	--	26	--	--	15	**20**	A	**3RW44 22-□BC□5**	1	1 unit	42H
36	--	18.5	**22**	--	--	32	--	--	20	**25**	A	**3RW44 23-□BC□5**	1	1 unit	42H
47	--	22	**30**	--	--	42	--	--	25	**30**	A	**3RW44 24-□BC□5**	1	1 unit	42H
57	--	30	**37**	--	--	51	--	--	30	**40**	A	**3RW44 25-□BC□5**	1	1 unit	42H
77	--	37	**45**	--	--	68	--	--	50	**50**	A	**3RW44 27-□BC□5**	1	1 unit	42H
Order No. supplement for connection types															
• With screw terminals												**1**			
• With spring-type terminals												**3**			
93	--	45	**55**	--	--	82	--	--	60	**75**	B	**3RW44 34-□BC□5**	1	1 unit	42H
113	--	55	**75**	--	--	100	--	--	75	**75**	B	**3RW44 35-□BC□5**	1	1 unit	42H
134	--	75	**90**	--	--	117	--	--	75	**100**	B	**3RW44 36-□BC□5**	1	1 unit	42H
162	--	90	**110**	--	--	145	--	--	100	**125**	B	**3RW44 43-□BC□5**	1	1 unit	42H
203	--	110	**132**	--	--	180	--	--	125	**150**	B	**3RW44 45-□BC□5**	1	1 unit	42H
250	--	132	**160**	--	--	215	--	--	150	**200**	B	**3RW44 46-□BC□5**	1	1 unit	42H
313	--	160	**200**	--	--	280	--	--	200	**250**	B	**3RW44 47-□BC□5**	1	1 unit	42H
356	--	200	**250**	--	--	315	--	--	250	**300**	B	**3RW44 47-□BC□5**	1	1 unit	42H
432	--	250	**315**	--	--	385	--	--	300	**400**	C	**3RW44 53-□BC□5**	1	1 unit	42H
551	--	315	**355**	--	--	494	--	--	400	**500**	C	**3RW44 53-□BC□5**	1	1 unit	42H
615	--	355	**400**	--	--	551	--	--	450	**600**	C	**3RW44 54-□BC□5**	1	1 unit	42H
693	--	400	**500**	--	--	615	--	--	500	**700**	C	**3RW44 57-□BC□5**	1	1 unit	42H
780	--	450	**560**	--	--	693	--	--	600	**750**	C	**3RW44 65-□BC□5**	1	1 unit	42H
880	--	500	**630**	--	--	780	--	--	700	**850**	C	**3RW44 65-□BC□5**	1	1 unit	42H
970	--	560	**710**	--	--	850	--	--	750	**900**	C	**3RW44 65-□BC□5**	1	1 unit	42H
Order No. supplement for connection types															
• With spring-type terminals												**2**			
• With screw terminals												**6**			
Order No. supplement for the rated control supply voltage U_s[2]															
• 115 V AC												**3**			
• 230 V AC												**4**			

For online configurator see www.siemens.com/sirius/configurators.

1) Soft starter with screw terminals:
3RW44 2. to 3RW44 4. Delivery time class A,
3RW44 5. to 3RW44 6. Delivery time class B.

2) Control by way of the internal 24 V DC supply and direct control by means of PLC possible.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The SIRIUS 3RW44 solid-state soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 40
- Maximum starting current in % of motor current I_e: 350
- Maximum number of starts per hour in 1/h: 1

In the event of more exacting requirements, it may be necessary to choose a larger device. However, in some cases the designed-in safety reserves also permit the listed units to be used in boundary conditions which are slightly more demanding. For detailed technical information for a configuration which is tailored exactly to the application see "Manuals". Siemens recommends the use of the selection and simulation program Win-Soft Starter.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3RW ambient temperature 40 °C[1]						3RW ambient temperature 50 °C[1]					DT	Heavy starting (CLASS 20) in inline circuit	PU (UNIT, SET, M)	PS*	PG
Rated values of induction motors						Rated values of induction motors						Configurator			
Operational current I_e	Rating at operational voltage U_e					Operational current I_e	Rating at operational voltage U_e					Order No. / Price per PU			
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V					
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp					
Inline circuit, rated operational voltage 400 ... 690 V															
29	--	15	18.5	**30**	--	26	--	--	15	**20**	B	**3RW44 22-□BC□6**	1	1 unit	42H
36	--	18.5	22	**37**	--	32	--	--	20	**25**	B	**3RW44 23-□BC□6**	1	1 unit	42H
47	--	22	30	**45**	--	42	--	--	25	**30**	B	**3RW44 24-□BC□6**	1	1 unit	42H
57	--	30	37	**55**	--	51	--	--	30	**40**	B	**3RW44 25-□BC□6**	1	1 unit	42H
77	--	37	45	**75**	--	68	--	--	50	**50**	B	**3RW44 27-□BC□6**	1	1 unit	42H
Order No. supplement for connection types															
• With screw terminals												**1**			
• With spring-type terminals												**3**			
93	--	45	55	**90**	--	82	--	--	60	**75**	B	**3RW44 34-□BC□6**	1	1 unit	42H
113	--	55	75	**110**	--	100	--	--	75	**75**	B	**3RW44 35-□BC□6**	1	1 unit	42H
134	--	75	90	**132**	--	117	--	--	75	**100**	B	**3RW44 36-□BC□6**	1	1 unit	42H
162	--	90	110	**160**	--	145	--	--	100	**125**	B	**3RW44 43-□BC□6**	1	1 unit	42H
203	--	110	132	**200**	--	180	--	--	125	**150**	B	**3RW44 45-□BC□6**	1	1 unit	42H
250	--	132	160	**250**	--	215	--	--	150	**200**	B	**3RW44 46-□BC□6**	1	1 unit	42H
313	--	160	200	**315**	--	280	--	--	200	**250**	B	**3RW44 47-□BC□6**	1	1 unit	42H
356	--	200	250	**355**	--	315	--	--	250	**300**	B	**3RW44 47-□BC□6**	1	1 unit	42H
432	--	250	315	**400**	--	385	--	--	300	**400**	C	**3RW44 53-□BC□6**	1	1 unit	42H
551	--	315	355	**560**	--	494	--	--	400	**500**	C	**3RW44 53-□BC□6**	1	1 unit	42H
615	--	355	400	**630**	--	551	--	--	450	**600**	C	**3RW44 55-□BC□6**	1	1 unit	42H
693	--	400	500	**710**	--	615	--	--	500	**700**	C	**3RW44 57-□BC□6**	1	1 unit	42H
780	--	450	560	**800**	--	693	--	--	600	**750**	C	**3RW44 65-□BC□6**	1	1 unit	42H
880	--	500	630	**900**	--	780	--	--	700	**850**	C	**3RW44 65-□BC□6**	1	1 unit	42H
970	--	560	710	**1 000**	--	850	--	--	750	**900**	C	**3RW44 65-□BC□6**	1	1 unit	42H
Order No. supplement for connection types															
• With spring-type terminals												**2**			
• With screw terminals												**6**			
Order No. supplement for the rated control supply voltage U_s[1]															
• 115 V AC												**3**			
• 230 V AC												**4**			

For online configurator see www.siemens.com/sirius/configurators.

[1] Control by way of the internal 24 V DC supply and direct control by means of PLC possible.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The SIRIUS 3RW44 solid-state soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 40
- Maximum starting current in % of motor current I_e: 350
- Maximum number of starts per hour in 1/h: 1

In the event of more exacting requirements, it may be necessary to choose a larger device. However, in some cases the designed-in safety reserves also permit the listed units to be used in boundary conditions which are slightly more demanding. For detailed technical information for a configuration which is tailored exactly to the application see "Manuals". Siemens recommends the use of the selection and simulation program Win-Soft Starter.

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3RW44

SIRIUS 3RW44 for very heavy starting (CLASS 30) in inline circuit


3RW44 2.


3RW44 3.


3RW44 4.


3RW44 5.


3RW44 6.

3RW ambient temperature 40 °C[1]						3RW ambient temperature 50 °C[1]					DT	**Very heavy starting (CLASS 30) in inline circuit**	PU (UNIT, SET, M)	PS*	PG
Rated values of induction motors						Rated values of induction motors						**Configurator**			
Operational current I_e	Rating at operational voltage U_e					Operational current I_e	Rating at operational voltage U_e								
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V		Order No. Price per PU			
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp					
Inline circuit, rated operational voltage 200 ... 460 V[1]															
29	5.5	**15**	--	--	--	26	7.5	7.5	**15**	--	▶	**3RW44 22-□BC□4**	1	1 unit	42H
36	7.5	**18.5**	--	--	--	32	10	10	**20**	--	▶	**3RW44 24-□BC□4**	1	1 unit	42H
47	11	**22**	--	--	--	42	10	15	**25**	--	▶	**3RW44 25-□BC□4**	1	1 unit	42H
57	15	**30**	--	--	--	51	15	15	**30**	--	▶	**3RW44 25-□BC□4**	1	1 unit	42H
Order No. supplement for connection types															
• With screw terminals												**1**			
• With spring-type terminals												**3**			
77	18.5	**37**	--	--	--	68	20	20	**50**	--	B	**3RW44 34-□BC□4**	1	1 unit	42H
93	22	**45**	--	--	--	82	25	25	**60**	--	B	**3RW44 35-□BC□4**	1	1 unit	42H
113	30	**55**	--	--	--	100	30	30	**75**	--	B	**3RW44 43-□BC□4**	1	1 unit	42H
134	37	**75**	--	--	--	117	30	40	**75**	--	B	**3RW44 43-□BC□4**	1	1 unit	42H
162	45	**90**	--	--	--	145	40	50	**100**	--	B	**3RW44 43-□BC□4**	1	1 unit	42H
203	55	**110**	--	--	--	180	50	60	**125**	--	B	**3RW44 46-□BC□4**	1	1 unit	42H
250	75	**132**	--	--	--	215	60	75	**150**	--	B	**3RW44 47-□BC□4**	1	1 unit	42H
313	90	**160**	--	--	--	280	75	100	**200**	--	C	**3RW44 53-□BC□4**	1	1 unit	42H
356	110	**200**	--	--	--	315	100	125	**250**	--	C	**3RW44 53-□BC□4**	1	1 unit	42H
432	132	**250**	--	--	--	385	125	150	**300**	--	C	**3RW44 53-□BC□4**	1	1 unit	42H
551	160	**315**	--	--	--	494	150	200	**400**	--	C	**3RW44 55-□BC□4**	1	1 unit	42H
615	200	**355**	--	--	--	551	150	200	**450**	--	C	**3RW44 58-□BC□4**	1	1 unit	42H
693	200	**400**	--	--	--	615	200	250	**500**	--	C	**3RW44 65-□BC□4**	1	1 unit	42H
780	250	**450**	--	--	--	693	200	250	**600**	--	C	**3RW44 65-□BC□4**	1	1 unit	42H
880	250	**500**	--	--	--	780	250	300	**700**	--	C	**3RW44 65-□BC□4**	1	1 unit	42H
970	315	**560**	--	--	--	850	300	350	**750**	--	C	**3RW44 66-□BC□4**	1	1 unit	42H
Order No. supplement for connection types															
• With spring-type terminals												**2**			
• With screw terminals												**6**			
Order No. supplement for the rated control supply voltage U_s[2]															
• 115 V AC												**3**			
• 230 V AC												**4**			

For online configurator see www.siemens.com/sirius/configurators.

1) 3RW44 2. to 3RW44 4. soft starters with screw terminals: delivery time class ▶ (preferred type).

2) Control by way of the internal 24 V DC supply and direct control by means of PLC possible.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The SIRIUS 3RW44 solid-state soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 60
- Maximum starting current in % of motor current I_e: 350
- Maximum number of starts per hour in 1/h: 1

In the event of more exacting requirements, it may be necessary to choose a larger device. However, in some cases the designed-in safety reserves also permit the listed units to be used in boundary conditions which are slightly more demanding. For detailed technical information for a configuration which is tailored exactly to the application see "Manuals". Siemens recommends the use of the selection and simulation program Win-Soft Starter.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3RW ambient temperature 40 °C[1]						3RW ambient temperature 50 °C[1]					DT	Very heavy starting (CLASS 30) in inline circuit	PU (UNIT, SET, M)	PS*	PG
Rated values of induction motors						Rated values of induction motors						Configurator			
Operational current I_e	Rating at operational voltage U_e					Operational current I_e	Rating at operational voltage U_e					Order No. / Price per PU			
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V					
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp					
Inline circuit, rated operational voltage 400 ... 600 V[1]															
29	--	15	**18.5**	--	--	26	--	--	15	**20**	A	**3RW44 22-□BC□5**	1	1 unit	42H
36	--	18.5	**22**	--	--	32	--	--	20	**25**	A	**3RW44 24-□BC□5**	1	1 unit	42H
47	--	22	**30**	--	--	42	--	--	25	**30**	A	**3RW44 25-□BC□5**	1	1 unit	42H
57	--	30	**37**	--	--	51	--	--	30	**40**	A	**3RW44 25-□BC□5**	1	1 unit	42H
Order No. supplement for connection types															
• With screw terminals												**1**			
• With spring-type terminals												**3**			
77	--	37	**45**	--	--	68	--	--	50	**50**	B	**3RW44 34-□BC□5**	1	1 unit	42H
93	--	45	**55**	--	--	82	--	--	60	**75**	B	**3RW44 35-□BC□5**	1	1 unit	42H
113	--	55	**75**	--	--	100	--	--	75	**75**	B	**3RW44 43-□BC□5**	1	1 unit	42H
134	--	75	**90**	--	--	117	--	--	75	**100**	B	**3RW44 43-□BC□5**	1	1 unit	42H
162	--	90	**110**	--	--	145	--	--	100	**125**	B	**3RW44 43-□BC□5**	1	1 unit	42H
203	--	110	**132**	--	--	180	--	--	125	**150**	B	**3RW44 46-□BC□5**	1	1 unit	42H
250	--	132	**160**	--	--	215	--	--	150	**200**	B	**3RW44 47-□BC□5**	1	1 unit	42H
313	--	160	**200**	--	--	280	--	--	200	**250**	C	**3RW44 53-□BC□5**	1	1 unit	42H
356	--	200	**250**	--	--	315	--	--	250	**300**	C	**3RW44 53-□BC□5**	1	1 unit	42H
432	--	250	**315**	--	--	385	--	--	300	**400**	C	**3RW44 53-□BC□5**	1	1 unit	42H
551	--	315	**355**	--	--	494	--	--	400	**500**	C	**3RW44 55-□BC□5**	1	1 unit	42H
615	--	355	**400**	--	--	551	--	--	450	**600**	C	**3RW44 58-□BC□5**	1	1 unit	42H
693	--	400	**500**	--	--	615	--	--	500	**700**	C	**3RW44 65-□BC□5**	1	1 unit	42H
780	--	450	**560**	--	--	693	--	--	600	**750**	C	**3RW44 65-□BC□5**	1	1 unit	42H
880	--	500	**630**	--	--	780	--	--	700	**850**	C	**3RW44 65-□BC□5**	1	1 unit	42H
--	--	--	--	--	--	850	--	--	750	**900**	C	**3RW44 66-□BC□5**	1	1 unit	42H
Order No. supplement for connection types															
• With spring-type terminals												**2**			
• With screw terminals												**6**			
Order No. supplement for the rated control supply voltage U_s[2]															
• 115 V AC												**3**			
• 230 V AC												**4**			

For online configurator see www.siemens.com/sirius/configurators.

1) Soft starter with screw terminals:
3RW44 2. to 3RW44 4. Delivery time class A,
3RW44 5. to 3RW44 6. Delivery time class B.

2) Control by way of the internal 24 V DC supply and direct control by means of PLC possible.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The SIRIUS 3RW44 solid-state soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 60
- Maximum starting current in % of motor current I_e: 350
- Maximum number of starts per hour in 1/h: 1

In the event of more exacting requirements, it may be necessary to choose a larger device. However, in some cases the designed-in safety reserves also permit the listed units to be used in boundary conditions which are slightly more demanding. For detailed technical information for a configuration which is tailored exactly to the application see "Manuals". Siemens recommends the use of the selection and simulation program Win-Soft Starter.

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3RW44

3RW ambient temperature 40 °C[1] Rated values of induction motors Operational current I_e	Rating at operational voltage U_e 230 V	400 V	500 V	690 V	1000 V	3RW ambient temperature 50 °C[1] Rated values of induction motors Operational current I_e	Rating at operational voltage U_e 200 V	230 V	460 V	575 V	DT	Very heavy starting (CLASS 30) in inline circuit Configurator Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp						
Inline circuit, rated operational voltage 400 ... 690 V																
29	--	15	18.5	**30**	--	26	--	--	15	**20**	B	**3RW44 22-□BC□6**		1	1 unit	42H
36	--	18.5	22	**37**	--	32	--	--	20	**25**	B	**3RW44 24-□BC□6**		1	1 unit	42H
47	--	22	30	**45**	--	42	--	--	25	**30**	B	**3RW44 25-□BC□6**		1	1 unit	42H
57	--	30	37	**55**	--	51	--	--	30	**40**	B	**3RW44 25-□BC□6**		1	1 unit	42H
Order No. supplement for connection types • With screw terminals • With spring-type terminals																
												1 3				
77	--	37	45	**75**	--	68	--	--	50	**50**	B	**3RW44 34-□BC□6**		1	1 unit	42H
93	--	45	55	**90**	--	82	--	--	60	**75**	B	**3RW44 35-□BC□6**		1	1 unit	42H
113	--	55	75	**110**	--	100	--	--	75	**75**	B	**3RW44 43-□BC□6**		1	1 unit	42H
134	--	75	90	**132**	--	117	--	--	75	**100**	B	**3RW44 43-□BC□6**		1	1 unit	42H
162	--	90	110	**160**	--	145	--	--	100	**125**	B	**3RW44 43-□BC□6**		1	1 unit	42H
203	--	110	132	**200**	--	180	--	--	125	**150**	B	**3RW44 46-□BC□6**		1	1 unit	42H
250	--	132	160	**250**	--	215	--	--	150	**200**	B	**3RW44 47-□BC□6**		1	1 unit	42H
313	--	160	200	**315**	--	280	--	--	200	**250**	C	**3RW44 53-□BC□6**		1	1 unit	42H
356	--	200	250	**355**	--	315	--	--	250	**300**	C	**3RW44 53-□BC□6**		1	1 unit	42H
432	--	250	315	**400**	--	385	--	--	300	**400**	C	**3RW44 53-□BC□6**		1	1 unit	42H
551	--	315	355	**560**	--	494	--	--	400	**500**	C	**3RW44 55-□BC□6**		1	1 unit	42H
615	--	355	400	**630**	--	551	--	--	450	**600**	C	**3RW44 58-□BC□6**		1	1 unit	42H
693	--	400	500	**710**	--	615	--	--	500	**700**	C	**3RW44 65-□BC□6**		1	1 unit	42H
780	--	450	560	**800**	--	693	--	--	600	**750**	C	**3RW44 65-□BC□6**		1	1 unit	42H
880	--	500	630	**900**	--	780	--	--	700	**850**	C	**3RW44 65-□BC□6**		1	1 unit	42H
--	--	--	--	--	--	850	--	--	750	**900**	C	**3RW44 66-□BC□6**		1	1 unit	42H
Order No. supplement for connection types • With spring-type terminals • With screw terminals																
												2 6				
Order No. supplement for the rated control supply voltage U_s[1] • 115 V AC • 230 V AC																
												3 4				

For online configurator see www.siemens.com/sirius/configurators.

[1] Control by way of the internal 24 V DC supply and direct control by means of PLC possible.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The SIRIUS 3RW44 solid-state soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 60
- Maximum starting current in % of motor current I_e: 350
- Maximum number of starts per hour in 1/h: 1

In the event of more exacting requirements, it may be necessary to choose a larger device. However, in some cases the designed-in safety reserves also permit the listed units to be used in boundary conditions which are slightly more demanding. For detailed technical information for a configuration which is tailored exactly to the application see "Manuals". Siemens recommends the use of the selection and simulation program Win-Soft Starter.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RW44 for normal starting (CLASS 10) in inside-delta circuit


3RW44 2.


3RW44 3.


3RW44 4.


3RW44 5.


3RW44 6.

3RW ambient temperature 40 °C[1]						3RW ambient temperature 50 °C[1]					DT	Normal starting (CLASS 10) in inside-delta circuit	PU (UNIT, SET, M)	PS*	PG
Rated values of induction motors						Rated values of induction motors						Configurator			
Operational current I_e	Rating at operational voltage U_e					Operational current I_e	Rating at operational voltage U_e								
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V		Order No.	Price per PU			
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp					
Inside-delta circuit, rated operational voltage 200 ... 460 V[2]															
50	15	**22**	--	--	--	45	10	15	**30**	--	▶	**3RW44 22-□BC□4**	1	1 unit	42H
62	18.5	**30**	--	--	--	55	15	20	**40**	--	▶	**3RW44 23-□BC□4**	1	1 unit	42H
81	22	**45**	--	--	--	73	20	25	**50**	--	▶	**3RW44 24-□BC□4**	1	1 unit	42H
99	30	**55**	--	--	--	88	25	30	**60**	--	▶	**3RW44 25-□BC□4**	1	1 unit	42H
133	37	**75**	--	--	--	118	30	40	**75**	--	▶	**3RW44 26-□BC□4**	1	1 unit	42H
161	45	**90**	--	--	--	142	40	50	**100**	--	▶	**3RW44 27-□BC□4**	1	1 unit	42H
Order No. supplement for connection types															
• With screw terminals												**1**			
• With spring-type terminals												**3**			
196	55	**110**	--	--	--	173	50	60	**125**	--	B	**3RW44 34-□BC□4**	1	1 unit	42H
232	75	**132**	--	--	--	203	60	75	**150**	--	B	**3RW44 35-□BC□4**	1	1 unit	42H
281	90	**160**	--	--	--	251	75	100	**200**	--	B	**3RW44 36-□BC□4**	1	1 unit	42H
352	110	**200**	--	--	--	312	100	125	**250**	--	B	**3RW44 43-□BC□4**	1	1 unit	42H
433	132	**250**	--	--	--	372	125	150	**300**	--	B	**3RW44 44-□BC□4**	1	1 unit	42H
542	160	**315**	--	--	--	485	150	200	**400**	--	B	**3RW44 45-□BC□4**	1	1 unit	42H
617	200	**355**	--	--	--	546	150	200	**450**	--	B	**3RW44 46-□BC□4**	1	1 unit	42H
748	250	**400**	--	--	--	667	200	250	**600**	--	B	**3RW44 47-□BC□4**	1	1 unit	42H
954	315	**560**	--	--	--	856	300	350	**750**	--	C	**3RW44 53-□BC□4**	1	1 unit	42H
1 065	355	**630**	--	--	--	954	350	400	**850**	--	C	**3RW44 54-□BC□4**	1	1 unit	42H
1 200	400	**710**	--	--	--	1 065	350	450	**950**	--	C	**3RW44 55-□BC□4**	1	1 unit	42H
1 351	450	**800**	--	--	--	1 200	450	500	**1 050**	--	C	**3RW44 56-□BC□4**	1	1 unit	42H
1 524	500	**900**	--	--	--	1 351	450	600	**1 200**	--	C	**3RW44 57-□BC□4**	1	1 unit	42H
1 680	560	**1 000**	--	--	--	1 472	550	650	**1 300**	--	C	**3RW44 58-□BC□4**	1	1 unit	42H
1 864	630	**1 100**	--	--	--	1 680	650	750	**1 500**	--	C	**3RW44 65-□BC□4**	1	1 unit	42H
2 103	710	**1 200**	--	--	--	1 864	700	850	**1 700**	--	C	**3RW44 66-□BC□4**	1	1 unit	42H
Order No. supplement for connection types															
• With spring-type terminals												**2**			
• With screw terminals												**6**			
Order No. supplement for the rated control supply voltage U_s[3]															
• 115 V AC												**3**			
• 230 V AC												**4**			

For online configurator see www.siemens.com/sirius/configurators.

1) In the selection table, the unit rated current I_e refers to the induction motor's rated operational current in the inside-delta circuit. The actual current of the device is approx. 58 % of this value.

2) 3RW44 2. to 3RW44 4. soft starters with screw terminals: delivery time class ▶ (preferred type).

3) Control by way of the internal 24 V DC supply and direct control by means of PLC possible.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The SIRIUS 3RW44 solid-state soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 10
- Maximum starting current in % of motor current I_e: 300
- Maximum number of starts per hour in 1/h: 5

In the event of more exacting requirements, it may be necessary to choose a larger device. However, in some cases the designed-in safety reserves also permit the listed units to be used in boundary conditions which are slightly more demanding. For detailed technical information for a configuration which is tailored exactly to the application see "Manuals". Siemens recommends the use of the selection and simulation program Win-Soft Starter.

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3RW44

3RW ambient temperature 40 °C[1]						3RW ambient temperature 50 °C[1]					DT	Normal starting (CLASS 10) in inside-delta circuit	PU (UNIT, SET, M)	PS*	PG
Rated values of induction motors						Rated values of induction motors						Configurator			
Operational current I_e	Rating at operational voltage U_e					Operational current I_e	Rating at operational voltage U_e					Order No. / Price per PU			
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V					
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp					
Inside-delta circuit, rated operational voltage 400 ... 600 V[2]															
50	--	22	**30**	--	--	45	--	--	30	**40**	A	**3RW44 22-□BC□5**	1	1 unit	42H
62	--	30	**37**	--	--	55	--	--	40	**50**	A	**3RW44 23-□BC□5**	1	1 unit	42H
81	--	45	**45**	--	--	73	--	--	50	**60**	A	**3RW44 24-□BC□5**	1	1 unit	42H
99	--	55	**55**	--	--	88	--	--	60	**75**	A	**3RW44 25-□BC□5**	1	1 unit	42H
133	--	75	**90**	--	--	118	--	--	75	**100**	A	**3RW44 26-□BC□5**	1	1 unit	42H
161	--	90	**110**	--	--	142	--	--	100	**125**	A	**3RW44 27-□BC□5**	1	1 unit	42H
Order No. supplement for connection types															
• With screw terminals												**1**			
• With spring-type terminals												**3**			
196	--	110	**132**	--	--	173	--	--	125	**150**	B	**3RW44 34-□BC□5**	1	1 unit	42H
232	--	132	**160**	--	--	203	--	--	150	**200**	B	**3RW44 35-□BC□5**	1	1 unit	42H
281	--	160	**200**	--	--	251	--	--	200	**250**	B	**3RW44 36-□BC□5**	1	1 unit	42H
352	--	200	**250**	--	--	312	--	--	250	**300**	B	**3RW44 43-□BC□5**	1	1 unit	42H
433	--	250	**315**	--	--	372	--	--	300	**350**	B	**3RW44 44-□BC□5**	1	1 unit	42H
542	--	315	**355**	--	--	485	--	--	400	**500**	B	**3RW44 45-□BC□5**	1	1 unit	42H
617	--	355	**450**	--	--	546	--	--	450	**600**	B	**3RW44 46-□BC□5**	1	1 unit	42H
748	--	400	**500**	--	--	667	--	--	600	**750**	B	**3RW44 47-□BC□5**	1	1 unit	42H
954	--	560	**630**	--	--	856	--	--	750	**950**	C	**3RW44 53-□BC□5**	1	1 unit	42H
1 065	--	630	**710**	--	--	954	--	--	850	**1 050**	C	**3RW44 54-□BC□5**	1	1 unit	42H
1 200	--	710	**800**	--	--	1 065	--	--	950	**1 200**	C	**3RW44 55-□BC□5**	1	1 unit	42H
1 351	--	800	**900**	--	--	1 200	--	--	1 050	**1 350**	C	**3RW44 56-□BC□5**	1	1 unit	42H
1 524	--	900	**1 000**	--	--	1 351	--	--	1 200	**1 500**	C	**3RW44 57-□BC□5**	1	1 unit	42H
1 680	--	1 000	**1 200**	--	--	1 472	--	--	1 300	**1 650**	C	**3RW44 58-□BC□5**	1	1 unit	42H
1 864	--	1 100	**1 350**	--	--	1 680	--	--	1 500	**1 900**	C	**3RW44 65-□BC□5**	1	1 unit	42H
2 103	--	1 200	**1 500**	--	--	1 864	--	--	1 700	**2 100**	C	**3RW44 66-□BC□5**	1	1 unit	42H
Order No. supplement for connection types															
• With spring-type terminals												**2**			
• With screw terminals												**6**			
Order No. supplement for the rated control supply voltage U_s[3]															
• 115 V AC												**3**			
• 230 V AC												**4**			

For online configurator see www.siemens.com/sirius/configurators.

1) In the selection table, the unit rated current I_e refers to the induction motor's rated operational current in the inside-delta circuit. The actual current of the device is approx. 58 % of this value.

2) Soft starter with screw terminals:
3RW44 2. to 3RW44 4. Delivery time class A
3RW44 5. to 3RW44 6. Delivery time class B.

3) Control by way of the internal 24 V DC supply and direct control by means of PLC possible.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The SIRIUS 3RW44 solid-state soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 10
- Maximum starting current in % of motor current I_e: 300
- Maximum number of starts per hour in 1/h: 5

In the event of more exacting requirements, it may be necessary to choose a larger device. However, in some cases the designed-in safety reserves also permit the listed units to be used in boundary conditions which are slightly more demanding. For detailed technical information for a configuration which is tailored exactly to the application see "Manuals". Siemens recommends the use of the selection and simulation program Win-Soft Starter.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RW44 for heavy starting (CLASS 20) in inside-delta circuit


3RW44 2.


3RW44 3.


3RW44 4.


3RW44 5.


3RW44 6.

3RW ambient temperature 40 °C[1]						3RW ambient temperature 50 °C[1]					DT	Heavy starting (CLASS 20) in inside-delta circuit	PU (UNIT, SET, M)	PS*	PG
Rated values of induction motors						Rated values of induction motors						Configurator			
Operational current I_e	Rating at operational voltage U_e					Operational current I_e	Rating at operational voltage U_e								
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V		Order No. Price per PU			
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp					
Inside-delta circuit, rated operational voltage 200 ... 460 V[2]															
50	15	**22**	--	--	--	45	10	15	**30**	--	▶	**3RW44 23-□BC□4**	1	1 unit	42H
62	18.5	**30**	--	--	--	55	15	20	**40**	--	▶	**3RW44 24-□BC□4**	1	1 unit	42H
81	22	**45**	--	--	--	73	20	25	**50**	--	▶	**3RW44 25-□BC□4**	1	1 unit	42H
99	30	**55**	--	--	--	88	25	30	**60**	--	▶	**3RW44 25-□BC□4**	1	1 unit	42H
133	37	**75**	--	--	--	118	30	40	**75**	--	▶	**3RW44 27-□BC□4**	1	1 unit	42H
Order No. supplement for connection types															
• With screw terminals												**1**			
• With spring-type terminals												**3**			
161	45	**90**	--	--	--	142	40	50	**100**	--	B	**3RW44 34-□BC□4**	1	1 unit	42H
196	55	**110**	--	--	--	173	50	60	**125**	--	B	**3RW44 35-□BC□4**	1	1 unit	42H
232	75	**132**	--	--	--	203	60	75	**150**	--	B	**3RW44 36-□BC□4**	1	1 unit	42H
281	90	**160**	--	--	--	251	75	100	**200**	--	B	**3RW44 43-□BC□4**	1	1 unit	42H
352	110	**200**	--	--	--	312	100	125	**250**	--	B	**3RW44 44-□BC□4**	1	1 unit	42H
433	132	**250**	--	--	--	372	125	150	**300**	--	B	**3RW44 45-□BC□4**	1	1 unit	42H
542	160	**315**	--	--	--	485	150	200	**400**	--	B	**3RW44 47-□BC□4**	1	1 unit	42H
617	200	**355**	--	--	--	546	150	200	**450**	--	B	**3RW44 47-□BC□4**	1	1 unit	42H
748	250	**400**	--	--	--	667	200	250	**600**	--	C	**3RW44 53-□BC□4**	1	1 unit	42H
954	315	**560**	--	--	--	856	300	350	**750**	--	C	**3RW44 53-□BC□4**	1	1 unit	42H
1 065	355	**630**	--	--	--	954	350	400	**850**	--	C	**3RW44 55-□BC□4**	1	1 unit	42H
1 200	400	**710**	--	--	--	1 065	350	450	**950**	--	C	**3RW44 57-□BC□4**	1	1 unit	42H
1 351	450	**800**	--	--	--	1 200	450	500	**1 050**	--	C	**3RW44 65-□BC□4**	1	1 unit	42H
1 524	500	**900**	--	--	--	1 351	450	600	**1 200**	--	C	**3RW44 65-□BC□4**	1	1 unit	42H
1 680	560	**1 000**	--	--	--	1 472	550	650	**1 300**	--	C	**3RW44 65-□BC□4**	1	1 unit	42H
--	--	--	--	--	--	1 680	650	750	**1 500**	--	C	**3RW44 66-□BC□4**	1	1 unit	42H
Order No. supplement for connection types															
• With spring-type terminals												**2**			
• With screw terminals												**6**			
Order No. supplement for the rated control supply voltage U_s[3]															
• 115 V AC												**3**			
• 230 V AC												**4**			

For online configurator see www.siemens.com/sirius/configurators.

[1] In the selection table, the unit rated current I_e refers to the induction motor's rated operational current in the inside-delta circuit. The actual current of the device is approx. 58 % of this value.

[2] 3RW44 2.to 3RW44 4. soft starters with screw terminals: delivery time class ▶ (preferred type).

[3] Control by way of the internal 24 V DC supply and direct control by means of PLC possible.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The SIRIUS 3RW44 solid-state soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 40
- Maximum starting current in % of motor current I_e: 350
- Maximum number of starts per hour in 1/h: 1

In the event of more exacting requirements, it may be necessary to choose a larger device. However, in some cases the designed-in safety reserves also permit the listed units to be used in boundary conditions which are slightly more demanding. For detailed technical information for a configuration which is tailored exactly to the application see "Manuals". Siemens recommends the use of the selection and simulation program Win-Soft Starter.

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3RW44

3RW ambient temperature 40 °C[1]						3RW ambient temperature 50 °C[1]					DT	Heavy starting (CLASS 20) in inside-delta circuit	PU (UNIT, SET, M)	PS*	PG
Rated values of induction motors						Rated values of induction motors						Configurator			
Operational current I_e	Rating at operational voltage U_e					Operational current I_e	Rating at operational voltage U_e					Order No. / Price per PU			
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V					
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp					
Inside-delta circuit, rated operational voltage 400 ... 600 V[2]															
50	--	22	**30**	--	--	45	--	--	30	**40**	A	**3RW44 23-☐BC☐5**	1	1 unit	42H
62	--	30	**37**	--	--	55	--	--	40	**50**	A	**3RW44 24-☐BC☐5**	1	1 unit	42H
81	--	45	**45**	--	--	73	--	--	50	**60**	A	**3RW44 25-☐BC☐5**	1	1 unit	42H
99	--	55	**55**	--	--	88	--	--	60	**75**	A	**3RW44 25-☐BC☐5**	1	1 unit	42H
133	--	75	**90**	--	--	118	--	--	75	**100**	A	**3RW44 27-☐BC☐5**	1	1 unit	42H
Order No. supplement for connection types															
• With screw terminals												**1**			
• With spring-type terminals												**3**			
161	--	90	**110**	--	--	142	--	--	100	**125**	B	**3RW44 34-☐BC☐5**	1	1 unit	42H
196	--	110	**132**	--	--	173	--	--	125	**150**	B	**3RW44 35-☐BC☐5**	1	1 unit	42H
232	--	132	**160**	--	--	203	--	--	150	**200**	B	**3RW44 36-☐BC☐5**	1	1 unit	42H
281	--	160	**200**	--	--	251	--	--	200	**250**	B	**3RW44 43-☐BC☐5**	1	1 unit	42H
352	--	200	**250**	--	--	312	--	--	250	**300**	B	**3RW44 44-☐BC☐5**	1	1 unit	42H
433	--	250	**315**	--	--	372	--	--	300	**350**	B	**3RW44 45-☐BC☐5**	1	1 unit	42H
542	--	315	**355**	--	--	485	--	--	400	**500**	B	**3RW44 47-☐BC☐5**	1	1 unit	42H
617	--	355	**450**	--	--	546	--	--	450	**600**	B	**3RW44 47-☐BC☐5**	1	1 unit	42H
748	--	400	**500**	--	--	667	--	--	600	**750**	C	**3RW44 53-☐BC☐5**	1	1 unit	42H
954	--	560	**630**	--	--	856	--	--	750	**950**	C	**3RW44 53-☐BC☐5**	1	1 unit	42H
1 065	--	630	**710**	--	--	954	--	--	850	**1 050**	C	**3RW44 55-☐BC☐5**	1	1 unit	42H
1 200	--	710	**800**	--	--	1 065	--	--	950	**1 200**	C	**3RW44 57-☐BC☐5**	1	1 unit	42H
1 351	--	800	**900**	--	--	1 200	--	--	1 050	**1 350**	C	**3RW44 65-☐BC☐5**	1	1 unit	42H
1 524	--	900	**1 000**	--	--	1 351	--	--	1 200	**1 500**	C	**3RW44 65-☐BC☐5**	1	1 unit	42H
1 680	--	1 000	**1 200**	--	--	1 472	--	--	1 300	**1 650**	C	**3RW44 65-☐BC☐5**	1	1 unit	42H
--	--	--	--	--	--	1 680	--	--	1 500	**1 900**	C	**3RW44 66-☐BC☐5**	1	1 unit	42H
Order No. supplement for connection types															
• With spring-type terminals												**2**			
• With screw terminals												**6**			
Order No. supplement for the rated control supply voltage U_s[3]															
• 115 V AC												**3**			
• 230 V AC												**4**			

For online configurator see www.siemens.com/sirius/configurators.

1) In the selection table, the unit rated current I_e refers to the induction motor's rated operational current in the inside-delta circuit. The actual current of the device is approx. 58 % of this value.

2) Soft starter with screw terminals:
3RW44 2. to 3RW44 4. Delivery time class A
3RW44 5. to 3RW44 6. Delivery time class B.

3) Control by way of the internal 24 V DC supply and direct control by means of PLC possible.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The SIRIUS 3RW44 solid-state soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 40
- Maximum starting current in % of motor current I_e: 350
- Maximum number of starts per hour in 1/h: 1

In the event of more exacting requirements, it may be necessary to choose a larger device. However, in some cases the designed-in safety reserves also permit the listed units to be used in boundary conditions which are slightly more demanding. For detailed technical information for a configuration which is tailored exactly to the application see "Manuals". Siemens recommends the use of the selection and simulation program Win-Soft Starter.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RW44 for very heavy starting (CLASS 30) in inside-delta circuit


3RW44 2.


3RW44 3.


3RW44 4.


3RW44 5.


3RW44 6.

3RW ambient temperature 40 °C[1]						3RW ambient temperature 50 °C[1]					DT	Very heavy starting (CLASS 30) in inside-delta circuit	PU (UNIT, SET, M)	PS*	PG
Rated values of induction motors						Rated values of induction motors						Configurator			
Operational current I_e	Rating at operational voltage U_e					Operational current I_e	Rating at operational voltage U_e					Order No. / Price per PU			
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V					
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp					
Inside-delta circuit, rated operational voltage 200 ... 460 V[2]															
50	15	**22**	--	--	--	45	10	15	**30**	--	▶	**3RW44 23-□BC□4**	1	1 unit	42H
62	18.5	**30**	--	--	--	55	15	20	**40**	--	▶	**3RW44 24-□BC□4**	1	1 unit	42H
81	22	**45**	--	--	--	73	20	25	**50**	--	▶	**3RW44 25-□BC□4**	1	1 unit	42H
99	30	**55**	--	--	--	88	25	30	**60**	--	▶	**3RW44 25-□BC□4**	1	1 unit	42H
133	37	**75**	--	--	--	118	30	40	**75**	--	▶	**3RW44 27-□BC□4**	1	1 unit	42H
Order No. supplement for connection types															
• With screw terminals												**1**			
• With spring-type terminals												**3**			
161	45	**90**	--	--	--	142	40	50	**100**	--	B	**3RW44 35-□BC□4**	1	1 unit	42H
196	55	**110**	--	--	--	173	50	60	**125**	--	B	**3RW44 36-□BC□4**	1	1 unit	42H
232	75	**132**	--	--	--	203	60	75	**150**	--	B	**3RW44 43-□BC□4**	1	1 unit	42H
281	90	**160**	--	--	--	251	75	100	**200**	--	B	**3RW44 43-□BC□4**	1	1 unit	42H
352	110	**200**	--	--	--	312	100	125	**250**	--	B	**3RW44 45-□BC□4**	1	1 unit	42H
433	132	**250**	--	--	--	372	125	150	**300**	--	B	**3RW44 47-□BC□4**	1	1 unit	42H
542	160	**315**	--	--	--	485	150	200	**400**	--	C	**3RW44 53-□BC□4**	1	1 unit	42H
617	200	**355**	--	--	--	546	150	200	**450**	--	C	**3RW44 53-□BC□4**	1	1 unit	42H
748	250	**400**	--	--	--	667	200	250	**600**	--	C	**3RW44 53-□BC□4**	1	1 unit	42H
954	315	**560**	--	--	--	856	300	350	**750**	--	C	**3RW44 55-□BC□4**	1	1 unit	42H
1 065	355	**630**	--	--	--	954	350	400	**850**	--	C	**3RW44 58-□BC□4**	1	1 unit	42H
1 200	400	**710**	--	--	--	1 065	350	450	**950**	--	C	**3RW44 65-□BC□4**	1	1 unit	42H
1 351	450	**800**	--	--	--	1 200	450	500	**1 050**	--	C	**3RW44 65-□BC□4**	1	1 unit	42H
1 524	500	**900**	--	--	--	1 351	450	600	**1 200**	--	C	**3RW44 65-□BC□4**	1	1 unit	42H
--	--	--	--	--	--	1 472	550	650	**1 300**	--	C	**3RW44 66-□BC□4**	1	1 unit	42H
Order No. supplement for connection types															
• With spring-type terminals												**2**			
• With screw terminals												**6**			
Order No. supplement for the rated control supply voltage U_s[3]															
• 115 V AC												**3**			
• 230 V AC												**4**			

⚙ For online configurator see www.siemens.com/sirius/configurators.

[1] In the selection table, the unit rated current I_e refers to the induction motor's rated operational current in the inside-delta circuit. The actual current of the device is approx. 58 % of this value.

[2] 3RW44 2.to 3RW44 4. soft starters with screw terminals: delivery time class ▶ (preferred type).

[3] Control by way of the internal 24 V DC supply and direct control by means of PLC possible.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The SIRIUS 3RW44 solid-state soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 60
- Maximum starting current in % of motor current I_e: 350
- Maximum number of starts per hour in 1/h: 1

In the event of more exacting requirements, it may be necessary to choose a larger device. However, in some cases the designed-in safety reserves also permit the listed units to be used in boundary conditions which are slightly more demanding. For detailed technical information for a configuration which is tailored exactly to the application see "Manuals". Siemens recommends the use of the selection and simulation program Win-Soft Starter.

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3RW44

3RW ambient temperature 40 °C[1]						3RW ambient temperature 50 °C[1]					DT	Very heavy starting (CLASS 30) in inside-delta circuit	PU (UNIT, SET, M)	PS*	PG
Rated values of induction motors						Rated values of induction motors						Configurator			
Operational current I_e	Rating at operational voltage U_e					Operational current I_e	Rating at operational voltage U_e					Order No. / Price per PU			
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V					
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp					
Inside-delta circuit, rated operational voltage 400 ... 600 V[2]															
50	--	22	**30**	--	--	45	--	--	30	**40**	A	**3RW44 23-☐BC☐5**	1	1 unit	42H
62	--	30	**37**	--	--	55	--	--	40	**50**	A	**3RW44 24-☐BC☐5**	1	1 unit	42H
81	--	45	**45**	--	--	73	--	--	50	**60**	A	**3RW44 25-☐BC☐5**	1	1 unit	42H
99	--	55	**55**	--	--	88	--	--	60	**75**	A	**3RW44 25-☐BC☐5**	1	1 unit	42H
133	--	75	**90**	--	--	118	--	--	75	**100**	A	**3RW44 27-☐BC☐5**	1	1 unit	42H
Order No. supplement for connection types															
• With screw terminals												**1**			
• With spring-type terminals												**3**			
161	--	90	**110**	--	--	142	--	--	100	**125**	B	**3RW44 35-☐BC☐5**	1	1 unit	42H
196	--	110	**132**	--	--	173	--	--	125	**150**	B	**3RW44 36-☐BC☐5**	1	1 unit	42H
232	--	132	**160**	--	--	203	--	--	150	**200**	B	**3RW44 43-☐BC☐5**	1	1 unit	42H
281	--	160	**200**	--	--	251	--	--	200	**250**	B	**3RW44 43-☐BC☐5**	1	1 unit	42H
352	--	200	**250**	--	--	312	--	--	250	**300**	B	**3RW44 45-☐BC☐5**	1	1 unit	42H
433	--	250	**315**	--	--	372	--	--	300	**350**	B	**3RW44 47-☐BC☐5**	1	1 unit	42H
542	--	315	**355**	--	--	485	--	--	400	**500**	C	**3RW44 53-☐BC☐5**	1	1 unit	42H
617	--	355	**450**	--	--	546	--	--	450	**600**	C	**3RW44 53-☐BC☐5**	1	1 unit	42H
748	--	400	**500**	--	--	667	--	--	600	**750**	C	**3RW44 53-☐BC☐5**	1	1 unit	42H
954	--	560	**630**	--	--	856	--	--	750	**950**	C	**3RW44 55-☐BC☐5**	1	1 unit	42H
1 065	--	630	**710**	--	--	954	--	--	850	**1 050**	C	**3RW44 58-☐BC☐5**	1	1 unit	42H
1 200	--	710	**800**	--	--	1 065	--	--	950	**1 200**	C	**3RW44 65-☐BC☐5**	1	1 unit	42H
1 351	--	800	**900**	--	--	1 200	--	--	1 050	**1 350**	C	**3RW44 65-☐BC☐5**	1	1 unit	42H
1 524	--	900	**1 000**	--	--	1 351	--	--	1 200	**1 500**	C	**3RW44 65-☐BC☐5**	1	1 unit	42H
--	--	--	--	--	--	1 472	--	--	1 300	**1 650**	C	**3RW44 66-☐BC☐5**	1	1 unit	42H
Order No. supplement for connection types															
• With spring-type terminals												**2**			
• With screw terminals												**6**			
Order No. supplement for the rated control supply voltage U_s[3]															
• 115 V AC												**3**			
• 230 V AC												**4**			

For online configurator see www.siemens.com/sirius/configurators.

1) In the selection table, the unit rated current I_e refers to the induction motor's rated operational current in the inside-delta circuit. The actual current of the device is approx. 58 % of this value.

2) Soft starter with screw terminals:
3RW44 2. to 3RW44 4. Delivery time class A
3RW44 5. to 3RW44 6. Delivery time class B.

3) Control by way of the internal 24 V DC supply and direct control by means of PLC possible.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The SIRIUS 3RW44 solid-state soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 60
- Maximum starting current in % of motor current I_e: 350
- Maximum number of starts per hour in 1/h: 1

In the event of more exacting requirements, it may be necessary to choose a larger device. However, in some cases the designed-in safety reserves also permit the listed units to be used in boundary conditions which are slightly more demanding. For detailed technical information for a configuration which is tailored exactly to the application see "Manuals". Siemens recommends the use of the selection and simulation program Win-Soft Starter.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Accessories

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Soft Starter ES 2007 PC communication program[1]						
 **Soft Starter ES 2007 Basic** Floating license for one user E-SW, software and documentation on CD, 3 languages (German/English/French), communication through system interface						
• License key on USB stick, Class A, including CD	B	**3ZS1 313-4CC10-0YA5**		1	1 unit	42H
Soft Starter ES 2007 Standard **Floating license for one user** E-SW, software and documentation on CD, 3 languages (German/English/French), communication through system interface						
• License key on USB stick, Class A, including CD	B	**3ZS1 313-5CC10-0YA5**		1	1 unit	42H
Soft Starter ES 2007 Premium Floating license for one user E-SW, software and documentation on CD, 3 languages (German/English/French), communication through system interface or PROFIBUS						
• License key on USB stick, Class A, including CD	B	**3ZS1 313-6CC10-0YA5**		1	1 unit	42H
SIRIUS 3RW44 soft starter block library for SIMATIC PCS 7[1]						
 3ZS1 633-1XX00-0YA0						
Scope of supply: AS modules and faceplates for integrating SIRIUS 3RW44 into the PCS 7 process control system, for PCS 7, version V 6.1/V 7.0						
Engineering software for one engineering station (single license) including runtime software for execution of the AS module in an automation system (single license), German/English, Type of delivery: on CD incl. electronic documentation in German/English/Portuguese	►	**3ZS1 633-1XX00-0YA0**		1	1 unit	42H
Runtime software for execution of the AS module in an automation system (single license), Type of delivery: License without software and documentation	►	**3ZS1 633-2XX00-0YB0**		1	1 unit	42H

[1] Detailed information about the Soft Starter ES software program and about the SIRIUS 3RW44 soft starter block library for SIMATIC PCS 7 see Chapter 14 "Parametrization, Configuration and Visualization with SIRIUS".

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3RW44

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
PC cables							
 3UF7 940-0AA00-0	**For PC/PG communication with SIRIUS 3RW44 soft starters** Through the system interface, for connecting to the serial interface of the PC/PG	►	**3UF7 940-0AA00-0**		1	1 unit	42J
USB/serial adapters							
	For connecting the PC cable to the USB interface of a PC We recommend, in conjunction with 3RW44 soft starter, using SIMOCODE pro 3UF7, 3RK3 modular safety system, ET 200S/ECOFAST/ET 200pro motor starters, AS-i safety monitor, AS-i analyzer	B	**3UF7 946-0AA00-0**		1	1 unit	42J
PROFIBUS communication modules							
 3RW49 00-0KC00	Modules can be plugged into the soft starters for integrating the starters in the PROFIBUS network with DPV1 slave functionality. With firmware version E04 and higher (or date of manufacture 01.05.2009 and later) of the module, DPV1 operation of the soft starter on a Y-link is also possible (with < E04 only DPV0 operation possible).	A	**3RW49 00-0KC00**		1	1 unit	42H
External display and operator module							
 3RW49 00-0AC00	For indicating and operating the functions provided by the soft starter using an externally mounted display and operator module in degree of protection IP54 (e.g. in the control cabinet door)	►	**3RW49 00-0AC00**		1	1 unit	42H
	Connection cable From the device interface (serial) of the 3RW44 soft starter to the external display and operator module						
	• Length 0.5 m, flat	►	**3UF7 932-0AA00-0**		1	1 unit	42J
	• Length 0.5 m, round	►	**3UF7 932-0BA00-0**		1	1 unit	42J
	• Length 1.0 m, round	►	**3UF7 937-0BA00-0**		1	1 unit	42J
	• Length 2.5 m, round	►	**3UF7 933-0BA00-0**		1	1 unit	42J

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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For soft starters Type	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Box terminal blocks for soft starters							
 3RT19	**Box terminal block** (2 units are required for each device)						
3RW44 2.	Included in the scope of supply						
3RW44 3.	• Up to 70 mm²	▶	**3RT19 55-4G**		1	1 unit	41B
	• Up to 120 mm²	▶	**3RT19 56-4G**		1	1 unit	41B
	Auxiliary conductor connection for box terminals	B	**3TX7 500-0A**		1	1 unit	41B
3RW44 4.	• Up to 240 mm² (with auxiliary conductor connection)	▶	**3RT19 66-4G**		1	1 unit	41B
Covers for soft starters							
	Terminal covers for box terminals Additional touch protection to be fitted at the box terminals (2 units required per device)						
3RW44 2. and 3RW44 3.		▶	**3RT19 56-4EA2**		1	1 unit	41B
3RW44 4.		▶	**3RT19 66-4EA2**		1	1 unit	41B
 3RT19.6-4EA1	**Terminal covers for cable lugs and busbar connections**						
3RW44 2. and 3RW44 3.	For complying with the phase clearances and as touch protection (2 units required per device) Also fits on mounted box terminals.	▶	**3RT19 56-4EA1**		1	1 unit	41B
3RW44 4.		▶	**3RT19 66-4EA1**		1	1 unit	41B
Manual 3RW44[1]							
3RW44	• German	C	**3ZX10 12-0RW44-1AB1**		1	1 unit	401
	• English	C	**3ZX10 12-0RW44-1AC1**		1	1 unit	401
	• French	C	**3ZX10 12-0RW44-1AD1**		1	1 unit	401
	• Spanish (Mex)	C	**3ZX10 12-0RW44-1AE1**		1	1 unit	401
	• Spanish (Ibero)	C	**3ZX10 12-0RW44-1AL1**		1	1 unit	401
	• Italian	C	**3ZX10 12-0RW44-1AF1**		1	1 unit	401
	• Portuguese	C	**3ZX10 12-0RW44-1AG1**		1	1 unit	401
	• Turkish	C	**3ZX10 12-0RW44-1AH1**		1	1 unit	401
	• Russian	C	**3ZX10 12-0RW44-1AJ1**		1	1 unit	401
	• Chinese	C	**3ZX10 12-0RW44-1AK1**		1	1 unit	401

1) The operating instructions for 3RW44 (3ZX10 12-0RW44-0AA0) are included in the scope of supply of the soft starter or are available – like the manual – as a PDF download from the Service&Support portal at www.siemens.com/industrial-controls/support --> "Controls" --> "Soft Starters and Solid-State Switching Devices" --> "SIRIUS 3RW Soft Starters".

Spare parts

For soft starters Type	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Fans							
 3RW49	**Fans**						
3RW44 2. and 3RW44 3.	115 V AC	▶	**3RW49 36-8VX30**		1	1 unit	42G
	230 V AC	▶	**3RW49 36-8VX40**		1	1 unit	42G
3RW44 4.	115 V AC	▶	**3RW49 47-8VX30**		1	1 unit	42G
	230 V AC	▶	**3RW49 47-8VX40**		1	1 unit	42G
3RW44 5. and 3RW44 6.[1]	115 V AC	▶	**3RW49 57-8VX30**		1	1 unit	42H
	230 V AC	▶	**3RW49 57-8VX40**		1	1 unit	42H
3RW44 6.[2]	115 V AC	▶	**3RW49 66-8VX30**		1	1 unit	42H
	230 V AC	▶	**3RW49 66-8VX40**		1	1 unit	42H

1) 3RW44 6. mounting on output side.
2) For mounting on front side.

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More information

Application examples for normal starting (CLASS 10)

Normal starting CLASS 10 (up to 20 s with 350 % $I_{n\ motor}$)
The soft starter rating can be selected to be as high as the rating of the motor used

Application		Conveyor belt	Roller conveyor	Compressor	Small fans[1]	Pump	Hydraulic pump
Starting parameters							
• Voltage ramp and current limiting							
- Starting voltage	%	70	60	50	30	30	30
- Starting time	s	10	10	10	10	10	10
- Current limit value		Deactivated	Deactivated	4 x I_M	4 x I_M	Deactivated	Deactivated
• Torque ramp							
- Starting torque		60	50	40	20	10	10
- End torque		150	150	150	150	150	150
- Starting time		10	10	10	10	10	10
• Breakaway pulse		Deactivated (0 ms)	Deactivated (0 ms)	Deactivated (0 ms)	Deactivated (0 ms)	Deactivated (0 ms)	Deactivated (0 ms)
Ramp-down mode		Smooth ramp-down	Smooth ramp-down	Free ramp-down	Free ramp-down	Pump ramp-down	Free ramp-down

Application examples for heavy starting (CLASS 20)

Heavy starting CLASS 20 (up to 40 s with 350 % $I_{n\ motor}$)
The soft starter has to be selected one performance class higher than the motor used

Application		Stirrer	Centrifuge	Milling machines
Starting parameters				
• Voltage ramp and current limiting				
- Starting voltage	%	30	30	30
- Starting time	s	30	30	30
- Current limit value		4 x I_M	4 x I_M	4 x I_M
• Torque ramp				
- Starting torque		30	30	30
- End torque		150	150	150
- Starting time		30	30	30
• Breakaway pulse		Deactivated (0 ms)	Deactivated (0 ms)	Deactivated (0 ms)
Ramp-down mode		Free ramp-down	Free ramp-down	Free ramp-down or DC braking

Application examples for very heavy starting (CLASS 30)

Very heavy starting CLASS 30 (up to 60 s with 350 % $I_{n\ motor}$)
The soft starter has to be selected two performance classes higher than the motor used

Application		Large fans[2]	Mills	Breakers	Circular saws/bandsaws
Starting parameters					
• Voltage ramp and current limiting					
- Starting voltage	%	30	50	50	30
- Starting time	s	60	60	60	60
- Current limit value		4 x I_M	4 x I_M	4 x I_M	4 x I_M
• Torque ramp					
- Starting torque		20	50	50	20
- End torque		150	150	150	150
- Starting time		60	60	60	60
• Breakaway pulse		Deactivated (0 ms)	80 %; 300 ms	80 %; 300 ms	Deactivated (0 ms)
Ramp-down mode		Free ramp-down	Free ramp-down	Free ramp-down	Free ramp-down

1) The mass inertia of the fan is <10 times the mass inertia of the motor.
2) The mass inertia of the fan is ≥10 times the mass inertia of the motor.

Note:

These tables present sample set values and device sizes. They are intended only for the purposes of information and are not binding. The set values depend on the application in question and must be optimized during commissioning.

The soft starter dimensions should be checked where necessary with the Win-Soft Starter software or with the help of Technical Assistance.

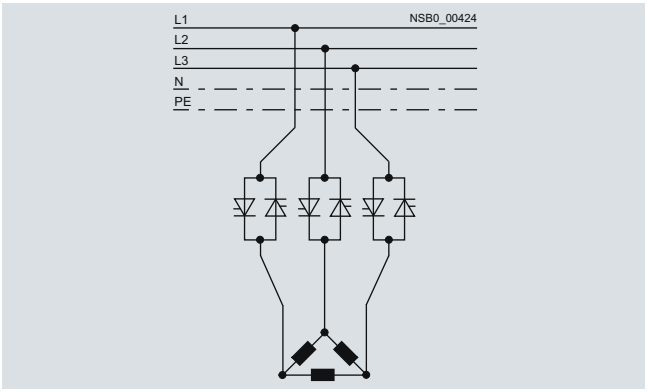
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Circuit concept

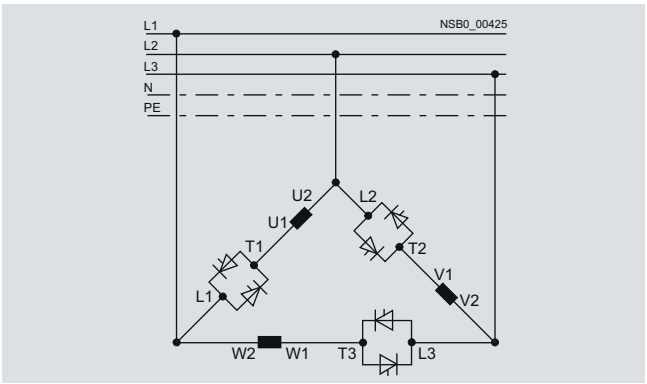
The SIRIUS 3RW44 soft starters can be operated in two different types of circuit.

- Inline circuit
  The controls for isolating and protecting the motor are simply connected in series with the soft starter. The motor is connected to the soft starter with three cables.
- Inside-delta circuit
  The wiring is similar to that of wye-delta starters. The phases of the soft starter are connected in series with the individual motor windings. The soft starter then only has to carry the phase current, amounting to about 58 % of the rated motor current (conductor current).

Comparison of the types of circuit



Inline circuit:
Rated current I_e corresponds to the rated motor current I_n,
3 cables to the motor



Inside-delta circuit:
Rated current I_e corresponds to approx. 58 % of the rated motor current I_n, 6 cables to the motor (as with wye-delta starters)

Which circuit?

Using the inline circuit involves the lowest wiring outlay. If the soft starter to motor connections are long, this circuit is preferable. With the inside-delta circuit there is double the wiring complexity but a smaller size of device can be used at the same rating.

Thanks to the choice of operating mode between the inline circuit and inside-delta circuit, it is always possible to select the most favorable solution.

The braking function is possible only in the inline circuit.

Configuration

The 3RW44 solid-state soft starters are designed for normal starting. In case of heavy starting or increased starting frequency, a larger device must be selected.

For long starting times it is recommended to have a PTC sensor in the motor. This also applies for the ramp-down modes smooth ramp-down, pump ramp-down and DC braking, because during the ramp-down time in these modes, an additional current loading applies in contrast to free ramp-down.

No capacitive elements are permitted in the motor feeder between the SIRIUS 3RW soft starter and the motor (e.g. no reactive-power compensation equipment). In addition, neither static systems for reactive-power compensation nor dynamic PFC (Power Factor Correction) must be operated in parallel during starting and ramp-down of the soft starter. This is important to prevent faults arising on the compensation equipment and/or the soft starter.

All elements of the main circuit (such as fuses and controls) should be dimensioned for direct starting, following the local short-circuit conditions. Fuses, controls and overload relays must be ordered separately.

A bypass contact system and solid-state overload relay are already integrated in the 3RW44 soft starter and therefore do not have to be ordered separately.

The harmonic component load for starting currents must be taken into consideration for the selection of motor starter protectors (selection of release).

Note:

When induction motors are switched on, voltage drops occur as a rule on starters of all types (direct starters, wye-delta starters, softstarters). The infeed transformer must always be dimensioned such that the voltage dip when starting the motor remains within the permissible tolerance. If the infeed transformer is dimensioned with only a small margin, it is best for the control voltage to be supplied from a separate circuit (independently of the main voltage) in order to avoid the potential switching off of the soft starter.

Device interface, PROFIBUS DP communication module, Soft Starter ES parameterizing and operating software

The 3RW44 electronic soft starters have a PC interface for communicating with the Soft Starter ES software or for connecting the external display and operator module. If the optional PROFIBUS communication module is used, the 3RW44 soft starter can be integrated in the PROFIBUS network and communicate using the GSD file or Soft Starter ES Premium software.

SIRIUS 3RW44 soft starter block library for SIMATIC PCS 7

The SIRIUS 3RW44 soft starter PCS 7 block library can be used for simple and easy integration of SIRIUS 3RW44 soft starters into the SIMATIC PCS 7 process control system. The SIRIUS 3RW44 soft starter PCS 7 block library contains the diagnostics and driver blocks corresponding with the SIMATIC PCS 7 diagnostics and driver concept as well as the elements (symbols and faceplates) required for operator control and process monitoring.

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3RW44

Manual for SIRIUS 3RW44

Besides containing all important information on configuring, commissioning and servicing, the manual also contains example circuits and the technical specifications for all devices.

Win-Soft Starter selection and simulation program

With this software, you can simulate and select all Siemens soft starters, taking into account various parameters such as mains properties, motor and load data, and special application requirements.

The software is a valuable tool, which makes complicated, lengthy manual calculations for determining the required soft starters superfluous.

The Win-Soft Starter selection and simulation program can be downloaded from:
www.siemens.com/softstarter → Software

You can find more information about soft starters on the Internet at:
www.siemens.com/softstarter

Training course for SIRIUS soft starters (SD-SIRIUSO)

Siemens offers a 2-day training course on the SIRIUS solid-state soft starters to keep customers and own personnel up-to-date on configuring, commissioning and maintenance issues.

You can find more information on our SITRAIN website:

www.siemens.com/sitrain
→ For course name select "SD-SIRIUSO"

See also Chapter 16, "Appendix" → "Training"

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Overview

Type	Solid-state relays			Solid-state contactors		Function modules					
	Single-phase		3-phase	Single-phase	3-phase	Converters	Load monitoring		Heating current monitoring	Power controllers	Power regulators
	22.5 mm	45 mm	45 mm				Basic	Extended			
Usage											
Simple use of existing solid-state relays	❑	✓	❑	❑	❑	--	--	--	--	--	--
Complete unit "Ready to use"	❑	❑	❑	✓	✓	--	--	--	--	--	--
Space-saving	✓	--	✓	✓	✓	✓	✓	--	--	--	--
Can be extended with modular function modules	✓	--	[1]	✓	[1]	--	--	--	--	--	--
Frequent switching and monitoring of loads and solid-state relays/solid-state contactors	--	--	--	--	--	--	✓	✓	✓	✓	✓
Monitoring of up to 6 partial loads	--	--	--	--	--	--	✓	--	✓	✓	--
Monitoring of more than 6 partial loads	--	--	--	--	--	--	--	✓	--	--	--
Control of the heating power through an analog input	--	--	--	--	--	✓	--	--	--	✓	✓
Power control	--	--	--	--	--	--	--	--	--	--	✓
Startup											
Easy setting of set-point values with "Teach" button	--	--	--	--	--	--	✓	✓	--	✓	✓
"Remote Teach" input for setting set-points	--	--	--	--	--	--	--	--	✓	--	--
Mounting											
Mounting onto mounting rails or mounting plates	--	--	--	✓	✓	--	--	--	--	--	--
Can be snapped directly onto a solid-state relays or contactors	--	--	--	--	--	✓	✓	✓	✓	✓	✓
For use with "Coolplate" heat sink	✓	✓	✓	--	--	--	--	--	--	--	--
Cable routing											
Connection of load circuit as for controlgears	✓	--	✓	✓	✓	--	✓	✓	✓	✓	✓
Connection of load circuits from above	--	✓	--	--	--	--	--	--	--	--	--

✓ Function is available

❑ Function is possible

-- Function not available

[1] The converter can also be used with three-phase devices.

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General data

Order No. scheme

Digit of the Order No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th
	□□□	□	□	□	□	–	□	□	□	□	□
Solid-State Switching Devices	**3 R F**										
SIRIUS solid-state switching device generation		□									
Design			□								
Type current				□	□						
Connection type							□				
Switching function								□			
Single-phase or number of controlled phases									□		
Rated control supply voltage										□	
Rated operational voltage											□
Example	**3 R F**	**2**	**1**	**2**	**0**	**–**	**1**	**A**	**A**	**0**	**4**

Note:

The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quoted in the catalog in the Selection and ordering data.

6

Benefits

Characteristics

- Considerable space savings thanks to a width of only 22.5 mm
- Variety of connection methods: Screw terminal, spring-type connection or ring terminal lug, there is no problem – they are all finger-safe
- Flexible for all applications with function modules for retrofitting
- Possibility of fuseless short-circuit proof design

Benefits

- Saves time and costs with fast mounting and commissioning, short start-up times and easy wiring
- Extremely long life, low maintenance, rugged and reliable
- Space-saving and safe thanks to side-by-side mounting up to an ambient temperature of +60 °C
- Modular design: Standardized function modules and heat sinks can be used in conjunction with solid-state relays to satisfy individual requirements
- Safety due to lifelong, vibration-resistant and shock-resistant spring-type terminal connection method even under tough conditions

Application

Applications

Example: Plastics processing industry

Thanks to their high switching endurance, SIRIUS solid-state switching devices are ideally suited for use in the control of electrical heat. This is because the more precise the temperature regulation process has to be, the higher the switching frequency. The accurate regulation of electrical heat is used for example in many processes in the plastics processing industry:

- Band heaters heat the extrudate to the correct temperature in plastic extruders
- Heat emitters heat plastic blanks to the correct temperature
- Heat drums dry plastic granules
- Heating channels keep molds at the correct temperature in order to manufacture different plastic parts without defects.

The powerful SIRIUS solid-state relays and contactors can be used to control several heating loads at the same time. By using a load monitoring module the individual partial loads can easily be monitored, and in the event of a failure a signal is generated to be sent to the controller.

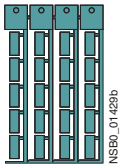
Use in fuseless load feeders

Short-circuit protection and line protection with miniature circuit breakers is easy to achieve with SIRIUS solid-state relays and solid-state contactors in comparison with designing load feeders with fuses. A special version of the solid-state contactors can be protected against damage in the case of a short circuit with a miniature circuit breaker with type B tripping characteristic. This allows the low-cost and simple design of fuseless load feeders with full protection of the switchgear.

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Selection and ordering data

Inscription labels for 3RF2 series

	Designation	Labeling area (W x H)	Color	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		mm x mm							
Blank labels									
 NSBO_01429b	**Unit labeling plates for "SIRIUS"**[1]	10 x 7	Pastel turquoise	C	**3RT19 00-1SB10**		100	816 units	41B
		20 x 7	Pastel turquoise	D	**3RT19 00-1SB20**		100	340 units	41B
	Labels for sticking for SIRIUS	19 x 6	Pastel turquoise	C	**3RT19 00-1SB60**		100	3060 units	41B
		19 x 6	Zinc yellow	C	**3RT19 00-1SD60**		100	3060 units	41B

Unit labeling plates
(1 frame = 20 units)

[1] Computer labeling system for individual inscription of unit labeling plates are available from:
Murrplastik Systemtechnik GmbH
(see Chapter 16, "Appendix" → "External Partners").

More information

Notes on integration in the load feeders

The SIRIUS solid-state switching devices are very easy to integrate into the load feeders thanks to their industrial connection method and design.

Particular attention must however be paid to the circumstances of the installation and ambient conditions, as the performance of the solid-state switching devices is largely dependent on these. Depending on the version, certain restrictions must be observed. Detailed information, for example in relation to solid-state contactors about the minimum spacing and to solid-state relays about the choice of heat sink, is given in the technical specifications (see manual) and the product data sheets.

Short-circuit and overload protection

Despite the rugged power semiconductors that are used, solid-state switching devices respond more sensitively to short circuits in the load feeder. Consequently, special precautions have to be taken against destruction, depending on the type of design.

Siemens generally recommends using SITOR semiconductor protection fuses. These fuses also provide protection against destruction in the event of a short circuit even when the solid-state contactors and solid-state relays are fully utilized.

Alternatively, if there is lower loading, protection can also be provided by standard fuses or miniature circuit breakers. This protection is achieved by overdimensioning the solid-state switching devices accordingly. The technical specifications and the product data sheets contain details both about the solid-state fuse protection itself and about use of the devices with conventional protection equipment.

Electromagnetic compatibility (EMC)

The solid-state switching devices are suitable for interference-free operation in industrial networks without further measures. If they are used in public networks, it may be necessary for conducted interference to be reduced by means of filters.

This does not include the solid-state contactors for resistive loads of the special type 3RF23 ..-.CA.. "Low Noise". These comply with the class B limit values up to a rated current of 16 A. If other versions are used, and at currents of over 16 A, standard filters can be used in order to comply with the limit values. The decisive factors when it comes to selecting the filters are essentially the current loading and the other parameters (operational voltage, design type, etc.) in the load feeder.

Suitable filters can be ordered from EPCOS AG. More information is available on the Internet at:

www.epcos.com

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General data

Overview

Solid-state relays

SIRIUS solid-state relays are suitable for surface mounting on existing cooling surfaces. Mounting is quick and easy, involving just two screws. The special technology of the power semiconductor ensures there is excellent thermal contact with the heat sink. Depending on the nature of the heat sink, the capacity reaches up to 88 A on resistive loads.

The solid-state relays are available in three different versions:

- 3RF21 single-phase solid-state relay with a width of 22.5 mm
- 3RF20 single-phase solid-state relay with a width of 45 mm
- 3RF22 three-phase solid-state relay with a width of 45 mm

The 3RF21 and 3RF22 solid-state relays can be expanded with various function modules to adapt them to individual applications.

Version for resistive loads, "zero-point switching"

This standard version is often used for switching space heaters on and off.

Version for inductive loads, "instantaneous switching"

In this version the solid-state relay is specifically matched to inductive loads. Whether it is a matter of frequent actuation of the valves in a filling plant or starting and stopping small operating mechanisms in packet distribution systems, operation is carried out safely and noiselessly.

Special "Low noise" version

Thanks to a special control circuit, this special version can be used in public networks up to 16 A without any additional measures such as interference suppressor filters. As a result, in terms of emitted interference, it conforms to limit value curve class B according to IEC 60947-4-3.

Single-phase solid-state relays with a width of 22.5 mm

With its compact design and a width of just 22.5 mm, which stays the same even at currents of up to 88 A, the 3RF21 solid-state relay offers an ultra small footprint. The logical connection method, with the power infeed from above and load connection from below, ensures tidy installation in the control cabinet.

Single-phase solid-state relays with a width of 45 mm

The solid-state relays with a width of 45 mm provide for connection of the power supply lead and the load from above. This makes it easy to replace existing solid-state relays in existing arrangements. The connection of the control cable also saves space in much the same way as the 22.5 mm design, as it is simply plugged on.

Three-phase solid-state relays with a width of 45 mm

With its compact design and a width of just 45 m, which stays the same even at currents of up to 55 A, the 3RF22 solid-state relay offers an ultra small footprint. The logical connection method, with the power infeed from above and load connection from below, ensures tidy installation in the control cabinet.

The three-phase solid-state relays are available with

- two-phase control (suitable in particular for circuits without connection to the neutral conductor) and
- three-phase control (suitable for star circuits with connection to the neutral conductor or for applications in which the system requires all phases to be switched)

Selection notes

When selecting solid-state relays, in addition to information about the network, the load and the ambient conditions it is also necessary to know details of the planned design. The solid-state relays can only conform to their specific technical specifications if they are mounted with appropriate care on an adequately dimensioned heat sink.

The following procedure is recommended:

- Determine the rated current of the load and the mains voltage
- Select the relay design and choose a solid-state relay with higher rated current than the load
- Determine the thermal resistance of the proposed heat sink
- Check the correct relay size with the aid of the diagrams

More information is available on the Internet at:

www.siemens.com/solid-state-switching-devices

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SIRIUS 3RF21 solid-state relays, single-phase, 22.5 mm

Overview

With its compact design and a width of just 22.5 mm, which stays the same even at currents of up to 88 A, the 3RF21 solid-state relay offers an ultra small footprint. The logical connection method, with the power infeed from above and load connection from below, ensures tidy installation in the control cabinet.

Technical specifications

Type		**3RF21 ..-1....**	**3RF21 ..-2....**	**3RF21 ..-3....**
Dimensions (W x H x D)	mm	22.5 x 85 x 48	22.5 x 85 x 48	22.5 x 85 x 48
General data				
Ambient temperature				
• During operation, derating from 40 °C	°C	-25 ... + 60		
• During storage	°C	-55 ... + 80		
Installation altitude	m	0 ... 1000; derating from 1000		
Shock resistance acc. to IEC 60068-2-27	*g*/ms	15/11		
Vibration resistance acc. to IEC 60068-2-6	*g*	2		
Degree of protection		IP20		
Electromagnetic compatibility (EMC)				
• Emitted interference				
- Conducted interference voltage according to IEC 60947-4-3		Class A for industrial applications		
- Emitted, high-frequency interference voltage according to IEC 60947-4-3		Class B for residential, business and commercial applications		
• Interference immunity				
- Electrostatic discharge according to IEC 61000-4-2 (corresponds to degree of severity 3)	kV	Contact discharge 4; air discharge 8; behavior criterion 2		
- Induced RF fields according to IEC 61000-4-6	MHz	0.15 ... 80; 140 dBµV; behavior criterion 1		
- Burst acc. to IEC 61000-4-4	kV	2/5.0 kHz; behavior criterion 2		
- Surge acc. to IEC 61000-4-5	kV	Conductor - ground 2; conductor - conductor 1; behavior criterion 2		
Mounting				
• Screws[1]		2 x M4		
• Tightening torque	Nm	1.5		
Connection type		**Screw terminals**	**Spring-type terminals**	**Ring terminal lug connections**
Connection, main contacts				
• Conductor cross-sections				
- Solid	mm^2	2 x (1.5 ... 2.5)[2], 2 x (2.5 ... 6)[2]	2 x (0.5 ... 2.5)	--
- Finely stranded with end sleeve	mm^2	2 x (1 ... 2.5)[2]; 2 x (2.5 ... 6)[2]; 1 x 10	2 x (0.5 ... 1.5)	--
- Finely stranded without end sleeve	mm^2	--	2 x (0.5 ... 2.5)	--
- Solid or stranded, AWG cables		2 x (AWG 14 ... 10)	2 x (AWG 18 ... 14)	--
• Terminal screws		M4	--	M5
• Tightening torque	Nm lb.in	2 ... 2.5 7 ... 10.3	-- --	2.5 ... 2 10.3 ... 7
• Cable lugs		--	--	
- According to DIN 46234				5-2.5, 5-6, 5-10, 5-16, 5-25
- According to JIS C 2805				R 2-5, R 5.5-5, R 8-5, R 14-5
- Width, maximum	mm			12
Connection, auxiliary/control contacts				
• Conductor cross-sections	mm AWG	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.0) 20 ... 12	0.5 ... 2.5 20 ... 12	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.0) 20 ... 12
• Stripped length	mm	7	10	7
• Terminal screw		M3	--	M3
• Tightening torque	Nm lb.in	0.5 ... 0.6 4.5 ... 5.3	-- --	0.5 ... 0.6 4.5 ... 5.3

1) Not included in the scope of supply.

2) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

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Solid-State Relays

SIRIUS 3RF21 solid-state relays, single-phase, 22.5 mm

Type	I_{max} [1] at R_{thha}/T_u = 40 °C		I_e according to IEC 60947-4-3 at R_{thha}/T_u = 40 °C		I_e according to UL/CSA at R_{thha}/T_u = 50 °C		Power loss at I_{max}	Minimum load current	Off-state current
	A	K/W	A	K/W	A	K/W	W	A	mA
Main circuit									
3RF21 20-.....	20	2.0	20	1.7	20	1.3	28.6	0.1	10
3RF21 30-1....	30	1.1	30	0.79	30	0.56	44.2	0.5	10
3RF21 50-1....	50	0.68	50	0.48	50	0.33	66	0.5	10
3RF21 50-2....	50	0.68	20	2.6	20	2.9	66	0.5	10
3RF21 50-3....	50	0.68	50	0.48	50	0.33	66	0.5	10
3RF21 70-1....	70	0.40	50	0.77	50	0.6	94	0.5	10
3RF21 90-1....	88	0.33	50	0.94	50	0.85	118	0.5	10
3RF21 90-2....	88	0.33	20	2.8	20	3.5	118	0.5	10
3RF21 90-3....	88	0.33	88	0.22	83	0.19	118	0.5	10

[1] I_{max} provides information about the performance of the solid-state relay. The actual permitted rated operational current I_e can be smaller depending on the connection method and cooling conditions.

Note:

The required heat sinks for the corresponding load currents can be determined from the characteristic curves (see "Technical Information"). The minimum thickness values for the mounting surface must be observed.

Type	Rated peak withstand current I_{tsm}	I^2t value
	A	A^2s
Main circuit		
3RF21 20-.....	200	200
3RF21 30-..A.2	300	450
3RF21 30-..A.4	300	450
3RF21 30-..A.5	300	450
3RF21 30-..A.6	400	800
3RF21 50-.....	600	1800
3RF21 70-..A.2	1200	7200
3RF21 70-..A.4	1200	7200
3RF21 70-..A.5	1200	7200
3RF21 70-..A.6	1150	6600
3RF21 90-.....	1150	6600

Type		3RF21 ..-....2	3RF21 ..-....4	3RF21 ..-....5	3RF21 ..-....6
Main circuit					
Rated operational voltage U_e	V AC	24 ... 230	48 ... 460	48 ... 600	48 ... 600
• Operating range	V AC	20 ... 253	40 ... 506	40 ... 660	40 ... 660
• Rated frequency	Hz	50/60 ± 10 %			
Rated insulation voltage U_i	V	600			
Blocking voltage	V	800	1200		1600
Rage of voltage rise	V/µs	1000			

Type		3RF21 ..-...0.	3RF21 ..-...1.		3RF21 ..-...2.	3RF21 ..-...4.
Control circuits						
Method of operation		DC operation	AC/DC operation		AC operation	DC operation
Rated control supply voltage U_s	V	24 acc. to IEC 61131-2	24 AC	24 DC	110 ... 230	4 ... 30
Rated frequency of the control supply voltage	Hz	--	50/60 ± 10 %	--	50/60 ± 10 %	--
Control supply voltage, max.	V	30	26.5 AC	30 DC	253	30
Typical actuating current	mA	20/Low Power: 6.5[1]	20	20	15	20
Response voltage	V	15	14 AC	15 DC	90	4
Drop-out voltage	V	5	5 AC	5 DC	40	1
Operating times						
• ON-delay	ms	1 + max. one half-wave[2]	10 + max. one half-wave[2]		40 + max. one half-wave[2]	1 + max. one half-wave[2]
• OFF-delay	ms	1 + max. one half-wave	15 + max. one half-wave		40 + max. one half-wave	1 + max. one half-wave

[1] Applies to the version "Low Power" 3RF21 ..-.AA..-**0KN0**

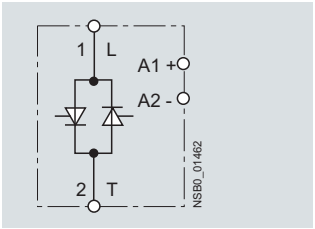
[2] Only for zero-point-switching devices.

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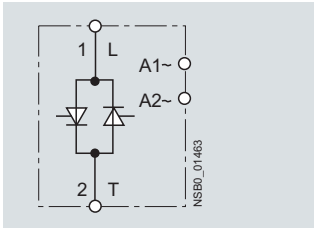
SIRIUS 3RF21 solid-state relays, single-phase, 22.5 mm

Circuit diagrams

DC control supply voltage



AC control supply voltage



Selection and ordering data

Type current[1]	Rated control supply voltage U_s	DT	Screw terminals[2] Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	V						
Zero-point switching Rated operational voltage U_e 24 ... 230 V AC							
20	24 DC acc. to IEC 61131-2	A	**3RF21 20-1AA02**		1	1 unit	41C
30		A	**3RF21 30-1AA02**		1	1 unit	41C
50		A	**3RF21 50-1AA02**		1	1 unit	41C
70		A	**3RF21 70-1AA02**		1	1 unit	41C
90		A	**3RF21 90-1AA02**		1	1 unit	41C
20	110 ... 230 AC	A	**3RF21 20-1AA22**		1	1 unit	41C
30		A	**3RF21 30-1AA22**		1	1 unit	41C
50		A	**3RF21 50-1AA22**		1	1 unit	41C
70		A	**3RF21 70-1AA22**		1	1 unit	41C
90		B	**3RF21 90-1AA22**		1	1 unit	41C
20	4 ... 30 DC	B	**3RF21 20-1AA42**		1	1 unit	41C
30		B	**3RF21 30-1AA42**		1	1 unit	41C
Zero-point switching Rated operational voltage U_e 48 ... 460 V AC							
20	24 DC acc. to IEC 61131-2	A	**3RF21 20-1AA04**		1	1 unit	41C
30		A	**3RF21 30-1AA04**		1	1 unit	41C
50		A	**3RF21 50-1AA04**		1	1 unit	41C
70		A	**3RF21 70-1AA04**		1	1 unit	41C
90		A	**3RF21 90-1AA04**		1	1 unit	41C
20	24 AC/DC	A	**3RF21 50-1AA14**		1	1 unit	41C
20	110 ... 230 AC	A	**3RF21 20-1AA24**		1	1 unit	41C
30		A	**3RF21 30-1AA24**		1	1 unit	41C
50		A	**3RF21 50-1AA24**		1	1 unit	41C
70		A	**3RF21 70-1AA24**		1	1 unit	41C
90		A	**3RF21 90-1AA24**		1	1 unit	41C
Zero-point switching Rated operational voltage U_e 48 ... 600 V AC							
70	24 DC Low Power	B	**3RF21 70-1AA05-0KN0**		1	1 unit	41C
20	4 ... 30 DC	B	**3RF21 20-1AA45**		1	1 unit	41C
30		B	**3RF21 30-1AA45**		1	1 unit	41C
50		B	**3RF21 50-1AA45**		1	1 unit	41C
70		B	**3RF21 70-1AA45**		1	1 unit	41C
90		B	**3RF21 90-1AA45**		1	1 unit	41C
Zero-point switching · Blocking voltage 1600 V, rated operational voltage U_e 48 ... 600 V AC							
30	24 DC acc. to IEC 61131-2	A	**3RF21 30-1AA06**		1	1 unit	41C
50		A	**3RF21 50-1AA06**		1	1 unit	41C
70		B	**3RF21 70-1AA06**		1	1 unit	41C
90		B	**3RF21 90-1AA06**		1	1 unit	41C
30	110 ... 230 AC	B	**3RF21 30-1AA26**		1	1 unit	41C
50		B	**3RF21 50-1AA26**		1	1 unit	41C
70		B	**3RF21 70-1AA26**		1	1 unit	41C
90		B	**3RF21 90-1AA26**		1	1 unit	41C



3RF21 20-1AA02

For online configurator see www.siemens.com/sirius/configurators.

Other rated control supply voltages on request.

1) The type current provides information about the performance capacity of the solid-state relay.
The actual permitted rated operational current I_e can be smaller depending on the connection method and cooling conditions.

2) Please note that this version can only be used for a rated current of up to approx. 50 A and a conductor cross-section of 10 mm^2.

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Solid-State Relays

SIRIUS 3RF21 solid-state relays, single-phase, 22.5 mm

Type current[1]	Rated control supply voltage U_s	DT	Screw terminals[2] / Configurator	PU (UNIT, SET, M)	PS*	PG
A	V		Order No.			
Instantaneous switching · Rated operational voltage U_e 24 ... 230 V AC						
50	110 ... 230 AC	A	**3RF21 50-1BA22**	1	1 unit	41C
Instantaneous switching · Rated operational voltage U_e 48 ... 460 V AC						
20	24 DC acc. to IEC 61131-2	B	**3RF21 20-1BA04**	1	1 unit	41C
30		B	**3RF21 30-1BA04**	1	1 unit	41C
50		B	**3RF21 50-1BA04**	1	1 unit	41C
70		A	**3RF21 70-1BA04**	1	1 unit	41C
90		B	**3RF21 90-1BA04**	1	1 unit	41C
Instantaneous switching · Blocking voltage 1600 V, rated operational voltage U_e 48 ... 600 V AC						
50	24 DC acc. to IEC 61131-2	B	**3RF21 50-1BA06**	1	1 unit	41C
Low noise[3] · Zero-point switching · Rated operational voltage U_e 48 ... 460 V AC						
70	24 DC acc. to IEC 61131-2	B	**3RF21 70-1CA04**	1	1 unit	41C

For online configurator see www.siemens.com/sirius/configurators.

1) The type current provides information about the performance capacity of the solid-state relay.
The actual permitted rated operational current I_e can be smaller depending on the connection method and cooling conditions.

2) Please note that this version can only be used for a rated current of up to approx. 50 A and a conductor cross-section of 10 mm².

3) See page 6/72.

Other rated control supply voltages on request.

Type current[1]	Rated control supply voltage U_s	DT	Spring-type terminals[2] / Configurator	PU (UNIT, SET, M)	PS*	PG
A	V		Order No.			
Zero-point switching · Rated operational voltage U_e 24 ... 230 V AC						
20	24 DC acc. to IEC 61131-2	A	**3RF21 20-2AA02**	1	1 unit	41C
50		B	**3RF21 50-2AA02**	1	1 unit	41C
90		B	**3RF21 90-2AA02**	1	1 unit	41C
20	110 ... 230 AC	B	**3RF21 20-2AA22**	1	1 unit	41C
50		B	**3RF21 50-2AA22**	1	1 unit	41C
90		B	**3RF21 90-2AA22**	1	1 unit	41C
20	4 ... 30 DC	B	**3RF21 20-2AA42**	1	1 unit	41C



3RF21 20-2AA02

Zero-point switching · Rated operational voltage U_e 48 ... 460 V AC						
20	24 DC acc. to IEC 61131-2	B	**3RF21 20-2AA04**	1	1 unit	41C
50		B	**3RF21 50-2AA04**	1	1 unit	41C
90		B	**3RF21 90-2AA04**	1	1 unit	41C
50	24 AC/DC	B	**3RF21 50-2AA14**	1	1 unit	41C
20	110 ... 230 AC	B	**3RF21 20-2AA24**	1	1 unit	41C
50		B	**3RF21 50-2AA24**	1	1 unit	41C
90		B	**3RF21 90-2AA24**	1	1 unit	41C
Zero-point switching · Rated operational voltage U_e 48 ... 600 V AC						
20	4 ... 30 DC	B	**3RF21 20-2AA45**	1	1 unit	41C
Zero-point switching · Blocking voltage 1600 V, rated operational voltage U_e 48 ... 600 V AC						
50	24 DC acc. to IEC 61131-2	B	**3RF21 50-2AA06**	1	1 unit	41C
90		B	**3RF21 90-2AA06**	1	1 unit	41C
50	110 ... 230 AC	B	**3RF21 50-2AA26**	1	1 unit	41C
90		B	**3RF21 90-2AA26**	1	1 unit	41C

For online configurator see www.siemens.com/sirius/configurators.

1) The type current provides information about the performance capacity of the solid-state relay.
The actual permitted rated operational current I_e can be smaller depending on the connection method and cooling conditions.

2) Please note that the version with spring-type terminals can only be used for a rated current of up to approx. 20 A and a conductor cross-section of 2.5 mm². Higher currents are possible by connecting two conductors per terminal.

Other rated control supply voltages on request.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RF21 solid-state relays, single-phase, 22.5 mm

Type current[1] A	Rated control supply voltage U_s V	DT	Ring terminal lug connection / Configurator — Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Zero-point switching · Rated operational voltage U_e 24 ... 230 V AC							
20	24 DC acc. to IEC 61131-2	A	**3RF21 20-3AA02**		1	1 unit	41C
50		B	**3RF21 50-3AA02**		1	1 unit	41C
90		B	**3RF21 90-3AA02**		1	1 unit	41C
20	110 ... 230 AC	B	**3RF21 20-3AA22**		1	1 unit	41C
50		B	**3RF21 50-3AA22**		1	1 unit	41C
90		B	**3RF21 90-3AA22**		1	1 unit	41C
Zero-point switching · Rated operational voltage U_e 48 ... 460 V AC							
20	24 DC acc. to IEC 61131-2	B	**3RF21 20-3AA04**		1	1 unit	41C
50		B	**3RF21 50-3AA04**		1	1 unit	41C
90		B	**3RF21 90-3AA04**		1	1 unit	41C
20	110 ... 230 AC	B	**3RF21 20-3AA24**		1	1 unit	41C
50		B	**3RF21 50-3AA24**		1	1 unit	41C
90		B	**3RF21 90-3AA24**		1	1 unit	41C
90	4 ... 30 DC	B	**3RF21 90-3AA44**		1	1 unit	41C
Zero-point switching · Blocking voltage 1600 V, rated operational voltage U_e 48 ... 600 V AC							
50	24 DC acc. to IEC 61131-2	B	**3RF21 50-3AA06**		1	1 unit	41C
90		B	**3RF21 90-3AA06**		1	1 unit	41C
50	110 ... 230 AC	B	**3RF21 50-3AA26**		1	1 unit	41C
90		B	**3RF21 90-3AA26**		1	1 unit	41C



3RF21 20-3AA02

For online configurator see www.siemens.com/sirius/configurators.

Other rated control supply voltages on request.

1) The type current provides information about the performance capacity of the solid-state relay.
The actual permitted rated operational current I_e can be smaller depending on the connection method and cooling conditions.

Version	DT	Spring-type terminals — Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Optional accessories						
Screwdrivers for all SIRIUS devices with spring-type terminals Length approx. 200 mm, size 3.0 mm x 0.5 mm, titanium gray/black, partially insulated	A	**3RA29 08-1A**		1	1 unit	41B



3RA29 08-1A

Version	DT	Ring terminal lug connection — Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Terminal covers for 3RF21 solid-state relays and 3RF23 solid-state contactors in ring terminal lug connection (After simple adaptation, this terminal cover can also be used for screw connection).	A	**3RF29 00-3PA88**		1	10 units	41C



3RF29 00-3PA88

* You can order this quantity or a multiple thereof.
Illustrations are approximate

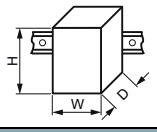
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SIRIUS 3RF20 solid-state relays, single-phase, 45 mm

Overview

The solid-state relays with a width of 45 mm provide for connection of the power supply lead and the load from above. This makes it easy to replace existing solid-state relays in existing arrangements. The connection of the control cable also saves space in much the same way as the 22.5 mm design, as it is simply plugged on.

Technical specifications

Type			**3RF20 ..-1....**	**3RF20 ..-4....**
Dimensions (W x H x D)		mm	45 x 58 x 48	45 x 58 x 48
General data				
Ambient temperature				
• During operation, derating from 40 °C		°C	-25 ... +60	
• During storage		°C	-55 ... +80	
Installation altitude		m	0 ... 1000; derating from 1000	
Shock resistance acc. to IEC 60068-2-27		*g*/ms	15 /11	
Vibration resistance acc. to IEC 60068-2-6		*g*	2	
Degree of protection			IP20	
Electromagnetic compatibility (EMC)				
• Emitted interference				
- Conducted interference voltage according to IEC 60947-4-3			Class A for industrial applications	
- Emitted, high-frequency interference voltage according to IEC 60947-4-3			Class B for residential, business and commercial applications	
• Interference immunity				
- Electrostatic discharge according to IEC 61000-4-2 (corresponds to degree of severity 3)		kV	Contact discharge 4; air discharge 8; behavior criterion 2	
- Induced RF fields according to IEC 61000-4-6		MHz	0.15 ... 80; 140 dBµV; behavior criterion 1	
- Burst acc. to IEC 61000-4-4		kV	2/5.0 kHz; behavior criterion 2	
- Surge acc. to IEC 61000-4-5		kV	Conductor - ground 2; conductor - conductor 1; behavior criterion 2	
Mounting				
• Screws[1]			2 x M4	
• Tightening torque		Nm	1.5	
Connection type			**Screw terminals**	**Spring-type terminals**
Connection, main contacts				
• Conductor cross-sections				
- Solid		mm^2	2 x (1.5 ... 2.5)[2], 2 x (2.5 ... 6)[2]	--
- Finely stranded with end sleeve		mm^2	2 x (1 ... 2.5)[2]; 2 x (2.5 ... 6)[2]; 1 x 10	--
- Solid or stranded, AWG cables			2 x (AWG 14 ... 10)	--
• Terminal screw			M4	--
• Tightening torque		Nm lb.in	2 ... 2.5 7 ... 10.3	-- --
Connection, auxiliary/control contacts				
• Conductor cross-sections		mm^2	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.0), AWG 20 ... 12	0.5 ... 2.5, AWG 20 ... 12
• Stripped length		mm	7	10
• Terminal screw			M3	--
• Tightening torque		Nm lb.in	0.5 ... 0.6 4.5 ... 5.3	-- --

1) Not included in the scope of supply.

2) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

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SIRIUS 3RF20 solid-state relays, single-phase, 45 mm

Type	I_{max} [1] at R_{thha}/T_u = 40 °C		I_e according to IEC 60947-4-3 at R_{thha}/T_u = 40 °C		I_e according to UL/CSA at R_{thha}/T_u = 50 °C		Power loss at I_{max}	Minimum load current	Off-state current
	A	K/W	A	K/W	A	K/W	W	A	mA
Main circuit									
3RF20 20-1.A..	20	2.0	20	1.7	20	1.3	28.6	0.1	10
3RF20 30-1.A..	30	1.1	30	0.79	30	0.56	44.2	0.5	10
3RF20 50-1.A..	50	0.68	50	0.48	50	0.33	66	0.5	10
3RF20 70-1.A..	70	0.40	50	0.77	50	0.6	94	0.5	10
3RF20 90-1.A..	88	0.33	50	0.94	50	0.85	118	0.5	10

1) I_{max} provides information about the performance of the solid-state relay. The actual permitted rated operational current I_e can be smaller depending on the connection method and cooling conditions.

Note:

The required heat sinks for the corresponding load currents can be determined from the characteristic curves (see "Technical Information"). The minimum thickness values for the mounting surface must be observed.

Type	Rated peak withstand current I_{tsm}	I^2t value
	A	A^2s
Main circuit		
3RF20 20-1.A..	200	200
3RF20 30-1.A.2	300	450
3RF20 30-1.A.4	300	450
3RF20 30-1.A.6	400	800
3RF20 50-1.A..	600	1800
3RF20 70-1.A.2	1200	7200
3RF20 70-1.A.4	1200	7200
3RF20 70-1.A.5	1200	7200
3RF20 70-1.A.6	1150	6600
3RF20 90-1.A..	1150	6600

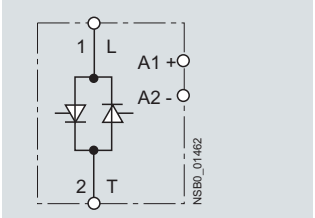
Type			3RF20 .0-1.A.2	3RF20 .0-1.A.4	3RF20 .0-1.A.5	3RF20 .0-1.A.6
Main circuit						
Rated operational voltage U_e	V AC		24 ... 230	48 ... 460	48 ... 600	48 ... 600
• Operating range	V AC		20 ... 253	40 ... 506	40 ... 660	40 ... 660
• Rated frequency	Hz		50/60 ± 10 %			
Rated insulation voltage U_i	V		600			
Blocking voltage	V		800	1200		1600
Rage of voltage rise	V/µs		1000			

Type		3RF20 .0-1.A0.	3RF20 .0-1.A2.	3RF20 .0-1.A4.
Control circuits				
Method of operation		DC operation	AC operation	DC operation
Rated control supply voltage U_S	V	24 acc. to IEC 61131-2	110 … 230	4 … 30
Rated frequency of the control supply voltage	Hz	--	50/60 ± 10 %	--
Control supply voltage, max.	V	30	253	30
Typical actuating current	mA	20	15	20
Response voltage	V	15	90	4
Drop-out voltage	V	5	40	1
Operating times				
• ON-delay	ms	1 + max. one half-wave[1]	40 + max. one half-wave[1]	1 + max. one half-wave[1]
• OFF-delay	ms	1 + max. one half-wave	40 + max. one half-wave	1 + max. one half-wave

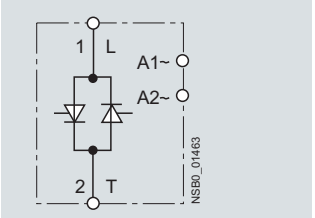
1) Only for zero-point-switching devices.

Circuit diagrams

DC control supply voltage



AC control supply voltage



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SIRIUS 3RF20 solid-state relays, single-phase, 45 mm

Selection and ordering data

	Type current[1]	Rated control supply voltage U_s	DT	Screw terminals[2] / Configurator	PU (UNIT, SET, M)	PS*	PG
	A	V		Order No. / Price per PU			
Zero-point switching Rated operational voltage U_e 24 ... 230 V AC							
	20	24 DC acc. to IEC 61131-2	A	**3RF20 20-1AA02**	1	1 unit	41C
	30		A	**3RF20 30-1AA02**	1	1 unit	41C
	50		A	**3RF20 50-1AA02**	1	1 unit	41C
	70		A	**3RF20 70-1AA02**	1	1 unit	41C
	90		A	**3RF20 90-1AA02**	1	1 unit	41C
	20	110 ... 230 AC	A	**3RF20 20-1AA22**	1	1 unit	41C
	30		A	**3RF20 30-1AA22**	1	1 unit	41C
	50		A	**3RF20 50-1AA22**	1	1 unit	41C
	70		A	**3RF20 70-1AA22**	1	1 unit	41C
	90		B	**3RF20 90-1AA22**	1	1 unit	41C
3RF20 20-1AA02	20	4 ... 30 DC	B	**3RF20 20-1AA42**	1	1 unit	41C
	30		B	**3RF20 30-1AA42**	1	1 unit	41C
Zero-point switching Rated operational voltage U_e 48 ... 460 V AC							
	20	24 DC acc. to IEC 61131-2	A	**3RF20 20-1AA04**	1	1 unit	41C
	30		A	**3RF20 30-1AA04**	1	1 unit	41C
	50		A	**3RF20 50-1AA04**	1	1 unit	41C
	70		A	**3RF20 70-1AA04**	1	1 unit	41C
	90		A	**3RF20 90-1AA04**	1	1 unit	41C
	20	110 ... 230 AC	A	**3RF20 20-1AA24**	1	1 unit	41C
	30		A	**3RF20 30-1AA24**	1	1 unit	41C
	50		A	**3RF20 50-1AA24**	1	1 unit	41C
	70		A	**3RF20 70-1AA24**	1	1 unit	41C
	90		A	**3RF20 90-1AA24**	1	1 unit	41C
	50	4 ... 30 DC	A	**3RF20 50-1AA44**	1	1 unit	41C
Zero-point switching Rated operational voltage U_e 48 ... 600 V AC							
	20	4 ... 30 DC	B	**3RF20 20-1AA45**	1	1 unit	41C
	50		B	**3RF20 50-1AA45**	1	1 unit	41C
	70		B	**3RF20 70-1AA45**	1	1 unit	41C
	90		B	**3RF20 90-1AA45**	1	1 unit	41C
Zero-point switching · Blocking voltage 1600 V, rated operational voltage U_e 48 ... 600 V AC							
	30	24 DC acc. to IEC 61131-2	B	**3RF20 30-1AA06**	1	1 unit	41C
	50		B	**3RF20 50-1AA06**	1	1 unit	41C
	70		B	**3RF20 70-1AA06**	1	1 unit	41C
	90		B	**3RF20 90-1AA06**	1	1 unit	41C
	30	110 ... 230 AC	B	**3RF20 30-1AA26**	1	1 unit	41C
	50		B	**3RF20 50-1AA26**	1	1 unit	41C
	70		B	**3RF20 70-1AA26**	1	1 unit	41C
	90		B	**3RF20 90-1AA26**	1	1 unit	41C
Instantaneous switching Rated operational voltage U_e 48 ... 460 V AC							
	30	24 DC acc. to IEC 61131-2	B	**3RF20 30-1BA04**	1	1 unit	41C

For online configurator see www.siemens.com/sirius/configurators.

1) The type current provides information about the performance capacity of the solid-state relay. The actual permitted rated operational current I_e can be smaller depending on the connection method and cooling conditions.

2) Please note that this version can only be used for a rated current of up to approx. 50 A and a conductor cross-section of 10 mm^2.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RF20 solid-state relays, single-phase, 45 mm

	Type current[1]	Rated control supply voltage U_s	DT	Screw terminals + spring-type terminals (control current side)		PU (UNIT, SET, M)	PS*	PG
				Configurator				
	A	V		Order No.	Price per PU			
Zero-point switching Rated operational voltage U_e 24 ... 230 V AC								
 3RF20 50-4AA02	50	24 DC acc. to IEC 61131-2	A	**3RF20 50-4AA02**		1	1 unit	41C

For online configurator see www.siemens.com/sirius/configurators.

[1] The type current provides information about the performance capacity of the solid-state relay. The actual permitted rated operational current I_e can be smaller depending on the connection method and cooling conditions.

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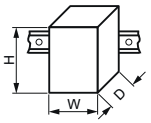
SIRIUS 3RF22 solid-state relays, three-phase, 45 mm

Overview

With its compact design and a width of just 45 m, which stays the same even at currents of up to 55 A, the 3RF22 solid-state relay offers an ultra small footprint. The logical connection method, with the power infeed from above and load connection from below, ensures tidy installation in the control cabinet.

Important features:
- LED display
- Variety of connection methods
- Plug-in control connection
- Degree of protection IP20
- Zero-point switching
- Two- or three-phase controlled

Technical specifications

Type			3RF22 ..-1....	3RF22 ..-2....	3RF22 ..-3....
Dimensions (W x H x D)		mm	45 x 95 x 47	45 x 95 x 47	45 x 95 x 47
General data					
Ambient temperature					
• During operation, derating from 40 °C		°C	-25 ... + 60		
• During storage		°C	-55 ... + 80		
Installation altitude		m	0 ... 1000; > 1000 ask Technical Assistance		
Shock resistance acc. to IEC 60068-2-27		*g*/ms	15/11		
Vibration resistance acc. to IEC 60068-2-6		*g*	2		
Degree of protection			IP20		
Insulation strength at 50/60 Hz (main/control circuit to floor)		V rms	4000		
Electromagnetic compatibility (EMC)					
• Emitted interference - Conducted interference voltage according to IEC 60947-4-3			Class A for industrial applications[1]		
• Interference immunity - Electrostatic discharge according to IEC 61000-4-2 (corresponds to degree of severity 3)		kV	Contact discharge 4; air discharge 8; behavior criterion 2		
- Induced RF fields according to IEC 61000-4-6		MHz	0.15 ... 80; 140 dBµV; behavior criterion 1		
- Burst acc. to IEC 61000-4-4		kV	2/5.0 kHz; behavior criterion 2		
- Surge acc. to IEC 61000-4-5		kV	Conductor - ground 2; conductor - conductor 1; behavior criterion 2		
Mounting					
• Screws[2]			2 x M4		
• Tightening torque		Nm	1.5		
Connection type			**Screw terminals**	**Spring-type terminals**	**Ring terminal lug connections**
Connection, main contacts					
• Conductor cross-sections					
- Solid		mm^2	2 x (1.5 ... 2.5)[3], 2 x (2.5 ... 6)[3]	2 x (0.5 ... 2.5)	--
- Finely stranded with end sleeve		mm^2	2 x (1 ... 2.5)[3]; 2 x (2.5 ... 6)[3]; 1 x 10	2 x (0.5 ... 1.5)	--
- Finely stranded without end sleeve		mm^2	--	2 x (0.5 ... 2.5)	--
- Solid or stranded, AWG cables			2 x (AWG 14 ... 10)	2 x (AWG 18 ... 14)	--
• Stripped length		mm	10	10	
• Terminal screws			M4	--	M5
- Tightening torque, ∅ 5 ... 6 mm, PZ 2		Nm lb.in	2 ... 2.5 18 ... 22		2.5 ... 2 18 ... 22
• Cable lugs			--	--	
- According to DIN 46234					5-2.5 ... 5-25
- According to JIS C 2805					R 2-5 ... R 14-5
- Width, maximum		mm			12
Connection, auxiliary/control contacts					
• Conductor cross-sections, with or without end sleeve		mm AWG	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.0) 20 ... 12	0.5 ... 2.5 20 ... 12	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.0) 20 ... 12
• Stripped length		mm	7	10	7
• Terminal screw			M3	--	M3
- Tightening torque, ∅ 3.5, PZ 1		Nm lb.in	0.5 ... 0.6 4.5 ... 5.3		0.5 ... 0.6 4.5 ... 5.3

1) These products were built as Class A devices. The use of these devices in residential areas could result in radio interference. In this case these may be required to introduce additional interference suppression measures.

2) Not included in the scope of supply.

3) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

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SIRIUS 3RF22 solid-state relays, three-phase, 45 mm

Type	I_{max} [1] at R_{thha}/T_u = 40 °C		I_e according to IEC 60947-4-3 at R_{thha}/T_u = 40 °C		I_e according to UL/CSA at R_{thha}/T_u = 50 °C		Power loss at I_{max}	Minimum load current	Max. off-state current
	A	K/W	A	K/W	A	K/W	W	A	mA
Main circuit									
3RF22 30-. AB..	30	0.57	30	0.57	30	0.44	81	0.5	10
3RF22 55-1AB.. **3RF22 55-2AB..** **3RF22 55-3AB..**	55	0.18	50 20 50	0.27 1.83 0.27	50 20 50	0.19 1.58 0.19	151	0.5	10
3RF22 30-. AC..	30	0.33	30	0.33	30	0.25	122	0.5	10
3RF22 55-1AC.. **3RF22 55-2AC..** **3RF22 55-3AC..**	55	0.09	50 20 50	0.15 1.19 0.15	50 20 50	0.1 1.02 0.1	226	0.5	10

[1] I_{max} provides information about the performance of the solid-state relay. The actual permitted rated operational current I_e can be smaller depending on the connection method and cooling conditions.

Note:

The required heat sinks for the corresponding load currents can be determined from the characteristic curves (see "Technical Information"). The minimum thickness values for the mounting surface must be observed.

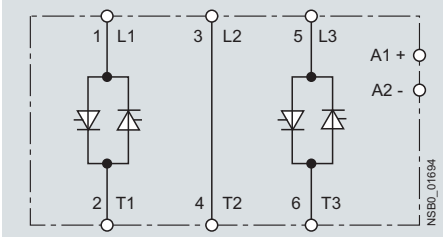
Type	Rated peak withstand current I_{tsm}	I^2t value
	A	A^2s
Main circuit		
3RF22 30-....5	300	450
3RF22 55-....5	600	1800

Type		3RF22 ..-.AB.5	3RF22 ..-.AC.5
Main circuit			
Controlled phases		2-phase	3-phase
Rated operational voltage U_e	V AC	48 ... 600	48 ... 600
• Operating range	V AC	40 ... 660	40 ... 660
• Rated frequency	Hz	50/60 ± 10 %	50/60 ± 10 %
Rated insulation voltage U_i	V	600	600
Rated impulse withstand voltage U_{imp}	kV	6	6
Blocking voltage	V	1200	1200
Rage of voltage rise	V/µs	1000	1000

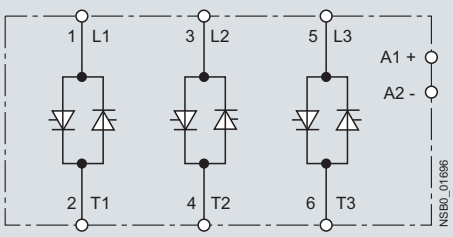
Type		3RF22 ..-.A.3.	3RF22 ..-.A.4.
Control circuits			
Method of operation		AC operation	DC operation
Rated control supply voltage U_s	V	110	4 ... 30
Rated frequency of the control supply voltage	Hz	50/60 ± 10 %	--
Control supply voltage, max.	V	121	30
Typical actuating current	mA	15	30
Response voltage	V	90	4
Drop-out voltage	V	< 40	1
Operating times			
• ON-delay	ms	40 + max. one half-wave	1 + max. one half-wave
• OFF-delay	ms	40 + max. one half-wave	1 + max. one half-wave

Circuit diagrams

Two-phase controlled, DC control supply voltage



Three-phase controlled, DC control supply voltage



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SIRIUS 3RF22 solid-state relays, three-phase, 45 mm

Selection and ordering data

Type current[1] A	Rated control supply voltage U_s V	DT	Screw terminals[2] Configurator Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Zero-point switching Rated operational voltage U_e 48 ... 600 V AC							
Two-phase controlled							
30	110 AC	B	**3RF22 30-1AB35**		1	1 unit	41C
55		B	**3RF22 55-1AB35**		1	1 unit	41C
30	4 ... 30 DC	B	**3RF22 30-1AB45**		1	1 unit	41C
55		B	**3RF22 55-1AB45**		1	1 unit	41C
Three-phase controlled							
30	110 AC	B	**3RF22 30-1AC35**		1	1 unit	41C
55		B	**3RF22 55-1AC35**		1	1 unit	41C
30	4 ... 30 DC	A	**3RF22 30-1AC45**		1	1 unit	41C
55		B	**3RF22 55-1AC45**		1	1 unit	41C


3RF22 30-1AB45

Type current[1] A	Rated control supply voltage U_s V	DT	Spring-type terminals[3] Configurator Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Zero-point switching Rated operational voltage U_e 48 ... 600 V AC							
Two-phase controlled							
30	4 ... 30 DC	B	**3RF22 30-2AB45**		1	1 unit	41C
55		B	**3RF22 55-2AB45**		1	1 unit	41C
Three-phase controlled							
30	4 ... 30 DC	B	**3RF22 30-2AC45**		1	1 unit	41C
55		B	**3RF22 55-2AC45**		1	1 unit	41C


3RF22 30-2AB45

Type current[1] A	Rated control supply voltage U_s V	DT	Ring terminal lug connection Configurator Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Zero-point switching Rated operational voltage U_e 48 ... 600 V AC							
Two-phase controlled							
30	4 ... 30 DC	B	**3RF22 30-3AB45**		1	1 unit	41C
55		B	**3RF22 55-3AB45**		1	1 unit	41C
Three-phase controlled							
30	4 ... 30 DC	B	**3RF22 30-3AC45**		1	1 unit	41C
55		B	**3RF22 55-3AC45**		1	1 unit	41C


3RF22 30-3AB45

For online configurator see www.siemens.com/sirius/configurators.

1) The type current provides information about the performance capacity of the solid-state relay.
The actual permitted rated operational current I_e can be smaller depending on the connection method and cooling conditions.

2) Please note that the version with an M4 screw connection can only be used for a rated current of up to approx. 50 A and a conductor cross-section of 10 mm^2.

3) Please note that the version with spring-type terminals can only be used for a rated current of up to approx. 20 A and a conductor cross-section of 2.5 mm^2. Higher currents are possible by connecting two conductors per terminal.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Solid-state contactors

The complete units consist of a solid-state relay plus optimized heat sink, and are therefore ready to use. They offer defined rated currents to make selection as easy as possible. Depending on the version, current intensities of up to 88 A are achieved. Like all of our solid-state switching devices, one of their particular advantages is their compact and space-saving design.

With their insulated mounting foot they can easily be snapped onto a standard mounting rail, or they can be mounted on support plates with fixing screws. This insulation enables them to be used in circuits with protective extra-low voltage (PELV) or safety extra-low voltage (SELV) in building management systems. For other applications, such as for extended personal safety, the heat sink can be grounded through a screw terminal.

The solid-state contactors are available in 2 different versions:

- 3RF23 single-phase solid-state contactors
- 3RF24 three-phase solid-state contactors

Single-phase versions

The 3RF23 solid-state contactors can be expanded with various function modules to adapt them to individual applications.

Version for resistive loads, "zero-point switching"

This standard version is often used for switching space heaters on and off.

Version for inductive loads, "instantaneous switching"

In this version the solid-state contactor is specifically matched to inductive loads. Whether it is a matter of frequent actuation of the valves in a filling plant or starting and stopping small operating mechanisms in packet distribution systems, operation is carried out safely and noiselessly.

Special "Low noise" version

Thanks to a special control circuit, this special version can be used in public networks up to 16 A without any additional measures such as interference suppressor filters. As a result, in terms of emitted interference, it conforms to limit value curve class B according to IEC 60947-4-3.

Special "Short-circuit proof" version

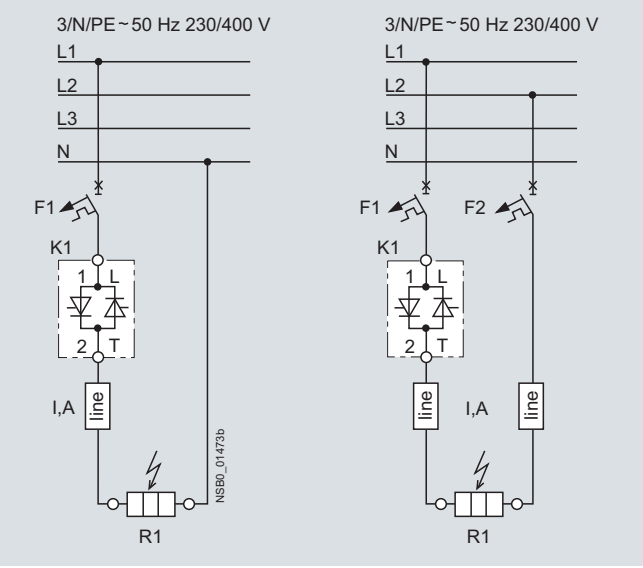
Skillful matching of the power semiconductor with the performance capacity of the solid-state contactor means that "short-circuit strength" can be achieved with a standard miniature circuit breaker. In combination with a B-type MCB or a conventional line protection fuse, the result is a short-circuit proof feeder.

In order to achieve problem-free short-circuit protection by means of miniature circuit breakers, however, certain boundary conditions must be observed. As the magnitude and duration of the short-circuit current are determined not only by the short-circuit breaking response of the miniature circuit breaker but also the properties of the wiring system, such as the internal resistance of the input to the network and damping by controls and cables, particular attention must also be paid to these parameters. The necessary cable lengths are therefore shown for the main factor, the line resistance, in the table below.

The following miniature circuit breakers with a B characteristic and 10 kA or 6 kA breaking capacity protect the 3RF23 ..-.DA.. solid-state contactors in the event of short circuits on the load and the specified conductor cross-sections and lengths:

Rated current of the miniature circuit breaker	Example of type[1)]	Max. conductor cross-section	Minimum cable length from contactor to load
6 A	5SY4 106-6, 5SX2 106-6	1 mm^2	5 m
10 A	5SY4 110-6, 5SX2 110-6	1.5 mm^2	8 m
16 A	5SY4 116-6, 5SX2 116-6	1.5 mm^2	12 m
16 A	5SY4 116-6, 5SX2 116-6	2.5 mm^2	20 m
20 A	5SY4 120-6, 5SX2 120-6	2.5 mm^2	20 m
25 A	5SY4 125-6, 5SX2 125-6	2.5 mm^2	26 m

1) The miniature circuit breakers can be used up to a maximum rated voltage of 480 V!



The setup and installation above can also be used for the solid-state relays with a I^2t value of at least 6 600 A^{2}s.

Three-phase versions

The three-phase solid-state contactors for resistive loads up to 50 A are available with

- two-phase control (suitable in particular for circuits without connection to the neutral conductor) and
- three-phase control (suitable for star circuits with connection to the neutral conductor or for applications in which the system requires all phases to be switched)

The converter function module can be snapped onto both versions for the simple power control of AC loads by means of analog signals.

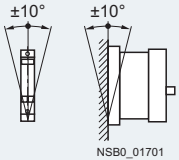
- Check the correct contactor size with the aid of the rated current diagram, taking account of the installation conditions

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SIRIUS 3RF23 solid-state contactors, single-phase

Technical specifications

Type		3RF23 ..-.A...	3RF23 ..-.B...	3RF23 ..-.C...	3RF23 ..-.D...
Dimensions (W x H x D)		See overleaf			
General data					
Ambient temperature					
• During operation, derating from 40 °C	°C	-25 ... +60			
• During storage	°C	-55 ... +80			
Installation altitude	m	0 ... 1000; derating from 1000			
Shock resistance acc. to IEC 60068-2-27	*g*/ms	15/11			
Vibration resistance acc. to IEC 60068-2-6	*g*	2			
Degree of protection		IP20			
Electromagnetic compatibility (EMC)					
• Emitted interference according to IEC 60947-4-3 - Conducted interference voltage		Class A for industrial applications		Class A for industrial applications; Class B for residential, business and commercial applications up to 16 A, AC-51 Low Noise	Class A for industrial applications
- Emitted, high-frequency interference voltage		Class B for residential, business and commercial applications			
• Interference immunity - Electrostatic discharge according to IEC 61000-4-2 (corresponds to degree of severity 3)	kV	Contact discharge 4; air discharge 8; behavior criterion 2			
- Induced RF fields according to IEC 61000-4-6	MHz	0.15 ... 80; 140 dBµV; behavior criterion 1			
- Burst acc. to IEC 61000-4-4	kV	2/5.0 kHz; behavior criterion 2			
- Surge acc. to IEC 61000-4-5	kV	Conductor - ground 2; conductor - conductor 1; behavior criterion 2			

Type		3RF23 ..-1....	3RF23 ..-2....	3RF23 ..-3....
General data				
Connection type		**Screw terminals**	**Spring-type terminals**	**Ring terminal lug connections**
Connection, main contacts				
• Conductor cross-section				
- Solid	mm^2	2 x (1.5 ... 2.5)[1], 2 x (2.5 ... 6)[1]	2 x (0.5 ... 2.5)	--
- Finely stranded with end sleeve	mm^2	2 x (1 ... 2.5)[1]; 2 x (2.5 ... 6)[1]; 1 x 10	2 x (0.5 ... 1.5)	--
- Finely stranded without end sleeve	mm^2	--	2 x (0.5 ... 2.5)	--
- Solid or stranded, AWG cables		2 x (AWG 14 ... 10)	2 x (AWG 18 ... 14)	--
• Terminal screws		M4	--	M5
• Tightening torque	Nm lb.in	2 ... 2.5 7 ... 10.3	-- --	2 ... 2.5 7 ... 10.3
• Cable lugs		--	--	
- According to DIN 46234				5-2.5, 5-6, 5-10, 5-16, 5-25
- According to JIS C 2805				R 2-5, R 5.5-5, R 8-5, R 14-5
- Width, maximum	mm			12
Connection, auxiliary/control contacts				
• Conductor cross-section	mm AWG	1 x (0.5 ... 2.5)[1], 2 x (0.5 ... 1.0) AWG 20 ... 12	0.5 ... 2.5 AWG 20 ... 12	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.0) AWG 20 ... 12
• Stripped length	mm	7	10	7
• Terminal screw		M3	--	M3
• Tightening torque	Nm lb.in	0.5 ... 0.6 4.5 ... 5.3	-- --	0.5 ... 0.6 4.5 ... 5.3
Grounding screw[2]				
• Size (standard screw)		M4	M4	M4
Permissible mounting positions				

1) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

2) The screw is not included in the scope of supply.

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Type		3RF23 ..-....2	3RF23 ..-....4	3RF23 ..-....5	3RF23 ..-....6
Main circuit					
Rated operational voltage U_e	V AC	24 ... 230	48 ... 460	48 ... 600	48 ... 600
• Operating range	V AC	20 ... 253	40 ... 506	40 ... 660	40 ... 660
• Rated frequency	Hz	50/60 ± 10 %			
Rated insulation voltage U_i	V	600			
Blocking voltage	V	800	1200		1600
Rage of voltage rise	V/µs	1000			

Type		3RF23 ..-...0.	3RF23 ..-...1.		3RF23 ..-...2.	3RF23 ..-...4.
Control circuits						
Method of operation		DC operation	AC/DC operation		AC operation	DC operation
Rated control supply voltage U_s	V	24 DC acc. to IEC 61131-2	24 AC	24 DC	110 ... 230 AC	4 ... 30 DC
Rated frequency of the control supply voltage	Hz	--	50/60 ± 10%	--	50/60 ± 10%	--
Actuating voltage, max.	V	30	26.5 AC	30 DC	253	30
Typical actuating current	mA	20/Low Power: <10[1)]	20	20	15	20
Response voltage	V	15	14 AC	15 DC	90	4
Drop-out voltage	V	5	5 AC	55 DC	40	1
Operating times						
• ON-delay	ms	1 + max. one half-wave[2)]	10 + max. one half-wave[2)]		40 + max. one half-wave[2)]	1 + max. one half-wave[2)]
• OFF-delay	ms	1 + max. one half-wave	15 + max. one half-wave		40 + max. one half-wave	1 + max. one half-wave

1) Applies to the version "Low Power" 3RF23 ..-.AA..-**0KN0**
2) Only for zero-point-switching devices.

Type	**Type current[1)]** I_{AC-51}	**Dimensions (W x H x D)** (including heat sink)
	A	mm
Main circuit		
3RF23 10-.AA..	10.5	22.5 x 100 x 89
3RF23 20-.AA.. **3RF23 20-.CA..** **3RF23 20-.DA..**	20	22.5 x 100 x 135.5
3RF23 30-.AA.. **3RF23 30-.CA..**	30	30 x 100 x 151
3RF23 30-.DA..	30	22.5 x 100 x 135.5

Type	**Type current[1)]** I_{AC-51}	**Dimensions (W x H x D)** (including heat sink)
	A	mm
Main circuit		
3RF23 40-.AA..	40	67 x 100 x 151
3RF23 50-.AA..	50	67 x 100 x 151
3RF23 70-.AA..	70	135 x 100 x 157.5
3RF23 90-.AA..	88	180 x 200 x 157.5

1) The type current provides information about the performance of the solid-state contactor. The actual permitted rated operational current I_e can be smaller depending on the connection method and start-up conditions.

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SIRIUS 3RF23 solid-state contactors, single-phase

Type	Type current AC-51[1]			Power loss	Minimum load current	Off-state current	Rated peak withstand current I_{tsm}	I^2t value
	For I_{max} at 40 °C	Acc. to IEC 60947-4-3 for 40 °C	Acc. to UL/CSA for 50 °C	at I_{max}				
	A	A	A	W	A	mA	A	A^2s
Main circuit								
3RF23 10-.AA.2	10.5	7.5	9.6	11	0.1	10	200	200
3RF23 10-.AA.4							200	200
3RF23 10-.AA.5							200	200
3RF23 10-.AA.6							400	800
3RF23 20-.AA.2	20	13.2	17.6	20	0.5	10	600	1800
3RF23 20-.AA.4						10	600	1800
3RF23 20-.AA.5						10	600	1800
3RF23 20-.AA.6						10	600	1800
3RF23 20-.CA.2						25	600	1800
3RF23 20-.CA.4						25	600	1800
3RF23 20-.DA.2						10	1150	6600
3RF23 20-.DA.4						10	1150	6600
3RF23 30-.AA.2	30	22	27	33	0.5	10	600	1800
3RF23 30-.AA.4						10	600	1800
3RF23 30-.AA.5						10	600	1800
3RF23 30-.AA.6						10	600	1800
3RF23 30-.CA.2						25	600	1800
3RF23 30-.DA.4						10	1150	6600
3RF23 40-.AA.2	40	33	36	44	0.5	10	1200	7200
3RF23 40-.AA.4							1200	7200
3RF23 40-.AA.5							1200	7200
3RF23 40-.AA.6							1150	6600
3RF23 50-.AA.2	50	36	45	54	0.5	10	1150	6600
3RF23 50-.AA.4								
3RF23 50-.AA.5								
3RF23 50-.AA.6								
3RF23 70-.AA.2	70	70	62	83	0.5	10	1150	6600
3RF23 70-.AA.4								
3RF23 70-.AA.5								
3RF23 70-.AA.6								
3RF23 90-.AA.2	88	88	80	117	0.5	10	1150	6600
3RF23 90-.AA.4								
3RF23 90-.AA.5								
3RF23 90-.AA.6								

[1] The type current provides information about the performance of the solid-state contactor. The actual permitted rated operational current I_e can be smaller depending on the connection method and start-up conditions.

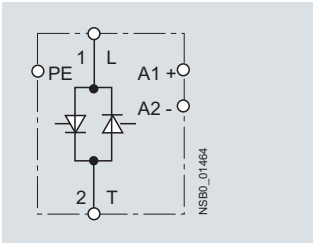
Type	Type current AC-51[1]			Type current AC-15		Power loss at I_{max}	Minimum load current	Off-state current	Rated peak withstand current I_{tsm}	I^2t value
	For I_{max} at 40 °C	Acc. to IEC 60947-4-3 for 40 °C	Acc. to UL/CSA for 50 °C	10 x I_e for 60 ms	Parameters					
	A	A	A	A		W	A	mA	A	A^2s
Main circuit										
3RF23 10-.BA.2	10.5	7.5	9.6	6	1200 1/h 50 % ON period	11	0.1	10	200	200
3RF23 10-.BA.4									200	200
3RF23 10-.BA.6									400	800
3RF23 20-.BA.2	20	13.2	17.6	12	1200 1/h 50 % ON period	20	0.5	10	600	1800
3RF23 20-.BA.4										
3RF23 20-.BA.6										
3RF23 30-.BA.2	30	22	27	15	1200 1/h 50 % ON period	33	0.5	10	600	1800
3RF23 30-.BA.4										
3RF23 30-.BA.6										
3RF23 40-.BA.2	40	33	36	20	1200 1/h 50 % ON period	44	0.5	10	1200	7200
3RF23 40-.BA.4									1200	7200
3RF23 40-.BA.6									1150	6600
3RF23 50-.BA.2	50	36	45	25	1200 1/h 50 % ON period	54	0.5	10	1150	6600
3RF23 50-.BA.4										
3RF23 50-.BA.6										
3RF23 70-.BA.2	70	70	62	27.5	1200 1/h 50 % ON period	83	0.5	10	1150	6600
3RF23 70-.BA.4										
3RF23 70-.BA.6										
3RF23 90-.BA.2	88	88	80	30	1200 1/h 50 % ON period	117	0.5	10	1150	6600
3RF23 90-.BA.4										
3RF23 90-.BA.6										

[1] The type current provides information about the performance of the solid-state contactor. The actual permitted rated operational current I_e can be smaller depending on the connection method and start-up conditions.

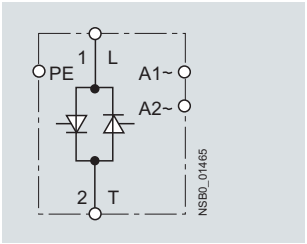
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Circuit diagrams

DC control supply voltage



AC control supply voltage



Selection and ordering data

Selection notes

The solid-state contactors are selected on the basis of details of the network, the load and the ambient conditions. As the solid-state contactors are already equipped with an optimally matched heat sink, the selection process is considerably simpler than that for solid-state relays.

The following procedure is recommended:

- Determine the rated current of the load and the mains voltage
- Select a solid-state contactor with the same or higher rated current than the load

Type current[1] I_{max}	Rated control supply voltage U_s	DT	Screw terminals / Configurator	PU (UNIT, SET, M)	PS*	PG
A	V		Order No. / Price per PU			
Zero-point switching Rated operational voltage U_e 24 ... 230 V AC						
 3RF23 10-1						
10.5	24 DC acc. to IEC 61131-2	A	**3RF23 10-1AA02**	1	1 unit	41C
20		A	**3RF23 20-1AA02**	1	1 unit	41C
30		A	**3RF23 30-1AA02**	1	1 unit	41C
40		A	**3RF23 40-1AA02**	1	1 unit	41C
50		A	**3RF23 50-1AA02**	1	1 unit	41C
20	24 DC Low Power	A	**3RF23 20-1AA02-0KN0**	1	1 unit	41C
10.5	24 AC/DC	A	**3RF23 10-1AA12**	1	1 unit	41C
10.5	110 ... 230 AC	A	**3RF23 10-1AA22**	1	1 unit	41C
20		A	**3RF23 20-1AA22**	1	1 unit	41C
30		A	**3RF23 30-1AA22**	1	1 unit	41C
40		A	**3RF23 40-1AA22**	1	1 unit	41C
50		A	**3RF23 50-1AA22**	1	1 unit	41C
Zero-point switching Rated operational voltage U_e 48 ... 460 V AC						
 3RF23 20-1						
10.5	24 DC acc. to IEC 61131-2	A	**3RF23 10-1AA04**	1	1 unit	41C
20		A	**3RF23 20-1AA04**	1	1 unit	41C
30		A	**3RF23 30-1AA04**	1	1 unit	41C
40		A	**3RF23 40-1AA04**	1	1 unit	41C
50		A	**3RF23 50-1AA04**	1	1 unit	41C
10.5	24 DC Low Power	A	**3RF23 10-1AA04-0KN0**	1	1 unit	41C
10.5	24 AC/DC	A	**3RF23 10-1AA14**	1	1 unit	41C
20		B	**3RF23 20-1AA14**	1	1 unit	41C
30		A	**3RF23 30-1AA14**	1	1 unit	41C
40		B	**3RF23 40-1AA14**	1	1 unit	41C
50		B	**3RF23 50-1AA14**	1	1 unit	41C
10.5	110 ... 230 AC	A	**3RF23 10-1AA24**	1	1 unit	41C
20		A	**3RF23 20-1AA24**	1	1 unit	41C
30		A	**3RF23 30-1AA24**	1	1 unit	41C
40		A	**3RF23 40-1AA24**	1	1 unit	41C
50		A	**3RF23 50-1AA24**	1	1 unit	41C
10.5	4 ... 30 DC	B	**3RF23 10-1AA44**	1	1 unit	41C
20		A	**3RF23 20-1AA44**	1	1 unit	41C
30		A	**3RF23 30-1AA44**	1	1 unit	41C

For online configurator see www.siemens.com/sirius/configurators.

Other rated control supply voltages on request.

[1] The type current provides information about the performance of the solid-state contactor. The actual permitted rated operational current I_e can be smaller depending on the connection method and start-up conditions. For derating see the manual, "Characteristic curves".

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 3RF23 solid-state contactors, single-phase

Type current[1] I_{max}	Rated control supply voltage U_s	DT	Screw terminals / Configurator — Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	V						
Zero-point switching · Rated operational voltage U_e 48 ... 600 V AC							
30	110 ... 230 AC	B	**3RF23 30-1AA25**		1	1 unit	41C
10.5	4 ... 30 DC	B	**3RF23 10-1AA45**		1	1 unit	41C
20		A	**3RF23 20-1AA45**		1	1 unit	41C
30		A	**3RF23 30-1AA45**		1	1 unit	41C
40		A	**3RF23 40-1AA45**		1	1 unit	41C
50		A	**3RF23 50-1AA45**		1	1 unit	41C
Zero-point switching · Blocking voltage 1600 V · Rated operational voltage U_e 48 ... 600 V AC							
10.5	24 DC acc. to IEC 61131-2	B	**3RF23 10-1AA06**		1	1 unit	41C
20		A	**3RF23 20-1AA06**		1	1 unit	41C
30		A	**3RF23 30-1AA06**		1	1 unit	41C
40		B	**3RF23 40-1AA06**		1	1 unit	41C
50		B	**3RF23 50-1AA06**		1	1 unit	41C
10.5	110 ... 230 AC	B	**3RF23 10-1AA26**		1	1 unit	41C
20		B	**3RF23 20-1AA26**		1	1 unit	41C
30		B	**3RF23 30-1AA26**		1	1 unit	41C
40		B	**3RF23 40-1AA26**		1	1 unit	41C
50		B	**3RF23 50-1AA26**		1	1 unit	41C
Low noise[2] · Zero-point switching · Rated operational voltage U_e 24 ... 230 V AC							
20	24 DC acc. to IEC 61131-2	B	**3RF23 20-1CA02**		1	1 unit	41C
30		B	**3RF23 30-1CA02**		1	1 unit	41C
20	110 ... 230 AC	B	**3RF23 20-1CA22**		1	1 unit	41C
Low noise[2] · Zero-point switching · Rated operational voltage U_e 48 ... 460 V AC							
20	24 DC acc. to IEC 61131-2	B	**3RF23 20-1CA04**		1	1 unit	41C
20	110 ... 230 AC	B	**3RF23 20-1CA24**		1	1 unit	41C
20	4 ... 30 DC	A	**3RF23 20-1CA44**		1	1 unit	41C
Short-circuit proof with B-type MCB · Zero-point switching · Rated operational voltage U_e 24 ... 230 V AC							
20	24 DC acc. to IEC 61131-2	A	**3RF23 20-1DA02**		1	1 unit	41C
20	110 ... 230 AC	B	**3RF23 20-1DA22**		1	1 unit	41C
Short-circuit proof with B-type MCB · Zero-point switching · Rated operational voltage U_e 48 ... 460 V AC							
20	24 DC acc. to IEC 61131-2	A	**3RF23 20-1DA04**		1	1 unit	41C
20	110 ... 230 AC	B	**3RF23 20-1DA24**		1	1 unit	41C
20	4 ... 30 DC	A	**3RF23 20-1DA44**		1	1 unit	41C
30		A	**3RF23 30-1DA44**		1	1 unit	41C


3RF23 40-1


3RF23 20-1


3RF23 20-1

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Other rated control supply voltages on request.

1) The type current provides information about the performance of the solid-state contactor. The actual permitted rated operational current I_e can be smaller depending on the connection method and start-up conditions. For derating see the manual, "Characteristic curves".

2) See page 6/85.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RF23 solid-state contactors, single-phase

	Type current[1] I_{max}	Operational current I_e/AC-15[2]	Rated control supply voltage U_s	DT	Screw terminals / Configurator — Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	A	A	V						
Instantaneous switching · Rated operational voltage U_e 24 ... 230 V AC									
 3RF23 10-1	10.5	6	24 DC acc. to IEC 61131-2	A	**3RF23 10-1BA02**		1	1 unit	41C
	20	12		A	**3RF23 20-1BA02**		1	1 unit	41C
	30	15		B	**3RF23 30-1BA02**		1	1 unit	41C
	40	20		B	**3RF23 40-1BA02**		1	1 unit	41C
	50	25		B	**3RF23 50-1BA02**		1	1 unit	41C
	50	27.5		B	**3RF23 70-1BA02**		1	1 unit	41C
	50	30		B	**3RF23 90-1BA02**		1	1 unit	41C
	10.5	6	110 ... 230 AC	B	**3RF23 10-1BA22**		1	1 unit	41C
	20	12		B	**3RF23 20-1BA22**		1	1 unit	41C
	30	15		B	**3RF23 30-1BA22**		1	1 unit	41C
	40	20		B	**3RF23 40-1BA22**		1	1 unit	41C
	50	25		B	**3RF23 50-1BA22**		1	1 unit	41C
	50	27.5		B	**3RF23 70-1BA22**		1	1 unit	41C
	50	30		B	**3RF23 90-1BA22**		1	1 unit	41C
Instantaneous switching · Rated operational voltage U_e 48 ... 460 V AC									
 3RF23 20-1	10.5	6	24 DC acc. to IEC 61131-2	A	**3RF23 10-1BA04**		1	1 unit	41C
	20	12		A	**3RF23 20-1BA04**		1	1 unit	41C
	30	15		A	**3RF23 30-1BA04**		1	1 unit	41C
	40	20		B	**3RF23 40-1BA04**		1	1 unit	41C
	50	25		B	**3RF23 50-1BA04**		1	1 unit	41C
	50	27.5		B	**3RF23 70-1BA04**		1	1 unit	41C
	50	30		B	**3RF23 90-1BA04**		1	1 unit	41C
	10.5	6	110 ... 230 AC	B	**3RF23 10-1BA24**		1	1 unit	41C
	20	12		B	**3RF23 20-1BA24**		1	1 unit	41C
	30	15		B	**3RF23 30-1BA24**		1	1 unit	41C
	40	20		B	**3RF23 40-1BA24**		1	1 unit	41C
	50	25		B	**3RF23 50-1BA24**		1	1 unit	41C
	50	27.5		B	**3RF23 70-1BA24**		1	1 unit	41C
	50	30		B	**3RF23 90-1BA24**		1	1 unit	41C
	20	12	4 ... 30 DC	B	**3RF23 20-1BA44**		1	1 unit	41C
	30	15		B	**3RF23 30-1BA44**		1	1 unit	41C
	50	25		B	**3RF23 50-1BA44**		1	1 unit	41C
Instantaneous switching · Blocking voltage 1600 V · Rated operational voltage U_e 48 ... 600 V AC									
 3RF23 40-1	10.5	6	24 DC acc. to IEC 61131-2	B	**3RF23 10-1BA06**		1	1 unit	41C
	20	12		A	**3RF23 20-1BA06**		1	1 unit	41C
	30	15		B	**3RF23 30-1BA06**		1	1 unit	41C
	40	20		B	**3RF23 40-1BA06**		1	1 unit	41C
	50	25		B	**3RF23 50-1BA06**		1	1 unit	41C
	50	27.5		B	**3RF23 70-1BA06**		1	1 unit	41C
	50	30		B	**3RF23 90-1BA06**		1	1 unit	41C
	10.5	6	110 ... 230 AC	B	**3RF23 10-1BA26**		1	1 unit	41C
	20	12		B	**3RF23 20-1BA26**		1	1 unit	41C
	30	15		B	**3RF23 30-1BA26**		1	1 unit	41C
	40	20		B	**3RF23 40-1BA26**		1	1 unit	41C
	50	25		B	**3RF23 50-1BA26**		1	1 unit	41C
	50	27.5		B	**3RF23 70-1BA26**		1	1 unit	41C
	50	30		B	**3RF23 90-1BA26**		1	1 unit	41C

For online configurator see www.siemens.com/sirius/configurators.

Other rated control supply voltages on request.

1) The type current provides information about the performance of the solid-state contactor. The actual permitted rated operational current I_e can be smaller depending on the connection method and start-up conditions. For derating see the manual, "Characteristic curves".

2) Utilization category AC-15:
Electromagnetic loads, e.g. valves according to IEC 60947-5-1.
Parameters: max. 1200 1/h, 50% ON period, 10-times inrush current for 60 ms.

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SIRIUS 3RF23 solid-state contactors, single-phase

Type current[1] I_{max}	Rated control supply voltage U_s	DT	Spring-type terminals / Configurator — Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	V						
Zero-point switching · Rated operational voltage U_e 24 ... 230 V AC							
10.5	24 DC acc. to IEC 61131-2	B	**3RF23 10-2AA02**		1	1 unit	41C
20		A	**3RF23 20-2AA02**		1	1 unit	41C
10.5	110 ... 230 AC	B	**3RF23 10-2AA22**		1	1 unit	41C
20		B	**3RF23 20-2AA22**		1	1 unit	41C
Zero-point switching · Rated operational voltage U_e 48 ... 460 V AC							
10.5	24 DC acc. to IEC 61131-2	A	**3RF23 10-2AA04**		1	1 unit	41C
20		A	**3RF23 20-2AA04**		1	1 unit	41C
10.5	110 ... 230 AC	B	**3RF23 10-2AA24**		1	1 unit	41C
20		B	**3RF23 20-2AA24**		1	1 unit	41C
Zero-point switching · Blocking voltage 1600 V · Rated operational voltage U_e 48 ... 600 V AC							
10.5	24 DC acc. to IEC 61131-2	B	**3RF23 10-2AA06**		1	1 unit	41C
20		A	**3RF23 20-2AA06**		1	1 unit	41C
10.5	110 ... 230 AC	B	**3RF23 10-2AA26**		1	1 unit	41C
20		B	**3RF23 20-2AA26**		1	1 unit	41C
Low noise[2] · Zero-point switching · Rated operational voltage U_e 24 ... 230 V AC							
20	24 DC acc. to IEC 61131-2	B	**3RF23 20-2CA02**		1	1 unit	41C
20	110 ... 230 AC	B	**3RF23 20-2CA22**		1	1 unit	41C
Low noise[2] · Zero-point switching · Rated operational voltage U_e 48 ... 460 V AC							
20	24 DC acc. to IEC 61131-2	B	**3RF23 20-2CA04**		1	1 unit	41C
20	110 ... 230 AC	B	**3RF23 20-2CA24**		1	1 unit	41C
Short-circuit proof with B-type MCB · Zero-point switching · Rated operational voltage U_e 24 ... 230 V AC							
20	110 ... 230 AC	B	**3RF23 20-2DA22**		1	1 unit	41C
Short-circuit proof with B-type MCB · Zero-point switching · Rated operational voltage U_e 48 ... 460 V AC							
20	24 DC acc. to IEC 61131-2	B	**3RF23 20-2DA04**		1	1 unit	41C
20	110 ... 230 AC	B	**3RF23 20-2DA24**		1	1 unit	41C



3RF23 20-2

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Other rated control supply voltages on request.

1) The type current provides information about the performance of the solid-state contactor. The actual permitted rated operational current I_e can be smaller depending on the connection method and start-up conditions. For derating see the manual, "Characteristic curves".

2) See page 6/85.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RF23 solid-state contactors, single-phase

	Type current[1] I_{max}	Rated control supply voltage U_s	DT	Ring terminal lug connection / Configurator	PU (UNIT, SET, M)	PS*	PG
	A	V		Order No. / Price per PU			
Zero-point switching Rated operational voltage U_e 24 ... 230 V AC							
 3RF23 50-3	10.5	24 DC acc. to IEC 61131-2	B	**3RF23 10-3AA02**	1	1 unit	41C
	20		B	**3RF23 20-3AA02**	1	1 unit	41C
	30		B	**3RF23 30-3AA02**	1	1 unit	41C
	40		B	**3RF23 40-3AA02**	1	1 unit	41C
	50		B	**3RF23 50-3AA02**	1	1 unit	41C
	70		A	**3RF23 70-3AA02**	1	1 unit	41C
	88		B	**3RF23 90-3AA02**	1	1 unit	41C
	10.5	110 ... 230 AC	B	**3RF23 10-3AA22**	1	1 unit	41C
	20		B	**3RF23 20-3AA22**	1	1 unit	41C
	30		B	**3RF23 30-3AA22**	1	1 unit	41C
	40		B	**3RF23 40-3AA22**	1	1 unit	41C
	50		B	**3RF23 50-3AA22**	1	1 unit	41C
	70		B	**3RF23 70-3AA22**	1	1 unit	41C
	88		B	**3RF23 90-3AA22**	1	1 unit	41C
Zero-point switching Rated operational voltage U_e 48 ... 460 V AC							
 3RF23 30-3, Covers optional	10.5	24 DC acc. to IEC 61131-2	B	**3RF23 10-3AA04**	1	1 unit	41C
	20		B	**3RF23 20-3AA04**	1	1 unit	41C
	30		A	**3RF23 30-3AA04**	1	1 unit	41C
	40		B	**3RF23 40-3AA04**	1	1 unit	41C
	50		B	**3RF23 50-3AA04**	1	1 unit	41C
	70		A	**3RF23 70-3AA04**	1	1 unit	41C
	88		A	**3RF23 90-3AA04**	1	1 unit	41C
	10.5	110 ... 230 AC	B	**3RF23 10-3AA24**	1	1 unit	41C
	20		B	**3RF23 20-3AA24**	1	1 unit	41C
	30		B	**3RF23 30-3AA24**	1	1 unit	41C
	40		B	**3RF23 40-3AA24**	1	1 unit	41C
	50		B	**3RF23 50-3AA24**	1	1 unit	41C
	70		B	**3RF23 70-3AA24**	1	1 unit	41C
	88		B	**3RF23 90-3AA24**	1	1 unit	41C
	20	4 ... 30 DC	B	**3RF23 20-3AA44**	1	1 unit	41C
	30		B	**3RF23 30-3AA44**	1	1 unit	41C
	50		B	**3RF23 50-3AA44**	1	1 unit	41C
Zero-point switching Rated operational voltage U_e 48 ... 600 V AC							
	40	4 ... 30 DC	B	**3RF23 40-3AA45**	1	1 unit	41C
	70		A	**3RF23 70-3AA45**	1	1 unit	41C
	88		B	**3RF23 90-3AA45**	1	1 unit	41C
Zero-point switching · Blocking voltage 1600 V Rated operational voltage U_e 48 ... 600 V AC							
	10.5	24 DC acc. to IEC 61131-2	B	**3RF23 10-3AA06**	1	1 unit	41C
	20		B	**3RF23 20-3AA06**	1	1 unit	41C
	30		B	**3RF23 30-3AA06**	1	1 unit	41C
	40		B	**3RF23 40-3AA06**	1	1 unit	41C
	50		B	**3RF23 50-3AA06**	1	1 unit	41C
	70		B	**3RF23 70-3AA06**	1	1 unit	41C
	88		B	**3RF23 90-3AA06**	1	1 unit	41C
	10.5	110 ... 230 AC	B	**3RF23 10-3AA26**	1	1 unit	41C
	20		B	**3RF23 20-3AA26**	1	1 unit	41C
	30		B	**3RF23 30-3AA26**	1	1 unit	41C
	40		B	**3RF23 40-3AA26**	1	1 unit	41C
	50		B	**3RF23 50-3AA26**	1	1 unit	41C
	70		A	**3RF23 70-3AA26**	1	1 unit	41C
	88		B	**3RF23 90-3AA26**	1	1 unit	41C

For online configurator see www.siemens.com/sirius/configurators.

[1] The type current provides information about the performance of the solid-state contactor. The actual permitted rated operational current I_e can be smaller depending on the connection method and start-up conditions. For derating see the manual, "Characteristic curves".

Other rated control supply voltages on request.

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SIRIUS 3RF23 solid-state contactors, single-phase

Type current[1] I_{max}	Operational current I_e/AC-15[2]	Rated control supply voltage U_s	DT	Ring terminal lug connection / Configurator — Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	A	V						
Instantaneous switching · Rated operational voltage U_e 24 ... 230 V AC								
70	27.5	24 DC acc. to IEC 61131-2	B	**3RF23 70-3BA02**		1	1 unit	41C
88	30		B	**3RF23 90-3BA02**		1	1 unit	41C
70	27.5	110 ... 230 AC	B	**3RF23 70-3BA22**		1	1 unit	41C
88	30		B	**3RF23 90-3BA22**		1	1 unit	41C
Instantaneous switching · Rated operational voltage U_e 48 ... 460 V AC								
70	27.5	24 DC acc. to IEC 61131-2	B	**3RF23 70-3BA04**		1	1 unit	41C
88	30		B	**3RF23 90-3BA04**		1	1 unit	41C
70	27.5	110 ... 230 AC	B	**3RF23 70-3BA24**		1	1 unit	41C
88	30		B	**3RF23 90-3BA24**		1	1 unit	41C
Instantaneous switching · Blocking voltage 1600 V · Rated operational voltage U_e 48 ... 600 V AC								
70	27.5	24 DC acc. to IEC 61131-2	B	**3RF23 70-3BA06**		1	1 unit	41C
88	30		B	**3RF23 90-3BA06**		1	1 unit	41C
70	27.5	110 ... 230 AC	B	**3RF23 70-3BA26**		1	1 unit	41C
88	30		B	**3RF23 90-3BA26**		1	1 unit	41C
Short-circuit proof with B-type MCB · Zero-point switching · Rated operational voltage U_e 24 ... 230 V AC								
20	--	24 DC acc. to IEC 61131-2	B	**3RF23 20-3DA02**		1	1 unit	41C
20	--	110 ... 230 AC	B	**3RF23 20-3DA22**		1	1 unit	41C
Short-circuit proof with B-type MCB · Zero-point switching · Rated operational voltage U_e 48 ... 460 V AC								
20	--	24 DC acc. to IEC 61131-2	B	**3RF23 20-3DA04**		1	1 unit	41C
20	--	110 ... 230 AC	B	**3RF23 20-3DA24**		1	1 unit	41C

For online configurator see www.siemens.com/sirius/configurators.

Other rated control supply voltages on request.

1) The type current provides information about the performance of the solid-state contactor. The actual permitted rated operational current I_e can be smaller depending on the connection method and start-up conditions. For derating see the manual, "Characteristic curves".

2) Utilization category AC-15: Electromagnetic loads, e.g. valves according to IEC 60947-5-1. Parameters: max. 1 200 1/h, 50 % ON period, 10-times inrush current for 60 ms.

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Optional accessories						
		Spring-type terminals				
Screwdrivers for all SIRIUS devices with spring-type terminals. Length approx. 200 mm, size 3.0 mm x 0.5 mm, titanium gray/black, partially insulated	A	**3RA29 08-1A**		1	1 unit	41B
		Ring terminal lug connection				
Terminal covers for 3RF21 solid-state relays and 3RF23 solid-state contactors in ring terminal lug connection. (After simple adaptation, this terminal cover can also be used for screw connection).	A	**3RF29 00-3PA88**		1	10 units	41C

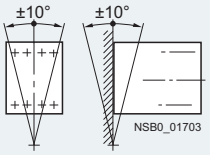

3RA29 08-1A


3RF29 00-3PA88

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Technical specifications

Type		3RF24 ..-1....	3RF24 ..-2....	3RF24 ..-3....
Dimensions (W x H x D)		See overleaf		
General data				
Ambient temperature				
• During operation, derating from 40 °C	°C	-25 ... +60		
• During storage	°C	-55 ... +80		
Installation altitude	m	0 ... 1000; derating from 1000		
Shock resistance acc. to IEC 60068-2-27	*g*/ms	15/11		
Vibration resistance acc. to IEC 60068-2-6	*g*	2		
Degree of protection		IP20		
Insulation strength at 50/60 Hz (main/control circuit to floor)	V rms	4000		
Electromagnetic compatibility (EMC)				
• Emitted interference according to IEC 60947-4-3 - Conducted interference voltage		Class A for industrial applications[1]		
• Interference immunity				
- Electrostatic discharge according to IEC 61000-4-2 (corresponds to degree of severity 3)	kV	Contact discharge 4; air discharge 8; behavior criterion 2		
- Induced RF fields according to IEC 61000-4-6	MHz	0.15 ... 80; 140 dBµV; behavior criterion 1		
- Burst acc. to IEC 61000-4-4	kV	2/5.0 kHz; behavior criterion 2		
- Surge acc. to IEC 61000-4-5	kV	Conductor - ground 2; conductor - conductor 1; behavior criterion 2		
Connection type		**Screw terminals**	**Spring-type terminals**	**Ring terminal lug connection**
Connection, main contacts				
• Conductor cross-section				
- Solid	mm^2	2 x (1.5 ... 2.5)[2], 2 x (2.5 ... 6)[2]	2 x (0.5 ... 2.5)	--
- Finely stranded with end sleeve	mm^2	2 x (1 ... 2.5)[2]; 2 x (2.5 ... 6)[2]; 1 x 10	2 x (0.5 ... 1.5)	--
- Finely stranded without end sleeve	mm^2	--	2 x (0.5 ... 2.5)	--
- Solid or stranded, AWG cables		2 x (AWG 14 ... 10)	2 x (AWG 18 ... 14)	--
• Stripped length	mm	10	10	--
• Terminal screws		M4	--	M5
- Tightening torque	Nm	2 ... 2.5		2 ... 2.5
	lb.in	18 ... 22		18 ... 22
• Cable lugs		--	--	
- According to DIN 46234				5-2.5 ... 5-25
- According to JIS C 2805				R 2-5 ... R 14-5
- Width, maximum	mm			12
Connection, auxiliary/control contacts				
• Conductor cross-section	mm	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.0)	0.5 ... 2.5	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.0)
	AWG	AWG 20 ... 12	AWG 20 ... 12	AWG 20 ... 12
• Stripped length	mm	7	10	7
• Terminal screw		M3	--	M3
- Tightening torque, Ø 3.5, PZ 1	Nm	0.5 ... 0.6		0.5 ... 0.6
	lb.in	4.5 ... 5.3		4.5 ... 5.3
Grounding screw[3]				
• Size (standard screw)		M4	M4	M4
Permissible mounting positions				

1) These products were built as Class A devices. The use of these devices in residential areas could result in radio interference. In this case these may be required to introduce additional interference suppression measures. The versions 3RF24 ..-1AC55 comply with Class B for residential, business and commercial applications

2) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

3) The screw is not included in the scope of supply.

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SIRIUS 3RF24 solid-state contactors, three-phase

Type	Type current I_{AC-51} at 40 °C	Rated operational current I_e Acc. to IEC 60947-4-3 for 40 °C	Rated operational current I_e Acc. to UL/CSA for 50 °C	Power loss at I_{AC-51}	Minimum load current	Max. off-state current	Rated peak withstand current I_{tsm}	I^2t value
	A	A	A	W	A	mA	A	A^2s
Main circuit								
3RF24 10-.AB.5	10.5	7	7	23	0.1	10	200	200
3RF24 20-.AB.5	22	15	15	44	0.5	10	600	1800
3RF24 30-.AB.5	30	22	22	61	0.5	10	1200	7200
3RF24 40-.AB.5	40	30	30	80	0.5	10	1150	6600
3RF24 50-.AB.5	50	38	38	107	0.5	10	1150	6600
3RF24 10-.AC.5	10.5	7	7	31	0.1	10	300	450
3RF24 20-.AC.5	22	15	15	66	0.5	10	600	1800
3RF24 30-.AC.5	30	22	22	91	0.5	10	1200	7200
3RF24 40-.AC.5	40	30	30	121	0.5	10	1150	6600
3RF24 50-.AC.5	50	38	38	160	0.5	10	1150	6600

1) The type current provides information about the performance of the solid-state contactor. The actual permitted rated operational current I_e can be smaller depending on the connection method and start-up conditions.

Type	Type current I_{AC-51}	Dimensions (W x H x D) (including heat sink)
	A	mm
Main circuit		
3RF24 10-.AB..	10.5	45 x 100 x 105
3RF24 10-.AC..		
3RF24 20-.AB..	22	67 x 100 x 112.5
3RF24 20-.AC..	22	89.5 x 100 x 112.5
3RF24 30-.AB..	30	

Type	Type current I_{AC-51}	Dimensions (W x H x D) (including heat sink)
	A	mm
Main circuit		
3RF24 30-.AC..	30	113.5 x 100 x 121
3RF24 40-.AB..	40	
3RF24 40-.AC..	40	157.5 x 100 x 121
3RF24 50-.AB..	50	
3RF24 50-.AC..	50	157.5 x 180 x 121

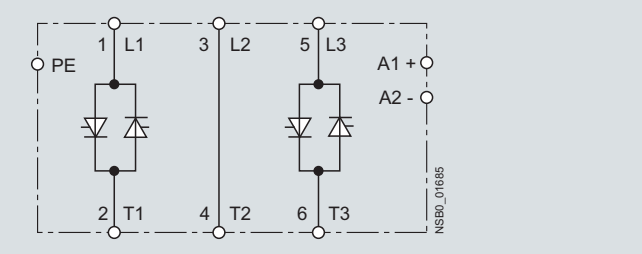
Type		3RF24 ..-.AB.5	3RF24 ..-.AC.5
Main circuit			
Controlled phases		2-phase	3-phase
Rated operational voltage U_e	V AC	48 ... 600	48 ... 600
• Operating range	V AC	40 ... 660	40 ... 660
• Rated frequency	Hz	50/60 ± 10 %	50/60 ± 10 %
Rated insulation voltage U_i	V	600	600
Rated impulse withstand voltage U_{imp}	kV	6	6
Blocking voltage	V	1200	1200
Rage of voltage rise	V/µs	1000	1000

Type		3RF24 ..-...3.	3RF24 ..-...4.	3RF24 ..-...5.
Control circuits				
Method of operation		AC operation	DC operation	AC operation
Rated control supply voltage U_s	V	110	4 ... 30	190 ... 230
Rated frequency of the control supply voltage	Hz	50/60 ± 10 %	--	50/60 ± 10 %
Actuating voltage, max.	V	121	30	253
Typical actuating current	mA	15	30	15
Response voltage	V	90	4	180
Drop-out voltage	V	< 40	< 1	< 40
Operating times				
• ON-delay	ms	40 + max. one half-wave	1 + max. one half-wave	40 + max. one half-wave
• OFF-delay	ms	40 + max. one half-wave	1 + max. one half-wave	40 + max. one half-wave

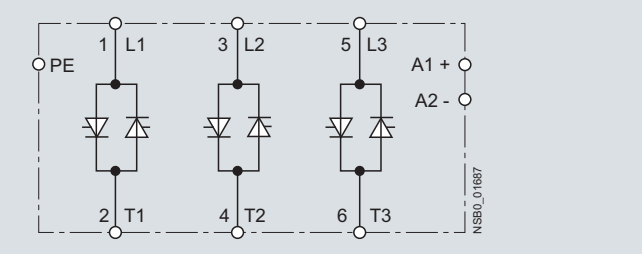
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Circuit diagrams

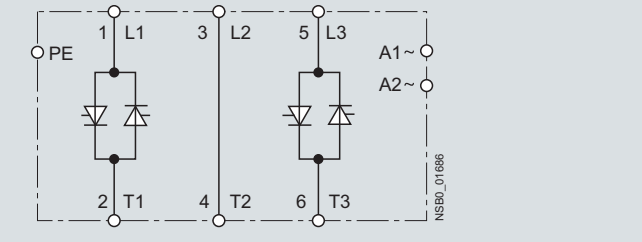
Two-phase controlled, DC control supply voltage



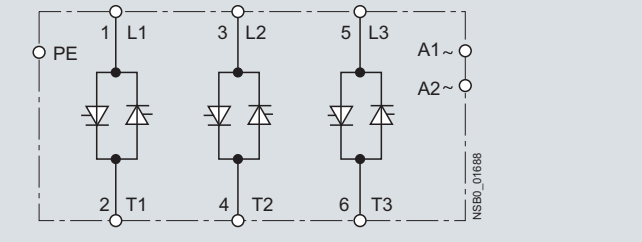
Three-phase controlled, DC control supply voltage



Two-phase controlled, AC control supply voltage



Three-phase controlled, AC control supply voltage



Selection and ordering data

Type current[1] I_{max}	Rated control supply voltage U_s	DT	Screw terminals / Configurator — Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	V						
Zero-point switching Rated operational voltage U_e 48 ... 600 V AC							
Two-phase controlled							
10.5	4 ... 30 DC	A	**3RF24 10-1AB45**		1	1 unit	41C
20		A	**3RF24 20-1AB45**		1	1 unit	41C
30		A	**3RF24 30-1AB45**		1	1 unit	41C
40		B	**3RF24 40-1AB45**		1	1 unit	41C
50		A	**3RF24 50-1AB45**		1	1 unit	41C
10.5	110 AC	B	**3RF24 10-1AB35**		1	1 unit	41C
20		B	**3RF24 20-1AB35**		1	1 unit	41C
30		B	**3RF24 30-1AB35**		1	1 unit	41C
40		B	**3RF24 40-1AB35**		1	1 unit	41C
50		B	**3RF24 50-1AB35**		1	1 unit	41C
10.5	230 AC	B	**3RF24 10-1AB55**		1	1 unit	41C
20		B	**3RF24 20-1AB55**		1	1 unit	41C
30		B	**3RF24 30-1AB55**		1	1 unit	41C
40		B	**3RF24 40-1AB55**		1	1 unit	41C
50		B	**3RF24 50-1AB55**		1	1 unit	41C
Three-phase controlled							
10.5	4 ... 30 DC	A	**3RF24 10-1AC45**		1	1 unit	41C
20		A	**3RF24 20-1AC45**		1	1 unit	41C
30		A	**3RF24 30-1AC45**		1	1 unit	41C
40		A	**3RF24 40-1AC45**		1	1 unit	41C
50		A	**3RF24 50-1AC45**		1	1 unit	41C
10.5	110 AC	B	**3RF24 10-1AC35**		1	1 unit	41C
20		B	**3RF24 20-1AC35**		1	1 unit	41C
30		B	**3RF24 30-1AC35**		1	1 unit	41C
40		B	**3RF24 40-1AC35**		1	1 unit	41C
50		B	**3RF24 50-1AC35**		1	1 unit	41C
10.5	230 AC	B	**3RF24 10-1AC55**		1	1 unit	41C
20		B	**3RF24 20-1AC55**		1	1 unit	41C
30		B	**3RF24 30-1AC55**		1	1 unit	41C
40		B	**3RF24 40-1AC55**		1	1 unit	41C
50		B	**3RF24 50-1AC55**		1	1 unit	41C



3RF24 20-1AB45



3RF24 10-1AC45

For online configurator see www.siemens.com/sirius/configurators.

[1] The type current provides information about the performance of the solid-state contactor. The actual permitted rated operational current I_e can be smaller depending on the connection method and start-up conditions. For derating see the manual, "Characteristic curves".

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SIRIUS 3RF24 solid-state contactors, three-phase


3RF24 10-2AB45

Type current[1] I_{max}	Rated control supply voltage U_s	DT	Spring-type terminals Configurator	PU (UNIT, SET, M)	PS*	PG
A	V		Order No.			
Zero-point switching Rated operational voltage U_e 48 ... 600 V AC						
Two-phase controlled						
10	4 ... 30 DC	B	**3RF24 10-2AB45**	1	1 unit	41C
20		B	**3RF24 20-2AB45**	1	1 unit	41C
10	230 AC	B	**3RF24 10-2AB55**	1	1 unit	41C
20		B	**3RF24 20-2AB55**	1	1 unit	41C
Three-phase controlled						
10	4 ... 30 DC	B	**3RF24 10-2AC45**	1	1 unit	41C
20		B	**3RF24 20-2AC45**	1	1 unit	41C
10	230 AC	B	**3RF24 10-2AC55**	1	1 unit	41C
20		B	**3RF24 20-2AC55**	1	1 unit	41C

Type current[1] I_{max}	Rated control supply voltage U_s	DT	Ring terminal lug connection Configurator	PU (UNIT, SET, M)	PS*	PG
A	V		Order No.			
Zero-point switching Rated operational voltage U_e 48 ... 600 V AC						
Two-phase controlled						
50	4 ... 30 DC	B	**3RF24 50-3AB45**	1	1 unit	41C
50	230 AC	B	**3RF24 50-3AB55**	1	1 unit	41C
Three-phase controlled						
50	4 ... 30 DC	B	**3RF24 50-3AC45**	1	1 unit	41C
50	230 AC	B	**3RF24 50-3AC55**	1	1 unit	41C

For online configurator see www.siemens.com/sirius/configurators.

1) The type current provides information about the performance of the solid-state contactor. The actual permitted rated operational current I_e can be smaller depending on the connection method and start-up conditions. For derating see the manual, "Characteristic curves".

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Function modules for SIRIUS 3RF2 solid-state switching devices

A great variety of applications demand an expanded range of functionality. With our function modules, these requirements can be met really easily. The modules are mounted simply by clicking them into place; straight away the necessary connections are made with the solid-state relay or contactor.

The plug-in connection to control the solid-state switching devices can simply remain in use. The external connections have screw terminals.

The following function modules are available:

- Converters
- Load monitoring
- Heating current monitoring
- Power controllers
- Power regulators

With the exception of the converter, the function modules can be used only with single-phase solid-state switching devices.

Recommended assignment of the function modules to the 3RF21 single-phase solid-state relays

Type	Accessories					
	Converters	Load monitoring		Heating current monitoring[1]	Power controllers[1)2)]	Power regulators[1)2)]
		Basic	Extended[1)]			
Type current = 20 A						
3RF21 20-1A.02	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA13	--	3RF29 20-0KA13	3RF29 20-0HA13
3RF21 20-1A.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF21 20-1A.22	--	--	3RF29 20-0GA33	--	--	--
3RF21 20-1A.24	--	--	3RF29 20-0GA36	--	--	--
3RF21 20-1A.42	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA13	--	3RF29 20-0KA13	3RF29 20-0HA13
3RF21 20-1A.45	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF21 20-1B.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF21 20-2A.02	3RF29 00-0EA18	--	--	--	--	--
3RF21 20-2A.04	3RF29 00-0EA18	--	--	--	--	--
3RF21 20-2A.22	--	--	--	--	--	--
3RF21 20-2A.24	--	--	--	--	--	--
3RF21 20-2A.42	3RF29 00-0EA18	--	--	--	--	--
3RF21 20-2A.45	3RF29 00-0EA18	--	--	--	--	--
3RF21 20-3A.02	3RF29 00-0EA18	--	3RF29 20-0GA13	--	--	3RF29 20-0HA13
3RF21 20-3A.04	3RF29 00-0EA18	--	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF21 20-3A.22	--	--	3RF29 20-0GA33	--	3RF29 20-0KA13	3RF29 20-0HA13
3RF21 20-3A.24	--	--	3RF29 20-0GA36	--	3RF29 20-0KA16	3RF29 20-0HA16
Type current = 30 A						
3RF21 30-1A.02	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA13	--	3RF29 50-0KA13	3RF29 50-0HA13
3RF21 30-1A.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 30-1A.06	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 30-1A.22	--	--	3RF29 50-0GA33	--	--	3RF29 50-0HA33
3RF21 30-1A.24	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF21 30-1A.26	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF21 30-1A.42	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA13	--	3RF29 50-0KA13	3RF29 50-0HA13
3RF21 30-1A.45	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 30-1B.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
Type current = 50 A						
3RF21 50-1A.02	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA13	--	3RF29 50-0KA13	3RF29 50-0HA13
3RF21 50-1A.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 50-1A.06	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 50-1A.22	--	--	3RF29 50-0GA33	--	--	3RF29 50-0HA33
3RF21 50-1A.24	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF21 50-1A.26	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF21 50-1A.45	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 50-1B.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 50-1B.06	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 50-1B.22	--	--	3RF29 50-0GA33	--	--	3RF29 50-0HA33
3RF21 50-2A.02	3RF29 00-0EA18	--	--	--	--	--
3RF21 50-2A.04	3RF29 00-0EA18	--	--	--	--	--
3RF21 50-2A.06	3RF29 00-0EA18	--	--	--	--	--
3RF21 50-2A.14	3RF29 00-0EA18	--	--	--	--	--
3RF21 50-2A.22	--	--	--	--	--	--
3RF21 50-2A.24	--	--	--	--	--	--
3RF21 50-2A.26	--	--	--	--	--	--
3RF21 50-3A.02	3RF29 00-0EA18	--	3RF29 50-0GA13	--	3RF29 50-0KA13	3RF29 50-0HA13
3RF21 50-3A.04	3RF29 00-0EA18	--	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 50-3A.06	3RF29 00-0EA18	--	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 50-3A.22	--	--	3RF29 50-0GA33	--	--	3RF29 50-0HA33
3RF21 50-3A.24	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF21 50-3A.26	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36

1) For mains voltages in the range from 110 to 230 V, the 3RF29 ..-0.A13 function module versions can also be combined with solid-state relay versions with greater electric strength (3RF21 ..-....4 , -....5 or -....6).

2) The use of power controllers/regulators is also possible on zero-point switching versions for full-wave control mode. The generalized phase control mode is recommended only for the combination with instantaneous switching versions.

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General data

Type	Accessories					
	Converters	Load monitoring		Heating current monitoring[1]	Power controllers[1)2)]	Power regulators[1)2)]
		Basic	Extended[1)]			
Type current = 70 A						
3RF21 70-1A.02	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA13	--	3RF29 50-0KA13	3RF29 50-0HA13
3RF21 70-1A.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 70-1A.05	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 70-1A.06	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 70-1A.22	--	--	3RF29 50-0GA33	--	--	3RF29 50-0HA33
3RF21 70-1A.24	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF21 70-1A.26	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF21 70-1A.45	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 70-1B.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 70-1C.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
Type current = 90 A						
3RF21 90-1A.02	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA13	--	3RF29 50-0KA13	3RF29 50-0HA13
3RF21 90-1A.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 90-1A.06	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 90-1A.22	--	--	3RF29 50-0GA33	--	--	3RF29 50-0HA33
3RF21 90-1A.24	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF21 90-1A.26	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF21 90-1A.45	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 90-1B.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 90-2A.02	3RF29 00-0EA18	--	--	--	--	--
3RF21 90-2A.04	3RF29 00-0EA18	--	--	--	--	--
3RF21 90-2A.06	3RF29 00-0EA18	--	--	--	--	--
3RF21 90-2A.22	--	--	--	--	--	--
3RF21 90-2A.24	--	--	--	--	--	--
3RF21 90-2A.26	--	--	--	--	--	--
3RF21 90-3A.02	3RF29 00-0EA18	--	3RF29 90-0GA13	--	3RF29 90-0KA13	3RF29 90-0HA13
3RF21 90-3A.04	3RF29 00-0EA18	--	3RF29 90-0GA16	3RF29 32-0JA16	3RF29 90-0KA16	3RF29 90-0HA16
3RF21 90-3A.06	3RF29 00-0EA18	--	3RF29 90-0GA16	3RF29 32-0JA16	3RF29 90-0KA16	3RF29 90-0HA16
3RF21 90-3A.22	--	--	3RF29 90-0GA33	--	--	3RF29 90-0HA33
3RF21 90-3A.24	--	--	3RF29 90-0GA36	--	--	3RF29 90-0HA36
3RF21 90-3A.26	--	--	3RF29 90-0GA36	--	--	3RF29 90-0HA36
3RF21 90-3A.44	3RF29 00-0EA18	--	3RF29 90-0GA16	3RF29 32-0JA16	3RF29 90-0KA16	3RF29 90-0HA16

1) For mains voltages in the range from 110 to 230 V, the 3RF29 ..-0.A13 function module versions can also be combined with solid-state relay versions with greater electric strength (3RF21 ..-....4 , -....5 or -....6).

2) The use of power controllers/regulators is also possible on zero-point switching versions for full-wave control mode. The generalized phase control mode is recommended only for the combination with instantaneous switching versions.

Recommended assignment of the function modules to the 3RF22 three-phase solid-state relays

Type	Accessories					
	Converters	Load monitoring		Heating current monitoring	Power controllers	Power regulators
		Basic	Extended			
Type current up to 55 A						
3RF22 ..-1AA..	3RF29 00-0EA18	--	--	--	--	--
3RF22 ..-2AA..	3RF29 00-0EA18	--	--	--	--	--
3RF22 ..-3AA..	3RF29 00-0EA18	--	--	--	--	--

Recommended assignment of the function modules to the 3RF23 single-phase solid-state contactors

Type	Accessories					
	Converters	Load monitoring		Heating current monitoring[1]	Power controllers[1)2)]	Power regulators[1)2)]
		Basic	Extended[1)]			
Type current I_e = 10.5 A						
3RF23 10-1A.02	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA13	3RF29 16-0JA13	3RF29 20-0KA13	3RF29 20-0HA13
3RF23 10-1A.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 10-1A.06	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 10-1A.12	3RF29 00-0EA18	--	3RF29 20-0GA13	3RF29 16-0JA13	3RF29 20-0KA13	3RF29 20-0HA13
3RF23 10-1A.14	3RF29 00-0EA18	--	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 10-1A.22	--	--	3RF29 20-0GA33	--	--	3RF29 20-0HA33
3RF23 10-1A.24	--	--	3RF29 20-0GA36	--	--	3RF29 20-0HA36
3RF23 10-1A.26	--	--	3RF29 20-0GA36	--	--	3RF29 20-0HA36
3RF23 10-1A.44	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 10-1A.45	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16

1) For mains voltages in the range from 110 to 230 V, the 3RF29 ..-0.A13 function module versions can also be combined with solid-state contactor versions with greater electric strength (3RF23 ..-....4 , -....5 or -....6).

2) The use of power controllers/regulators is also possible on zero-point switching versions for full-wave control mode. The generalized phase control mode is recommended only for the combination with instantaneous switching versions.

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Type	Accessories					
	Converters	Load monitoring		Heating current monitoring[1]	Power controllers[1)2)]	Power regulators[1)2)]
		Basic	Extended[1)]			
Type current I_e = 10.5 A						
3RF23 10-1B.02	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA13	3RF29 16-0JA13	3RF29 20-0KA13	3RF29 20-0HA13
3RF23 10-1B.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 10-1B.06	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 10-1B.22	--	--	3RF29 20-0GA33	--	--	3RF29 20-0HA33
3RF23 10-1B.24	--	--	3RF29 20-0GA36	--	--	3RF29 20-0HA36
3RF23 10-1B.26	--	--	3RF29 20-0GA36	--	--	3RF29 20-0HA36
3RF23 10-2A.02	3RF29 00-0EA18	--	--	--	--	--
3RF23 10-2A.04	3RF29 00-0EA18	--	--	--	--	--
3RF23 10-2A.06	3RF29 00-0EA18	--	--	--	--	--
3RF23 10-2A.22	--	--	--	--	--	--
3RF23 10-2A.24	--	--	--	--	--	--
3RF23 10-2A.26	--	--	--	--	--	--
3RF23 10-3A.02	3RF29 00-0EA18	--	3RF29 20-0GA13	3RF29 16-0JA13	3RF29 20-0KA13	3RF29 20-0HA13
3RF23 10-3A.04	3RF29 00-0EA18	--	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 10-3A.06	3RF29 00-0EA18	--	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 10-3A.22	--	--	3RF29 20-0GA33	--	--	3RF29 20-0HA33
3RF23 10-3A.24	--	--	3RF29 20-0GA36	--	--	3RF29 20-0HA36
3RF23 10-3A.26	--	--	3RF29 20-0GA36	--	--	3RF29 20-0HA36
Type current I_e = 20 A						
3RF23 20-1A.02	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA13	--	3RF29 20-0KA13	3RF29 20-0HA13
3RF23 20-1A.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-1A.06	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-1A.14	3RF29 00-0EA18	--	3RF29 20-0GA16	--	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-1A.22	--	--	3RF29 20-0GA33	--	--	3RF29 20-0HA33
3RF23 20-1A.24	--	--	3RF29 20-0GA36	--	--	3RF29 20-0HA36
3RF23 20-1A.26	--	--	3RF29 20-0GA36	--	--	3RF29 20-0HA36
3RF23 20-1A.44	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-1A.45	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-1B.02	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA13	--	3RF29 20-0KA13	3RF29 20-0HA13
3RF23 20-1B.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-1B.06	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-1B.22	--	--	3RF29 20-0GA33	--	--	3RF29 20-0HA33
3RF23 20-1B.24	--	--	3RF29 20-0GA36	--	--	3RF29 20-0HA36
3RF23 20-1B.26	--	--	3RF29 20-0GA36	--	--	3RF29 20-0HA36
3RF23 20-1B.44	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-1C.02	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA13	--	3RF29 20-0KA13	3RF29 20-0HA13
3RF23 20-1C.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-1C.22	--	--	3RF29 20-0GA33	--	--	3RF29 20-0HA33
3RF23 20-1C.24	--	--	3RF29 20-0GA36	--	--	3RF29 20-0HA36
3RF23 20-1C.44	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-1D.02	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA13	--	3RF29 20-0KA13	3RF29 20-0HA13
3RF23 20-1D.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-1D.22	--	--	3RF29 20-0GA33	--	--	3RF29 20-0HA33
3RF23 20-1D.24	--	--	3RF29 20-0GA36	--	--	3RF29 20-0HA36
3RF23 20-1D.44	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-2A.02	3RF29 00-0EA18	--	--	--	--	--
3RF23 20-2A.04	3RF29 00-0EA18	--	--	--	--	--
3RF23 20-2A.06	3RF29 00-0EA18	--	--	--	--	--
3RF23 20-2A.22	--	--	--	--	--	--
3RF23 20-2A.24	--	--	--	--	--	--
3RF23 20-2A.26	--	--	--	--	--	--
3RF23 20-2C.02	3RF29 00-0EA18	--	--	--	--	--
3RF23 20-2C.04	3RF29 00-0EA18	--	--	--	--	--
3RF23 20-2C.22	--	--	--	--	--	--
3RF23 20-2C.24	--	--	--	--	--	--
3RF23 20-2D.22	--	--	--	--	--	--
3RF23 20-2D.24	--	--	--	--	--	--
3RF23 20-3A.02	3RF29 00-0EA18	--	3RF29 20-0GA13	--	3RF29 20-0KA13	3RF29 20-0HA13
3RF23 20-3A.04	3RF29 00-0EA18	--	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-3A.06	3RF29 00-0EA18	--	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-3A.22	--	--	3RF29 20-0GA33	--	--	3RF29 20-0HA33
3RF23 20-3A.24	--	--	3RF29 20-0GA36	--	--	3RF29 20-0HA36
3RF23 20-3A.26	--	--	3RF29 20-0GA36	--	--	3RF29 20-0HA36
3RF23 20-3A.44	3RF29 00-0EA18	--	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16

1) For mains voltages in the range from 110 to 230 V, the 3RF29 ..-0.A13 function module versions can also be combined with solid-state contactor versions with greater electric strength (3RF23 ..-....4 , -....5 or -....6).

2) The use of power controllers/regulators is also possible on zero-point switching versions for full-wave control mode. The generalized phase control mode is recommended only for the combination with instantaneous switching versions.

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General data

Type	Accessories					
	Converters	Load monitoring Basic[1]	Load monitoring Extended[2]	Heating current monitoring[2]	Power controllers[2)3)]	Power regulators[2)3)]
Type current I_e = 20 A						
3RF23 20-3D.02	3RF29 00-0EA18	--	3RF29 20-0GA13	--	3RF29 20-0KA13	3RF29 20-0HA13
3RF23 20-3D.04	3RF29 00-0EA18	--	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-3D.22	--	--	3RF29 20-0GA33	--	--	3RF29 20-0HA33
3RF23 20-3D.24	--	--	3RF29 20-0GA36	--	--	3RF29 20-0HA36
Type current I_e = 30 A						
3RF23 30-1A.02	3RF29 00-0EA18	--	3RF29 50-0GA13	--	3RF29 50-0KA13	3RF29 50-0HA13
3RF23 30-1A.04	3RF29 00-0EA18	--	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 30-1A.06	3RF29 00-0EA18	--	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 30-1A.14	3RF29 00-0EA18	--	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 30-1A.22	--	--	3RF29 50-0GA33	--	--	3RF29 50-0HA33
3RF23 30-1A.24	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 30-1A.25	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 30-1A.26	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 30-1A.44	3RF29 00-0EA18	--	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 30-1A.45	3RF29 00-0EA18	--	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 30-1B.02	3RF29 00-0EA18	--	3RF29 50-0GA13	--	3RF29 50-0KA13	3RF29 50-0HA13
3RF23 30-1B.04	3RF29 00-0EA18	--	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 30-1B.06	3RF29 00-0EA18	--	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 30-1B.22	--	--	3RF29 50-0GA33	--	--	3RF29 50-0HA33
3RF23 30-1B.24	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 30-1B.26	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 30-1B.44	3RF29 00-0EA18	--	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 30-1C.02	3RF29 00-0EA18	--	3RF29 50-0GA13	--	--	3RF29 50-0HA13
3RF23 30-1D.44	3RF29 00-0EA18	--	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 30-3A.02	3RF29 00-0EA18	--	3RF29 50-0GA13	--	3RF29 50-0KA13	3RF29 50-0HA13
3RF23 30-3A.04	3RF29 00-0EA18	--	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 30-3A.06	3RF29 00-0EA18	--	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 30-3A.22	--	--	3RF29 50-0GA33	--	--	3RF29 50-0HA33
3RF23 30-3A.24	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 30-3A.26	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 30-3A.44	3RF29 00-0EA18	--	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
Type current I_e = 40 A						
3RF23 40-1A.02	3RF29 00-0EA18	--	3RF29 50-0GA13	--	3RF29 50-0KA13	3RF29 50-0HA13
3RF23 40-1A.04	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 40-1A.06	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 40-1A.14	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 40-1A.22	--	--	3RF29 50-0GA33	--	--	3RF29 50-0HA33
3RF23 40-1A.24	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 40-1A.26	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 40-1A.45	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 40-1B.02	3RF29 00-0EA18	--	3RF29 50-0GA13	--	3RF29 50-0KA13	3RF29 50-0HA13
3RF23 40-1B.04	3RF29 00-0EA18	--	3RF29 50-0GA13	--	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 40-1B.06	3RF29 00-0EA18	--	3RF29 50-0GA13	--	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 40-1B.22	--	--	3RF29 50-0GA33	--	--	3RF29 50-0HA33
3RF23 40-1B.24	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 40-1B.26	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 40-3A.02	3RF29 00-0EA18	--	3RF29 50-0GA13	--	3RF29 50-0KA13	3RF29 50-0HA13
3RF23 40-3A.04	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 40-3A.06	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 40-3A.22	--	--	3RF29 50-0GA33	--	--	3RF29 50-0HA33
3RF23 40-3A.24	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 40-3A.26	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 40-3A.45	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16
Type current I_e = 50 A						
3RF23 50-1A.02	3RF29 00-0EA18	--	3RF29 50-0GA13	--	3RF29 50-0KA13	3RF29 50-0HA13
3RF23 50-1A.04	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 50-1A.06	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 50-1A.14	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 50-1A.22	--	--	3RF29 50-0GA33	--	--	3RF29 50-0HA33
3RF23 50-1A.24	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 50-1A.26	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 50-1A.45	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16

1) The technical specifications must be taken into account when selecting the function modules. More combinations may be possible if the solid-state relays and contactors are not fully loaded, e.g. a load monitor for 20 A can also be operated with a solid-state contactor for 30 A if the load current during operation does not exceed 20 A.

2) For mains voltages in the range from 110 to 230 V, the 3RF29 ..-0.A13 function module versions can also be combined with solid-state contactor versions with greater electric strength (3RF23 ..-....4 , -....5 or -....6).

3) The use of power controllers/regulators is also possible on zero-point switching versions for full-wave control mode. The generalized phase control mode is recommended only for the combination with instantaneous switching versions.

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Type	Accessories					
	Converters	Load monitoring		Heating current monitoring[1]	Power controllers[1)2)]	Power regulators[1)2)]
		Basic	Extended[1)]			
Type current I_e = 50 A						
3RF23 50-1B.02	3RF29 00-0EA18	--	3RF29 50-0GA13	--	3RF29 50-0KA13	3RF29 50-0HA13
3RF23 50-1B.04	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 50-1B.06	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 50-1B.22	--	--	3RF29 50-0GA33	--	--	3RF29 50-0HA33
3RF23 50-1B.24	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 50-1B.26	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 50-1B.44	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 50-3A.02	3RF29 00-0EA18	--	3RF29 50-0GA13	--	3RF29 50-0KA13	3RF29 50-0HA13
3RF23 50-3A.04	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 50-3A.06	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 50-3A.22	--	--	3RF29 50-0GA33	--	--	3RF29 50-0HA33
3RF23 50-3A.24	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 50-3A.26	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 50-3A.44	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16
Type current I_e = 70 A						
3RF23 70-1B.02	3RF29 00-0EA18	--	3RF29 50-0GA13	--	3RF29 50-0KA13	3RF29 50-0HA13
3RF23 70-1B.04	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 70-1B.06	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 70-1B.22	--	--	3RF29 50-0GA33	--	--	3RF29 50-0HA33
3RF23 70-1B.24	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 70-1B.26	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 70-3A.02	3RF29 00-0EA18	--	3RF29 90-0GA13	--	3RF29 90-0KA13	3RF29 90-0HA13
3RF23 70-3A.04	3RF29 00-0EA18	--	3RF29 90-0GA16	--	3RF29 90-0KA16	3RF29 90-0HA16
3RF23 70-3A.06	3RF29 00-0EA18	--	3RF29 90-0GA16	--	3RF29 90-0KA16	3RF29 90-0HA16
3RF23 70-3A.22	--	--	3RF29 90-0GA33	--	--	3RF29 90-0HA33
3RF23 70-3A.24	--	--	3RF29 90-0GA36	--	--	3RF29 90-0HA36
3RF23 70-3A.26	--	--	3RF29 90-0GA36	--	--	3RF29 90-0HA36
3RF23 70-3A.45	3RF29 00-0EA18	--	3RF29 90-0GA16	--	3RF29 90-0KA16	3RF29 90-0HA16
3RF23 70-3B.02	3RF29 00-0EA18	--	3RF29 90-0GA13	--	3RF29 90-0KA13	3RF29 90-0HA13
3RF23 70-3B.04	3RF29 00-0EA18	--	3RF29 90-0GA16	--	3RF29 90-0KA16	3RF29 90-0HA16
3RF23 70-3B.06	3RF29 00-0EA18	--	3RF29 90-0GA16	--	3RF29 90-0KA16	3RF29 90-0HA16
3RF23 70-3B.22	--	--	3RF29 90-0GA33	--	--	3RF29 90-0HA33
3RF23 70-3B.24	--	--	3RF29 90-0GA36	--	--	3RF29 90-0HA36
3RF23 70-3B.26	--	--	3RF29 90-0GA36	--	--	3RF29 90-0HA36
Type current I_e = 90 A						
3RF23 90-1B.02	3RF29 00-0EA18	--	3RF29 50-0GA13	--	3RF29 50-0KA13	3RF29 50-0HA13
3RF23 90-1B.04	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 90-1B.06	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 90-1B.22	--	--	3RF29 50-0GA33	--	--	3RF29 50-0HA33
3RF23 90-1B.24	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 90-1B.26	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 90-3A.02	3RF29 00-0EA18	--	3RF29 90-0GA13	--	3RF29 90-0KA13	3RF29 90-0HA13
3RF23 90-3A.04	3RF29 00-0EA18	--	3RF29 90-0GA16	--	3RF29 90-0KA16	3RF29 90-0HA16
3RF23 90-3A.06	3RF29 00-0EA18	--	3RF29 90-0GA16	--	3RF29 90-0KA16	3RF29 90-0HA16
3RF23 90-3A.22	--	--	3RF29 90-0GA33	--	--	3RF29 90-0HA33
3RF23 90-3A.24	--	--	3RF29 90-0GA36	--	--	3RF29 90-0HA36
3RF23 90-3A.26	--	--	3RF29 90-0GA36	--	--	3RF29 90-0HA36
3RF23 90-3A.45	3RF29 00-0EA18	--	3RF29 90-0GA16	--	3RF29 90-0KA16	3RF29 90-0HA16
3RF23 90-3B.02	3RF29 00-0EA18	--	3RF29 90-0GA13	--	3RF29 90-0KA13	3RF29 90-0HA13
3RF23 90-3B.04	3RF29 00-0EA18	--	3RF29 90-0GA16	--	3RF29 90-0KA16	3RF29 90-0HA16
3RF23 90-3B.06	3RF29 00-0EA18	--	3RF29 90-0GA16	--	3RF29 90-0KA16	3RF29 90-0HA16
3RF23 90-3B.22	--	--	3RF29 90-0GA33	--	--	3RF29 90-0HA33
3RF23 90-3B.24	--	--	3RF29 90-0GA36	--	--	3RF29 90-0HA36
3RF23 90-3B.26	--	--	3RF29 90-0GA36	--	--	3RF29 90-0HA36

1) For mains voltages in the range from 110 to 230 V, the 3RF29 ..-0.A13 function module versions can also be combined with solid-state contactor versions with greater electric strength (3RF23 ..-....4 , -....5 or -....6).

2) The use of power controllers/regulators is also possible on zero-point switching versions for full-wave control mode. The generalized phase control mode is recommended only for the combination with instantaneous switching versions.

Recommended assignment of the function modules to the 3RF24 three-phase solid-state contactors

Type	Accessories					
	Converters	Load monitoring		Heating current monitoring	Power controllers	Power regulators
		Basic	Extended			
Type current up to 50 A						
3RF24 ..-1..4.	3RF29 00-0EA18	--	--	--	--	--
3RF24 ..-2..4.	--	--	--	--	--	--
3RF24 ..-3..4.	3RF29 00-0EA18	--	--	--	--	--
3RF24 ..-...5.	--	--	--	--	--	--

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General data

Technical specifications

Type		3RF29 ..-0EA..	3RF29 ..-0FA..	3RF29 ..-0GA..	3RF29 ..-0HA..	3RF29 ..-0JA..	3RF29 ..-0KA..
Dimensions (W x H x D)	mm	22.5 x 84 x 38	22.5 x 102 x 39	45 x 112 x 44	45 x 112 x 44	45 x 112 x 44	45 x 112 x 44
General data							
Ambient temperature							
• During operation, derating from 40 °C	°C	-25 ... +60					
• During storage	°C	-55 ... +80					
Installation altitude	m	0 ... 1000; derating from 1000					
Shock resistance acc. to IEC 60068-2-27	*g*/ms	15/11					
Vibration resistance acc. to IEC 60068-2-6	*g*	2					
Degree of protection		IP20					
Electromagnetic compatibility (EMC)							
• Emitted interference							
- Conducted interference voltage according to IEC 60947-4-3		Class A for industrial applications[1]					
- Emitted, high-frequency interference voltage according to IEC 60947-4-3		Class B for residential, business and commercial applications					
• Interference immunity							
- Electrostatic discharge according to IEC 61000-4-2 (corresponds to degree of severity 3)	kV	Contact discharge 4; air discharge 8; behavior criterion 2					
- Induced RF fields according to IEC 61000-4-6	MHz	0.15 ... 80; 140 dBµV; behavior criterion 1					
- Burst acc. to IEC 61000-4-4		2 kV/5.0 kHz; behavior criterion 2					
- Surge acc. to IEC 61000-4-5	kV	Conductor - ground 2; conductor - conductor 1; behavior criterion 2					
Connection type Auxiliary/control contacts		**Screw terminals**					
• Conductor cross-section	mm^2	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.0), 1 x (AWG 20 ... 12)					
• Stripped length	mm	7					
• Terminal screw		M3					
• Tightening torque	Nm lb.in	0.5 ... 0.6 4.5 ... 5.3					
Connection type Converters		**Straight-through transformers**					
• Diameter	mm	--	7	17			

[1] Note limitations for power controller function modules. These modules were built as Class A devices. The use of these devices in residential areas could result in radio interference. In this case these may be required to introduce additional interference suppression measures.

Type		3RF29 ..-0EA18	3RF29 ..-0FA08	3RF29 ..-0GA.3	3RF29 ..-0GA.6
Main circuit					
Rated operational voltage U_e	V AC	-- [1]		110 ... 230	400 ... 600
• Operating range	V AC	--		93.5 ... 253	340 ... 660
• Rated frequency	Hz	--		50/60	
Rated insulation voltage U_i	V	--		600	
Voltage measuring					
• Measuring range	V	--		93.5 ... 253	340 ... 660
Mains voltage, fluctuation compensation	%	--		20	

[1] Versions are independent of the main circuit.

Type		3RF29 ..-0HA.3 3RF29 ..-0KA.3	3RF29 ..-0HA.6 3RF29 ..-0KA.6	3RF29 ..-0JA.3	3RF29 ..-0JA.6
Main circuit					
Rated operational voltage U_e	V AC	110 ... 230	400 ... 600	110 ... 230	400 ... 600
• Operating range	V AC	93.5 ... 253	340 ... 660	93.5 ... 253	340 ... 660
• Rated frequency	Hz	50/60			
Rated insulation voltage U_i	V	600			
Voltage measuring					
• Measuring range	V	93.5 ... 253	340 ... 660	93.5 ... 253	340 ... 660
Mains voltage, fluctuation compensation	%	20			

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Type		3RF29 ..-...0.	3RF29 ..-...1.	3RF29 ..-...3.
Control circuits				
Method of operation		DC operation	AC/DC operation	AC operation
Rated control supply voltage U_s	V	24	24	110
Rated control current	mA	15	15	15
Rated frequency of the control supply voltage	Hz	--	50/60	50/60
Actuating voltage, max.	V	30	30	121
Rated control current	mA	15	15	15
At maximum voltage				
Response voltage	V	15	15	90
• For operating current	mA	2	2	2
Drop-out voltage	V	5	5	15

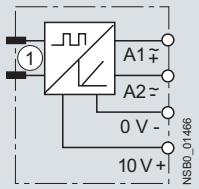
Type		3RF29 06-0FA08	3RF29 20-0FA08	3RF29 20-0GA..	3RF29 50-0GA..	3RF29 90-0GA..
Current measurement						
Rated operational current I_e	A	6	20	20	50	90
Current measurement						
• Teach range	A	0.25 ... 6	0.65 ... 20	0.56 ... 20	1.62 ... 50	2.93 ... 90
• Measuring range	A	0 ... 6.6	0 ... 22	0 ... 22	0 ... 55	0 ... 99
• Minimum partial load current	A	0.25	0.65	0.65	1.6	2.9
Number of partial loads		1 ... 6	1 ... 6	1 ... 12		

Type		3RF29 20-0HA..	3RF29 50-0HA..	3RF29 90-0HA..	3RF29 16-0JA..	3RF29 32-0JA..
Current measurement						
Rated operational current I_e	A	20	50	90	16	32
Current measurement						
• Teach range	A	4 ... 20	10 ... 50	18 ... 90	0.42 ... 16	0.8 ... 32
• Measuring range	A	0 ... 22	0 ... 55	4 ... 99	0 ... 16	0 ... 32
• Minimum partial load current	A	--			0.42	0.8
Number of partial loads		--			1 ... 6	

Type		3RF29 04-0KA..	3RF29 20-0KA..	3RF29 50-0KA..	3RF29 90-0KA..
Current measurement					
Rated operational current I_e	A	4	20	50	90
Current measurement					
• Teach range	A	0.15 ... 4	0.65 ... 20	1.6 ... 50	2.9 ... 90
• Measuring range	A	0 ... 4	0 ... 22	0 ... 55	0 ... 99
• Minimum partial load current	A	--	0.65	1.6	2.9
Number of partial loads		--	1 ... 6		

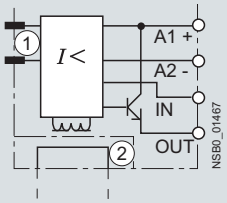
Circuit diagrams

Converters



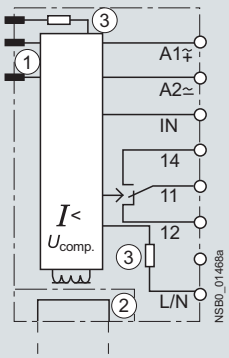
1 Internal connection

Basic load monitoring



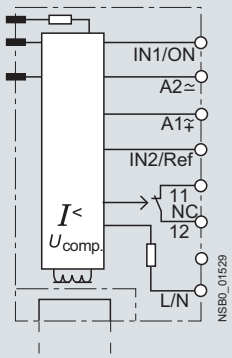
1 Internal connection
2 Straight-through transformer

Extended load monitoring



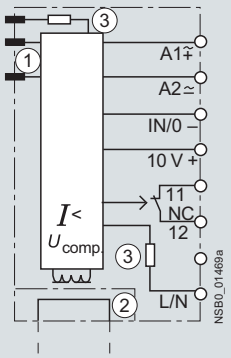
1 Internal connection
2 Straight-through transformer
3 Voltage detection not electrically isolated (3 MΩ per path)

Heating current monitoring



1 Internal connection
2 Straight-through transformer
3 Voltage detection not electrically isolated (3 MΩ per path)

Power controller and regulator



1 Internal connection
2 Straight-through transformer
3 Voltage detection not electrically isolated (3 MΩ per path)

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SIRIUS converters for 3RF2

Overview

Converters for 3RF2 solid-state switching devices

These modules are used to convert analog control signals, such as those output from many temperature controllers for example, into a pulse-width-modulated digital signal. The connected solid-state contactors and relays can therefore regulate the output of a load as a percentage.

Application

This function module is used for conversion from an analog input signal to an on/off ratio. The module can only be used in conjunction with 3RF21 and 3RF23 single-phase solid-state switching devices or 3RF22 and 3RF24 three-phase devices. It can be used on versions with 24 V DC and 24 V AC/DC control supply voltage.

Note:

The use of single-pole solid-state switching devices with converters, power controllers or power regulators on AC loads in full-wave control mode is not recommended. As mutual synchronization of the function modules is not possible, fluctuations in the heating power are possible; there is no optimum settling in particular with setpoint values < 50 %.

Selection and ordering data

Rated operational current I_e	Rated operational voltage U_e	DT	Screw terminals / Configurator	PU (UNIT, SET, M)	PS*	PG
A	V		Order No. / Price per PU			
Converters						
Rated control supply voltage 24 V AC/DC						
--	--	A	**3RF29 00-0EA18**	1	1 unit	41C



3RF29 00-0EA18

For online configurator see www.siemens.com/sirius/configurators.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Load monitoring for 3RF2 single-phase solid-state switching devices

Many faults can be quickly detected by monitoring a load circuit connected to the solid-state switching device, as made possible with this module. Examples include the failure of load elements (up to 6 in the basic version or up to 12 in the extended version), alloyed power semiconductors, a lack of voltage or a break in a load circuit. A fault is indicated by one or more LEDs and reported to the controller by way of a PLC-compatible output.

The principle of operation is based on permanent monitoring of the current intensity. This figure is continuously compared with the reference value stored once during start-up by the simple press of a button. In order to detect the failure of one of several loads, the current difference must be 1/6 (in the basic version) or 1/12 (in the extended version) of the reference value. In the event of a fault, an output is actuated and one or more LEDs indicate the fault.

Application

The device is used for monitoring one or more loads (partial loads). The function module can only be used in conjunction with a 3RF21 solid-state relay or a 3RF23 solid-state contactor. The devices with spring-type connections in the load circuit are not suitable.

Selection and ordering data

Rated operational current I_e	Rated operational voltage U_e	DT	Screw terminals / Configurator — Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	V						
Basic load monitoring							
 3RF29	Rated control supply voltage 24 V DC						
6	--	A	**3RF29 06-0FA08**		1	1 unit	41C
20	--	A	**3RF29 20-0FA08**		1	1 unit	41C
• With mounted 3RF29 00-0RA88 cover							
6	--	A	**3RF29 06-0FA08-0KH0**		1	1 unit	41C
20	--	A	**3RF29 20-0FA08-0KH0**		1	1 unit	41C
Extended load monitoring							
 3RF29	Rated control supply voltage 24 V AC/DC						
20	110 … 230	A	**3RF29 20-0GA13**		1	1 unit	41C
20	400 … 600	A	**3RF29 20-0GA16**		1	1 unit	41C
50	110 … 230	A	**3RF29 50-0GA13**		1	1 unit	41C
50	400 … 600	A	**3RF29 50-0GA16**		1	1 unit	41C
90	110 … 230	A	**3RF29 90-0GA13**		1	1 unit	41C
90	400 … 600	A	**3RF29 90-0GA16**		1	1 unit	41C
Rated control supply voltage 110 V AC							
20	110 … 230	A	**3RF29 20-0GA33**		1	1 unit	41C
20	400 … 600	A	**3RF29 20-0GA36**		1	1 unit	41C
50	110 … 230	A	**3RF29 50-0GA33**		1	1 unit	41C
50	400 … 600	A	**3RF29 50-0GA36**		1	1 unit	41C
90	110 … 230	A	**3RF29 90-0GA33**		1	1 unit	41C
90	400 … 600	A	**3RF29 90-0GA36**		1	1 unit	41C

For online configurator see www.siemens.com/sirius/configurators.

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Optional accessories						
 3RF29 00-0RA88 — **Sealable covers for function modules** (not for converters)	B	**3RF29 00-0RA88**		1	10 units	41C

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS heating current monitoring for 3RF2

Overview

Heating current monitoring for 3RF2 single-phase solid-state switching devices

Many faults can be quickly detected by monitoring a load circuit connected to the solid-state switching device, as made possible with this module. Examples include the failure of up to 6 load elements, alloyed power semiconductors, a lack of voltage or a break in a load circuit. A fault is indicated by LEDs and reported to the controller by way of a relay output (NC contact).

The principle of operation is based on permanent monitoring of the current intensity. This figure is continuously compared with the reference value stored once during start-up. In order to detect the failure of one of several loads, the current difference must be 1/6 of the reference value. In the event of a fault, an output is actuated and the LEDs indicate the fault.

The heating current monitoring has a teach input and therefore differs from the load monitoring. This remote teaching function enables simple adjustment to changing loads without manual intervention.

Special versions: deviations from the standard version

3RF29 ..-0JA1.-1KK0

If the current is below 50% of the lower teach current during the teach routine, the device will go into "Standby" mode; the LOAD LED will flicker. The device thus detects a non-connected load, e.g. channels not required for tool heaters, and does not signal a fault. This mode can be reset by re-teaching.

Application

The device is used for monitoring one or more loads (partial loads). The function module can only be used in conjunction with a 3RF21 solid-state relay or a 3RF23 solid-state contactor. The devices with spring-type connections in the load circuit are not suitable.

Selection and ordering data

Rated operational current I_e	Rated operational voltage U_e	DT	Screw terminals / Configurator — Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	V						
Heating current monitoring [1]							
Rated control supply voltage 24 V AC/DC							
16	110 … 230	A	**3RF29 16-0JA13**		1	1 unit	41C
16	110 … 230	A	**3RF29 16-0JA13-1KK0**		1	1 unit	41C
16	400 … 600	A	**3RF29 16-0JA16-1KK0**		1	1 unit	41C
32	110 … 230	A	**3RF29 32-0JA13-1KK0**		1	1 unit	41C
32	400 … 600	A	**3RF29 32-0JA16**		1	1 unit	41C
32	400 … 600	A	**3RF29 32-0JA16-1KK0**		1	1 unit	41C



3RF29

For online configurator see www.siemens.com/sirius/configurators.

1) Supplied without control connector. The control connector can be purchased from Phoenix Contact by quoting Order No. 1982 790 (2,5 HC/6-ST-5,08).

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Optional accessories						
Sealable covers for function modules (not for converters)	B	**3RF29 00-0RA88**		1	10 units	41C



3RF29 00-0RA88

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Power controllers for 3RF2 single-phase solid-state switching devices

The power controller is a function module for the autonomous power control of complex heating systems and inductive loads.

The following functions have been integrated:

- Power controller for adjusting the power of the connected load. Here, the setpoint value is set with a rotary knob on the module as a percentage with reference to the 100 % power stored as a setpoint value.
- Inrush current limitation: With the aid of an adjustable voltage ramp, the inrush current is limited by means of phase control. This is useful above all with loads such as lamps or infrared lamps which have an inrush transient current.
- Load circuit monitoring for detecting load failure, partial load faults, alloyed power semiconductors, lack of voltage or a break in the load circuit.

Note:

With the phase control operating mode, a partial load fault is detected by cyclic "scanning" of the load; the exact mode of operation is described in the data sheets!

Special versions: deviations from the standard version

3RF29 04-0KA13-0KC0

During the teaching process the connected solid-state relay or contactor is not activated; i.e. no current flow takes place. No current reference value is stored. No part-load monitoring!

3RF29 ..-0KA1.-0KT0

No part-load monitoring!

Application

The power controller can be used for:

- Complex heating systems
- Inductive loads
- Loads with temperature-dependent resistor
- Loads with ageing after long-time service
- Simple indirect control of temperature

The power controller can be used on the instantaneously switching 3RF21 and 3RF23 solid-state switching devices (single-phase). If only the full-wave operating mode is used, the power controller can also be used on the "zero-point switching" solid-state relays and contactors.

Power control

The power controller adjusts the power in the connected load by means of a solid-state switching device depending on the setpoint selection. It does not compensate for changes in the mains voltage or load resistance. The setpoint value can be predefined externally as a 0 to 10 V signal or internally by means of a potentiometer. Depending on the setting of the potentiometer (t_R), the control is carried out according to the principle of full-wave control or generalized phase control.

Full-wave control

In this operating mode the output is adjusted to the required setpoint value changing the on-to-off period. The period duration is predefined at one second.

See note about AC loads on page 6/106.

Generalized phase control

In this operating mode the output is adjusted to the required setpoint value by changing the current flow angle. In order to observe the limit values of the conducted interference voltage for industrial networks, the load circuit must include a reactor with a rating of at least 200 µH.

Selection and ordering data

Rated operational current I_e	Rated operational voltage U_e	DT	Screw terminals / Configurator — Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	V						
Power controllers							
Rated control supply voltage 24 V AC/DC							
4	110 … 230	A	**3RF29 04-0KA13-0KC0**		1	1 unit	41C
4		A	**3RF29 04-0KA13-0KT0**		1	1 unit	41C
20		A	**3RF29 20-0KA13**		1	1 unit	41C
50		A	**3RF29 50-0KA13**		1	1 unit	41C
90		A	**3RF29 90-0KA13**		1	1 unit	41C
20	400 … 600	A	**3RF29 20-0KA16**		1	1 unit	41C
50		A	**3RF29 50-0KA16**		1	1 unit	41C
50		A	**3RF29 50-0KA16-0KT0**		1	1 unit	41C
90		A	**3RF29 90-0KA16**		1	1 unit	41C



3RF29

For online configurator see www.siemens.com/sirius/configurators.

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Optional accessories						
Sealable covers for function modules (not for converters)	B	**3RF29 00-0RA88**		1	10 units	41C



3RF29 00-0RA88

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS power regulators for 3RF2

Overview

Power regulators for 3RF2 single-phase solid-state switching devices

The power regulator is a function module for the autonomous power control of complex heating systems.

The following functions have been integrated:

- Power controller with proportional-action control for adjusting the power of the connected load. Here, the setpoint value is set with a rotary knob on the module as a percentage with reference to the 100 % power stored as a setpoint value. Changes in the mains voltage or in the load resistance are compensated in this case.
- Inrush current limitation: With the aid of an adjustable voltage ramp, the inrush current is limited by means of phase control. This is useful above all with loads such as lamps which have an inrush transient current.
- Load circuit monitoring for detecting load failure, alloyed power semiconductors, lack of voltage or a break in the load circuit. Part-load monitoring is not possible. Load fluctuations are compensated.

Application

The power regulator can be used for:

- Complex heating systems
- Heating elements with temperature-dependent resistor
- Heating elements with ageing after long-time service
- Simple indirect control of temperature

The power regulator can be used on the instantaneously switching 3RF21 and 3RF23 solid-state switching devices (single-phase). If only the full-wave operating mode is used, the power regulator can also be used on the zero-point switching solid-state relays and contactors.

Power control

The power regulator adjusts the power in the connected load by means of a solid-state switching device depending on the taught power and the selected setpoint. Changes in the mains voltage or in the load resistance are thus compensated by the power regulator. The setpoint value can be predefined externally as a 0 to 10 V signal or internally by means of a potentiometer. Depending on the setting of the potentiometer (t_R), the adjustment is carried out according to the principle of full-wave control or generalized phase control.

Full-wave control

In this operating mode the output is adjusted to the required setpoint value changing the on-to-off period. The period duration is predefined at one second.

See note about AC loads on page 6/106.

Generalized phase control

In this operating mode the output is adjusted to the required setpoint value by changing the current flow angle. In order to observe the limit values of the conducted interference voltage for industrial networks, the load circuit must include a reactor with a rating of at least 200 µH.

Selection and ordering data

Rated operational current I_e	Rated operational voltage U_e	DT	Screw terminals / Configurator — Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	V						
Power regulators							
Rated control supply voltage 24 V AC/DC							
20	110 … 230	A	**3RF29 20-0HA13**		1	1 unit	41C
20	400 … 600	A	**3RF29 20-0HA16**		1	1 unit	41C
50	110 … 230	A	**3RF29 50-0HA13**		1	1 unit	41C
50	400 … 600	A	**3RF29 50-0HA16**		1	1 unit	41C
90	110 … 230	A	**3RF29 90-0HA13**		1	1 unit	41C
90	400 … 600	A	**3RF29 90-0HA16**		1	1 unit	41C
Rated control supply voltage 110 V AC							
20	110 … 230	A	**3RF29 20-0HA33**		1	1 unit	41C
20	400 … 600	A	**3RF29 20-0HA36**		1	1 unit	41C
50	110 … 230	A	**3RF29 50-0HA33**		1	1 unit	41C
50	400 … 600	A	**3RF29 50-0HA36**		1	1 unit	41C
90	110 … 230	A	**3RF29 90-0HA33**		1	1 unit	41C
90	400 … 600	A	**3RF29 90-0HA36**		1	1 unit	41C



3RF29

For online configurator see www.siemens.com/sirius/configurators.

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Optional accessories						
Sealable covers for function modules (not for converters)	B	**3RF29 00-0RA88**		1	10 units	41C



3RF29 00-0RA88

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Solid-state contactors for switching motors



Solid-state contactor for direct-on-line starting

The solid-state contactors for switching motors are intended for frequently switching on and off three-phase current operating mechanisms up to 7.5 kW and reversing up to 3.0 kW. The devices are constructed with complete insulation and can be mounted directly on SIRIUS motor starter protectors, overload relays and current monitoring relays, resulting in a very simple integration into motor feeders.

These three-phase solid-state contactors are equipped with a two-phase control which is particularly suitable for typical motor current circuits without connecting to the neutral conductor.

Important features:

- Insulated enclosure with integrated heat sink
- Degree of protection IP20
- Integrated mounting foot to snap on a standard mounting rail or for assembly onto a support plate
- Variety of connection methods
- Plug-in control connection
- Display via LEDs
- Wide voltage range for AC control supply voltage

Switching functions

The solid-state contactors for switching motors are ""instantaneous switching" because this method is particularly suited for inductive loads. By distributing the ON point over the entire sine curve of the mains voltage, disturbances are reduced to a minimum.

Connection methods

You can choose between the following connection methods for the solid-state contactors for switching motors:

Screw connection

The screw connection system is the standard among industrial controls. Open terminals and a plus-minus screw are just two features of this technology. Two conductors of up to 6 mm^2 can be connected in just one terminal.

Spring-type terminals

This innovative technology manages without any screw connection. This means that very high vibration resistance is achieved. Two conductors of up to 2.5 mm^2 can be connected to each terminal.

Motor feeders

The devices can use a link module to directly connect to a circuit breaker. Also possible is the mounting of a 3RB30/3RB31 solid-state overload relay (see Chapter 7 "Protection Equipment") or a 3RR2 current monitoring relay (see Chapter 10 "Monitoring and Control Devices") using a link adapter. The simultaneous mounting of a motor starter protector and an overload or current monitoring relay is not recommend for space and heat development reasons.

Rapid-switching fuseless and fuse motor feeders can thereby be implemented in a time-saving manner.

Selecting solid-state contactors

The solid-state contactors are selected on the basis of details of the network, the load and the ambient conditions.

The following procedure is recommended:

- Determine the rated current of the load and the mains voltage
- Select a solid-state contactor with the same or higher rated current than the load
- Testing the maximum permissible switching frequency based on the characteristic curves (see "Technical Information"). To do this, the starting current, the starting time and the motor loaded in the operating phase must be known.
- If the permissible switching frequency is under the desired frequency, it is possible to achieve an increase only by overdimensioning the motor and the solid-state contactor!

Alternatively, the tool for "Selection of solid-state contactors for switching motors" can be used. The correct device size can be determined by entering the network and motor data along with the application and ambient conditions. You will find the tool on the Internet at:

www.siemens.com/solid-state-switching-devices

Short-circuit protection

Despite the rugged power semiconductors that are used, solid-state switching devices respond more sensitively to short circuits in the load feeder. Consequently, special precautions have to be taken against destruction, depending on the type of design.

Siemens generally recommends using SITOR semiconductor fuses. These fuses also provide protection against destruction in the event of a short circuit even when the solid-state contactors and solid-state relays are fully utilized.

Alternatively, if there is lower loading, protection can also be provided by standard fuses or miniature circuit breakers. This protection is achieved by overdimensioning the solid-state switching devices accordingly.

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General data

Order No. scheme

Digit of the Order No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th
	□□□	□	□	□	□	–	□	□	□	□	□
Solid-State Switching Devices	**3 R F**										
SIRIUS solid-state switching device generation		□									
Design			□								
Rated operational current				□	□						
Connection type							□				
Switching function								□			
Number of controlled phases									□		
Rated control supply voltage										□	
Rated operational voltage											□
Example	**3 R F**	**3**	**4**	**1**	**0**	**–**	**1**	**B**	**B**	**0**	**4**

Note:

The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quoted in the catalog in the Selection and ordering data.

6

Benefits

- Units with integrated heat sink, "ready to use"
- Compact and space-saving design
- Reversing contactors with integrated interlocking

Application

Use in load feeders

There is no typical design of a load feeder with solid-state relays or solid-state contactors; instead, the great variety of connection methods and control voltages offers universal application opportunities. SIRIUS solid-state relays and solid-state contactors can be installed in fuseless or fused feeders, as required.

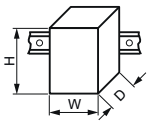
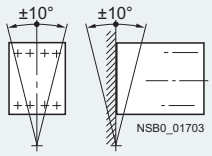
Standards and approvals

- IEC 60947-4-2
- UL 508, CSA for North America[1)]
- CE marking for Europe
- C-Tick approval for Australia
- CCC approval for China

1) Please note: Use overvoltage protection device;
max. cut-off-voltage 6000 V;
min. energy handling capability 100 J.

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Technical specifications

Type			3RF34 05-1BB.. 3RF34 03-1BD.., 3RF34 05-1BD..	3RF34 10-1BB.., 3RF34 12-1BB.., 3RF34 16-1BB.. 3RF34 10-1BD..	3RF34 05-2BB..	3RF34 10-2BB.., 3RF34 12-2BB.., 3RF34 16-2BB..
Dimensions (W x H x D)		mm	45 x 95 x 96.5	90 x 95 x 96.5	45 x 95 x 96.5	90 x 95 x 96.5
General technical specifications						
Ambient temperature						
• During operation, derating from 40 °C		°C	-25 ... +60			
• During storage		°C	-55 ... +80			
Installation altitude		m	0 ... 1000; derating from 1000 on request			
Shock resistance acc. to IEC 60068-2-27		*g*/ms	15/11			
Vibration resistance acc. to IEC 60068-2-6		*g*	2			
Degree of protection			IP20			
Insulation strength at 50/60 Hz (main/control circuit to floor)		V rms	4000			
Electromagnetic compatibility (EMC)						
• Emitted interference according to IEC 60947-4-2						
- Conducted interference voltage			Class A for industrial applications[1]			
- Emitted, high-frequency interference voltage			Class A for industrial applications			
• Interference immunity						
- Electrostatic discharge according to IEC 61000-4-2 (corresponds to degree of severity 3)		kV	Contact discharge: 4; Air discharge: 8; Behavior criterion 2			
- Induced RF fields according to IEC 61000-4-6		MHz	0.15 ... 80; 140 dBµV; behavior criterion 1			
- Burst acc. to IEC 61000-4-4		kV	2; at 5 kHz; behavior criterion 2			
- Surge according to IEC 61000-4-5[2]		kV	Conductor - Ground: 2; Conductor - Conductor: 1; Behavior criterion 2			
Connection type			**Screw terminals**		**Spring-type terminals**	
Operating devices			Standard screwdriver size 2 and Pozidriv 2		3.0 x 0.5 and 3.5 x 0.5	
Conductor cross-sections, main contacts						
• Solid		mm^2	2 x (1.5 ... 2.5)[3], 2 x (2.5 ... 6)[3]		2 x (0.5 ... 2.5)	
• Finely stranded with end sleeve		mm^2	2 x (1 ... 2.5)[3]; 2 x (2.5 ... 6)[3]; 1 x 10		2 x (0.5 ... 1.5)	
• Finely stranded without end sleeve		mm^2	--		2 x (0.5 ... 2.5)	
• AWG cables, solid or stranded			2 x (AWG 14 ... 10)		2 x (AWG 18 ... 14)	
Conductor cross-sections, auxiliary/control contacts						
• With/without end sleeve		mm^2	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.0)		0.5 ... 2.5	
• AWG cables, solid or stranded			AWG 20 ... 12		AWG 20 ... 12	
Permissible mounting positions						

1) These products were built as Class A devices. The use of these devices in residential areas could result in radio interference. In this case these may be required to introduce additional interference suppression measures.

2) The following applies for reversing contactors: To maintain the values, a 3TX7 462-3L surge suppressor (see "3TB Contactors", Chapter 3) should be used between the phases L1 and L3 as close as possible to the reversing contactor.

3) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

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3RF34 solid-state contactors, three-phase

Overview

These two-phase controlled, instantaneous switching solid-state contactors in the insulting enclosure are offered in 45 mm width to 5.2 A – and in 90 mm width to 16 A. This means that it is possible to operate motors up to 7.5 kW.

Technical specifications

Type		3RF34 05-.BB..	3RF34 10-.BB..	3RF34 12-.BB..	3RF34 16-.BB..
Fuseless design with 3RV2 motor starter protector, CLASS 10					
Rated operational current I_{AC-53} [1] according to IEC 60947-4-2					
• At 40 °C	A	5.2 (4.5)	9.2	12.5	16
• UL/CSA, at 50 °C	A	4.6 (4.0)	8.4	11.5	14
• At 60 °C	A	4.2 (3.5)	7.6	10.5	12.5
Power loss at I_{AC-53}					
• At 40 °C	W	10 (8)	16	22	28
Short-circuit protection with type of coordination "1" at an operational voltage of U_e to 440 V					
• Motor starter protector, type		3RV20 11-1GA10	3RV20 11-1JA10	3RV20 11-1KA10	3RV20 11-4AA10
• Current I_q	kA	50	5	5	3

[1] The reduced values in brackets apply to a directly mounted circuit breaker and simultaneous butt-mounting.

Type		3RF34 05-.BB.4	3RF34 05-.BB.6	3RF34 10-.BB..	3RF34 12-.BB.4	3RF34 12-.BB.6	3RF34 16-.BB..
Fused design with directly connected 3RB3 overload relay							
Rated operational current I_{AC-53} according to IEC 60947-4-2							
• At 40 °C	A	4		7.8	9.5		11
• UL/CSA, at 50 °C	A	3.6		7	8.5		10
• At 60 °C	A	3.2		6.2	7.6		9
Power loss at I_{AC-53}							
• At 40 °C	W	7		13	16		18
Minimum load current	A	0.5					
Max. off-state current	mA	10					
Rated peak withstand current I_{tsm}	A	200	600	600	1200	1150	1150
I^2t value	A^2s	200	1800	1800	7200	6600	6600

Type		3RF34 ..-.BB.4	3RF34 ..-.BB.6
Main circuit			
Controlled phases		2-phase	2-phase
Rated operational voltage U_e	V AC	48 ... 480	48 ... 600
• Operating range	V AC	40 ... 506	40 ... 660
• Rated frequency	Hz	50/60 ± 10 %	50/60 ± 10 %
Rated insulation voltage U_i	V	600	600
Rated impulse withstand voltage U_{imp}	kV	6	6
Blocking voltage	V	1200	1600
Rage of voltage rise	V/µs	1000	1000

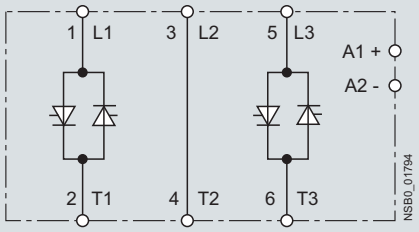
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3RF34 solid-state contactors, three-phase

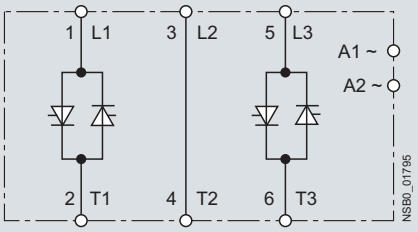
Type		3RF34 ..-.BB0.	3RF34 ..-.BB2.
Control circuits			
Method of operation		DC operation	AC operation
Rated control supply voltage U_s	V	24 acc. to IEC 61131-2	110 ... 230
Rated frequency of the control supply voltage	Hz	--	50/60 ± 10 %
Control supply voltage, max.	V	30	253
Typical actuating current	mA	20	15
Response voltage	V	15	90
Drop-out voltage	V	5	< 40
Operating times			
• ON-delay	ms	1	5
• OFF-delay	ms	1 + max. one half-wave	30 + max. one half-wave

Circuit diagrams

DC control supply voltage



AC control supply voltage



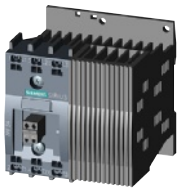
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3RF34 solid-state contactors, three-phase

Selection and ordering data

Motor contactors · Instantaneous switching · Two-phase controlled

	Rated operational current I_e	Rated power at I_e and U_e	Rated control supply voltage U_s	DT	Screw terminals Configurator	PU (UNIT, SET, M)	PS*	PG
	A	400 V kW	V		Order No. Price per PU			
Rated operational voltage U_e 48 ... 480 V AC								
 3RF34 05-1BB	5.2	**2.2**	24 DC acc. to IEC 61131-2	A	**3RF34 05-1BB04**	1	1 unit	41C
	9.2	**4.0**		B	**3RF34 10-1BB04**	1	1 unit	41C
	12.5	**5.5**		B	**3RF34 12-1BB04**	1	1 unit	41C
	16	**7.5**		B	**3RF34 16-1BB04**	1	1 unit	41C
	5.2	**2.2**	110 ... 230 AC	B	**3RF34 05-1BB24**	1	1 unit	41C
	9.2	**4.0**		B	**3RF34 10-1BB24**	1	1 unit	41C
	12.5	**5.5**		B	**3RF34 12-1BB24**	1	1 unit	41C
	16	**7.5**		B	**3RF34 16-1BB24**	1	1 unit	41C
Rated operational voltage U_e 48 ... 600 V AC, blocking voltage 1600 V								
 3RF34 10-1BB	5.2	**2.2**	24 DC acc. to IEC 61131-2	B	**3RF34 05-1BB06**	1	1 unit	41C
	9.2	**4.0**		B	**3RF34 10-1BB06**	1	1 unit	41C
	12.5	**5.5**		B	**3RF34 12-1BB06**	1	1 unit	41C
	16	**7.5**		B	**3RF34 16-1BB06**	1	1 unit	41C
	5.2	**2.2**	110 ... 230 AC	B	**3RF34 05-1BB26**	1	1 unit	41C
	9.2	**4.0**		B	**3RF34 10-1BB26**	1	1 unit	41C
	12.5	**5.5**		B	**3RF34 12-1BB26**	1	1 unit	41C
	16	**7.5**		B	**3RF34 16-1BB26**	1	1 unit	41C

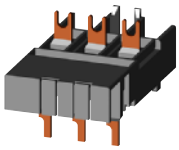
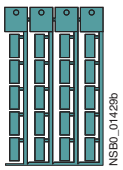
	Rated operational current I_e	Rated power at I_e and U_e	Rated control supply voltage U_s	DT	Spring-type terminals Configurator	PU (UNIT, SET, M)	PS*	PG
	A	400 V kW	V		Order No. Price per PU			
Rated operational voltage U_e 48 ... 480 V AC								
 3RF34 05-2BB	5.2	**2.2**	24 DC acc. to IEC 61131-2	B	**3RF34 05-2BB04**	1	1 unit	41C
	9.2	**4.0**		B	**3RF34 10-2BB04**	1	1 unit	41C
	12.5	**5.5**		B	**3RF34 12-2BB04**	1	1 unit	41C
	16	**7.5**		B	**3RF34 16-2BB04**	1	1 unit	41C
	5.2	**2.2**	110 ... 230 AC	B	**3RF34 05-2BB24**	1	1 unit	41C
	9.2	**4.0**		B	**3RF34 10-2BB24**	1	1 unit	41C
	12.5	**5.5**		B	**3RF34 12-2BB24**	1	1 unit	41C
	16	**7.5**		B	**3RF34 16-2BB24**	1	1 unit	41C
Rated operational voltage U_e 48 ... 600 V AC, blocking voltage 1600 V								
 3RF34 10-2BB	5.2	**2.2**	24 DC acc. to IEC 61131-2	B	**3RF34 05-2BB06**	1	1 unit	41C
	9.2	**4.0**		B	**3RF34 10-2BB06**	1	1 unit	41C
	12.5	**5.5**		B	**3RF34 12-2BB06**	1	1 unit	41C
	16	**7.5**		B	**3RF34 16-2BB06**	1	1 unit	41C
	5.2	**2.2**	110 ... 230 AC	B	**3RF34 05-2BB26**	1	1 unit	41C
	9.2	**4.0**		B	**3RF34 10-2BB26**	1	1 unit	41C
	12.5	**5.5**		B	**3RF34 12-2BB26**	1	1 unit	41C
	16	**7.5**		B	**3RF34 16-2BB26**	1	1 unit	41C

For online configurator see www.siemens.com/sirius/configurators.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Accessories

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Link modules for solid-state contactor to motor starter protector							
 3RA29 21-1BA00	**Link module** between solid-state contactor and motor starter protector with screw terminals		**Screw terminals**				
	For 3RV2 motor starter protectors size S00/S0	A	**3RA29 21-1BA00**		1	1 unit	41B
Link adapters for solid-state contactor to overload relay							
 3RF39 00-0QA88	**Link adapters** for direct mounting of 3RB3 overload relays or 3RR2 current monitoring relays to the solid-state contactor with screw terminals						
	The adapter is snapped onto the enclosure of the 3RF34 contactor and receives the fixing hooks of the 3RB3 overload relays or the 3RR2 current monitoring relays for direct mounting.	A	**3RF39 00-0QA88**		1	1 unit	41C
Insulation stop for securely holding back the conductor insulation on conductors up to 1 mm²							
 3RT29 16-4JA02	**Insulation stop strip** for all SIRIUS devices with spring-type terminals		**Spring-type terminals**				
	Can be inserted in cable entry of the spring-type connection (no more than 2 strips per contactor required); removable in pairs) for terminals with a conductor cross-section up to 2.5 mm²	B	**3RT29 16-4JA02**		1	20 units	41B
Tools for opening spring-type terminals							
 3RA29 08-1A	**Screwdrivers** for all SIRIUS devices with spring-type terminals						
	Length approx. 200 mm, size 3.0 mm x 0.5 mm, titanium gray/black, partially insulated	A	**3RA29 08-1A**		1	1 unit	41B
Blank labels							
 3SB19 00-1SB20	**Unit labeling plates**[1] for SIRIUS devices						
	20 mm × 7 mm, pastel turquoise	D	**3RT19 00-1SB20**		100	340 units	41B

[1] PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH
(see Chapter 16, "Appendix" → "External Partners").

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3RF34 solid-state reversing contactors, three-phase

Overview

The integration of four conducting paths to a reverse switch, combined in one enclosure makes this device a particularly compact solution. Compared to conventional systems, for which two contactors are required, it is possible to save up to 50 % width with the three-phase reversing contactors. Devices with 45 mm width cover motors up to 2.2 kW – and those with 90 mm width up to 3 kW.

Technical specifications

Type		3RF34 03-.BD.4	3RF34 05-.BD.4	3RF34 10-.BD.4
Fuseless design with 3RV2 motor starter protector, CLASS 10				
Rated operational current I_{AC-53} [1] according to IEC 60947-4-2				
• At 40 °C	A	3.8 (3.4)	5.4 (4.8)	7.4
• UL/CSA, at 50 °C	A	3.5 (3.1)	5 (4.3)	6.8
• At 60 °C	A	3.2 (2.8)	4.6 (3.8)	6.2
Power loss at I_{AC-53}				
• At 40 °C	W	7 (6)	9 (8)	13
Short-circuit protection with type of coordination "1" at an operational voltage of U_e to 440 V				
• Motor starter protector, type		3RV20 11-1FA10	3RV20 11-1GA10	3RV20 11-1JA10
• Current I_q	kA	50	50	10

[1] The reduced values in brackets apply to a directly mounted circuit breaker and simultaneous butt-mounting.

Type		3RF34 03-.BD.4	3RF34 05-.BD.4	3RF34 10-.BD.4
Fused design with directly connected 3RB3 overload relay				
Rated operational current I_{AC-53} according to IEC 60947-4-2				
• At 40 °C	A	3.8	5.4	7.4
• UL/CSA, at 50 °C	A	3.5	5	6.8
• At 60 °C	A	3.2	4.6	6.2
Power loss at I_{AC-53}				
• At 40 °C	W	6	8	16
Minimum load current	A	0.5		
Max. off-state current	mA	10		
Rated peak withstand current I_{tsm}	A	200	600	
I^2t value	A^2s	200	1800	

Type		3RF34 ..-.BD.4
Main circuit		
Controlled phases		2-phase
Rated operational voltage U_e [1]	V AC	48 ... 480
• Operating range	V AC	40 ... 506
• Rated frequency	Hz	50/60 ± 10 %
Rated insulation voltage U_i	V	600
Rated impulse withstand voltage U_{imp}	kV	6
Blocking voltage	V	1 200
Rage of voltage rise	V/µs	1 000

[1] To reduce the risk of a phase short circuit due to overvoltage, we recommend using a varistor type 3TX7 462-3L between the phases L1 and L3 and as close as possible to the switchgear.

We recommend a design with semiconductor protection as short-circuit protection.

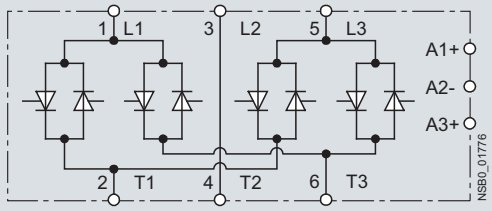
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Type		3RF34 ..-.BD0.	3RF34 ..-.BD2.
Control circuits			
Method of operation		DC operation	AC operation
Rated control supply voltage U_s	V	24 acc. to IEC 61131-2	110 ... 230
Rated frequency of the control supply voltage	Hz	--	50/60 ± 10 %
Control supply voltage, maximum	V	30	253
Typical actuating current	mA	15	10
Response voltage	V	15	90
Drop-out voltage	V	5	< 40
Operating times[1]			
• ON-delay	ms	5	20
• OFF-delay	ms	5 + max. one half-wave	10 + max. one half-wave
• Interlocking time	ms	60 ... 100	50 ... 100

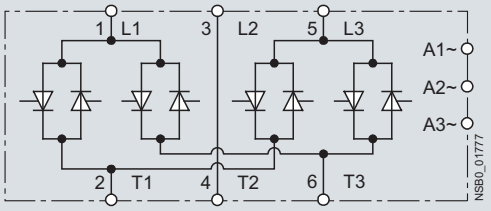
[1] Caution! Risk of phase short circuit in automatic mode.
The control inputs must not be actuated until after a delay time of 40 ms after the main voltage is applied

Circuit diagrams

DC control supply voltage



AC control supply voltage



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3RF34 solid-state reversing contactors, three-phase

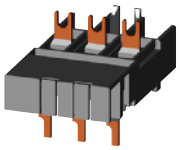
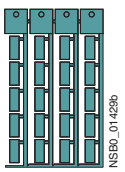
Selection and ordering data

Reversing contactors · Instantaneous switching · Two-phase controlled

	Rated operational current I_e	Rated power at I_e and U_e	Rated control supply voltage U_s	DT	Screw terminals / Configurator	PU (UNIT, SET, M)	PS*	PG
	A	400 V kW	V		Order No. / Price per PU			
Rated operational voltage U_e 48 ... 480 V AC								
 3RF34 03-1BD	3.8	**1.5**	24 DC acc. to IEC 61131-2	B	**3RF34 03-1BD04**	1	1 unit	41C
	5.4	**2.2**		B	**3RF34 05-1BD04**	1	1 unit	41C
	7.4	**3.0**		B	**3RF34 10-1BD04**	1	1 unit	41C
 3RF34 10-1BD	3.8	**1.5**	110 ... 230 AC	B	**3RF34 03-1BD24**	1	1 unit	41C
	5.4	**2.2**		B	**3RF34 05-1BD24**	1	1 unit	41C
	7.4	**3.0**		B	**3RF34 10-1BD24**	1	1 unit	41C

For online configurator see www.siemens.com/sirius/configurators.

Accessories

	Version	DT	Order No. / Price per PU	PU (UNIT, SET, M)	PS*	PG
Link modules for solid-state contactor to motor starter protector						
 3RA29 21-1BA00	**Link module** between solid-state reversing contactor and motor starter protector with screw terminals For 3RV2 motor starter protectors size S00/S0	A	Screw terminals **3RA29 21-1BA00**	1	1 unit	41B
Link adapters for solid-state contactor to overload relay						
 3RF39 00-0QA88	**Link adapters** for direct mounting of 3RB3 overload relays or 3RR2 current monitoring relays to the solid-state contactor with screw terminals The adapter is snapped onto the enclosure of the 3RF34 contactor and receives the fixing hooks of the 3RB3 overload relays or the 3RR2 current monitoring relays for direct mounting.	A	**3RF39 00-0QA88**	1	1 unit	41C
Blank labels						
 3SB19 00-1SB20	**Unit labeling plates**[1] for SIRIUS devices 20 mm × 7 mm, pastel turquoise	D	**3RT19 00-1SB20**	100	340 units	41B

[1] PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH (see Chapter 16, "Appendix" → "External Partners").

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Protection Equipment



Price groups
PG 41B, 41E, 41F, 41G, 41H, 41J, 42F, 42J, 143, 401

7/2 **Introduction**

Motor starter protectors/ circuit breakers

SIRIUS 3RV2 motor starter protectors up to 40 A

7/7 General data
7/14 For motor protection
7/16 For motor protection with overload relay function
7/17 For starter combinations
7/18 For transformer protection
7/19 For system protection according to UL 489/CSA C22.2 No. 5-02
7/20 For transformer protection according to UL 489/CSA C22.2 No. 5-02

Accessories

7/21 - Mountable accessories
7/24 - Busbar accessories
7/27 - Rotary operating mechanisms
7/28 - Mounting accessories
7/31 - Enclosures and front plates
7/34 3RV29 infeed system

SIRIUS 3RV1 motor starter protectors up to 100 A

7/38 General data
7/45 For motor protection
7/46 For motor protection with overload relay function
7/47 For starter combinations
7/48 For transformer protection
7/49 For fuse monitoring
7/50 For system protection according to UL 489/CSA C22.2 No. 5-02
7/51 For distance protection

Accessories

7/52 - Mountable accessories
7/55 - Busbar accessories
7/57 - Rotary operating mechanisms
7/59 - Mounting accessories
7/61 - Enclosures and front plates

SIRIUS 3RV1 molded case motor starter protectors up to 800 A

7/63 General data
7/68 For motor protection
7/69 For starter combinations

Accessories

7/70 - Mountable accessories
7/71 - Rotary operating mechanisms, mounting accessories

Overload relays

7/72 General data

SIRIUS 3RU2 thermal overload relays

7/79 3RU2 up to 40 A for standard applications
7/87 Accessories

SIRIUS 3RU1 thermal overload relays

7/89 3RU11 up to 100 A for standard applications
7/97 Accessories

SIRIUS 3RB3 solid-state overload relays

7/99 3RB30, 3RB31 up to 40 A for standard applications
7/107 Accessories

SIRIUS 3RB2 solid-state overload relays

7/109 3RB20, 3RB21 up to 630 A for standard applications
7/118 Accessories for 3RB20, 3RB21
7/120 3RB22, 3RB23 up to 630 A for High-Feature applications
7/128 3RB24 for IO-Link, up to 630 A for High-Feature applications new
7/134 Current measuring modules for 3RB22, 3RB23, 3RB24
7/137 Accessories for 3RB22, 3RB23, 3RB24

More information can be found on the Internet: see the opening information on page 13

Note:

The 3RV1, 3RU1 and 3RB2 devices (sizes S00/S0 to S12) can be found

- in the Catalog Add-On IC 10 AO · 2012 in the CD/DVD box
- in the Catalog Add-On IC 10 AO · 2012 at the Information and Download Center
- in the interactive catalog CA 01
- in the Industry Mall

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Introduction

Overview



Type		3RV20	3RV21	3RV23	3RV24	3RV27	3RV28
SIRIUS 3RV2 motor starter protectors up to 40 A							
Applications							
System protection		✓[1]	✓[1]	--	--	✓	✓
Motor protection		✓	--	--	--	--	--
Motor protection with overload relay function		--	✓	--	--	--	--
Starter combinations		--	--	✓	--	--	--
Transformer protection		--	--	--	✓	✓	✓
Size		S00, S0	S00, S0	S00, S0	S00, S0	S00	S00
Rated current I_n							
• Size S00	A	up to 16	up to 16	up to 16	up to 16	up to 15	up to 15
• Size S0	A	up to 40	up to 32	up to 40	up to 25	--	--
Rated operational voltage U_e according to IEC	V	690 AC[2]	690 AC[2]	690 AC[2]	690 AC[2]	690 AC	690 AC
Rated frequency	Hz	50/60	50/60	50/60	50/60	50/60	50/60
Trip class		CLASS 10	CLASS 10	--	CLASS 10	--	--
Thermal overload releases	A	0.11 ... 0.16 up to	0.11 ... 0.16 up to	Without[3]	0.11 ... 0.16 up to	0.16 ... 15 non-	0.16 ... 15 non-
	A	34 ... 40	27 ... 32		20 ... 25	adjustable	adjustable
Electronic release A multiple of the rated current		13 times	13 times	13 times	20 times	13 times	20 times
Short-circuit breaking capacity I_{cu} at 400 V AC	kA	20/55/100	55/100	20/55/100	55/100	[4]	[4]
Pages		7/14, 7/15	7/16	7/17	7/18	7/19	7/20

Accessories											
For sizes	S00	S0	S00	S0	S00	S0	S00	S0	S00	S00
Auxiliary switches	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Signaling switches	✓	✓	✓	✓	✓	✓	✓	✓	--	--
Undervoltage releases	✓	✓	--	--	✓	✓	✓	✓	✓	✓
Shunt releases	✓	✓	--	--	✓	✓	✓	✓	✓	✓
Isolator modules	✓	✓	✓	✓	✓	✓	✓	✓	--	--
Insulated three-phase busbar system	✓	✓	--	--	✓	✓	✓	✓	--	--
Busbar adapters	✓	✓	✓	✓	✓	✓	✓	✓	--	--
Door-coupling rotary operating mechanisms	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Link modules	✓	✓	✓	✓	✓	✓	✓	✓	--	--
Enclosures for surface mounting	✓	✓	✓	✓	✓	✓	✓	✓	--	--
Enclosures for flush mounting	✓	✓	✓	✓	✓	✓	✓	✓	--	--
Front plates	✓	✓	✓	✓	✓	✓	✓	✓	--	--
Infeed system	✓	✓	--	--	✓	✓	✓	✓	--	--
Terminal covers for ring terminal lug connections	✓[5]	✓[5]	--	--	--	--	--	--	--	--
Sealable scale covers for setting knobs	✓	✓	✓	✓	--	--	✓	✓	--	--
Pages	7/21 ... 7/37									

✓ Has this function or can use this accessory

-- Does not have this function or cannot use this accessory

1) For symmetrical loading of the three phases.

2) With molded-plastic enclosure 500 V AC. For DC applications see "Technical Specifications" → "DC Short-Circuit Breaking Capacity" on page 7/10.

3) For overload protection of the motors, appropriate overload relays must be used.

4) According to UL 489 at 480 Y/277 V AC: 65 kA.

5) Terminal covers are available for 3RV20 motor starter protectors with ring terminal lug connection to ensure finger-safety.

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Type		3RV10	3RV11	3RV13	3RV14	3RV16	3RV16	3RV17
SIRIUS 3RV1 motor starter protectors up to 100 A								
Applications								
System protection		✓[1]	✓[1]	--	--	--	--	✓
Motor protection		✓	--	--	--	--	--	--
Motor protection with overload relay function		--	✓	--	--	--	--	--
Starter combinations		--	--	✓	--	--	--	--
Transformer protection		--	--	--	✓	--	--	✓
Fuse monitoring		--	--	--	--	✓	--	--
Voltage transformer circuit breakers for distance protection		--	--	--	--	--	✓	--
Size		S2, S3	S2, S3	S2, S3	S2	S00	S00	S3
Rated current I_n								
• Size S00	A	--	--	--	--	0.2	up to 3	--
• Size S2	A	up to 50	up to 50	up to 50	up to 40	--	--	--
• Size S3	A	up to 100	up to 100	up to 100	--	--	--	up to 70
Rated operational voltage U_e according to IEC	V	690 AC[2]	690 AC[2]	690 AC[2]	690 AC[2]	690 AC[2]	400 AC	690 AC
Rated frequency	Hz	50/60	50/60	50/60	50/60	50/60	$16^2/_3$ ... 60	50/60
Trip class		CLASS 10, 20	CLASS 10	--	CLASS 10	--	--	--
Thermal overload releases	A	11 ... 16	11 ... 16	Without[3]	11 ... 16	0.2	1.4 ... 3	10 ... 70
	A	up to 80 ... 100	up to 80 ... 100		up to 28 ... 40			non-adjustable
Electronic release A multiple of the rated current		13 times	13 times	13 times	20 times	6 times	4 ... 7 times	13 times
Short-circuit breaking capacity I_{cu} at 400 V AC	kA	50/100	50/100	50/100	50/100	100	50	[4]
Pages		7/45	7/46	7/47	7/48	7/49	7/51	7/50
Accessories								
For sizes		S2 S3	S2 S3	S2 S3	S2	S00	S00	S3
Auxiliary switches		✓ ✓	✓ ✓	✓ ✓	✓	✓	✓	✓[5]
Signaling switches		✓ ✓	✓ ✓	✓ ✓	✓	--	--	--
Undervoltage releases		✓ ✓	-- --	✓ ✓	✓	--	--	✓
Shunt releases		✓ ✓	-- --	✓ ✓	✓	--	--	✓
Isolator modules		✓ --	✓ --	✓ --	✓	--	--	--
Insulated three-phase busbar system		✓ --	✓ --	✓ --	✓	--	--	--
Busbar adapters		✓ ✓	✓ ✓	✓ ✓	✓	--	--	--
Door-coupling rotary operating mechanisms		✓ ✓	✓ ✓	✓ ✓	✓	--	--	✓
Remote motorized operating mechanisms		✓ ✓	✓ ✓	✓ ✓	✓	--	--	--
Link modules		✓ ✓	✓ ✓	✓ ✓	✓	--	--	--
Enclosures for surface mounting		✓ --	✓ --	✓ --	✓	--	--	--
Front plates		✓ ✓	✓ ✓	✓ ✓	✓	--	--	--
Pages		7/52 ... 7/62						

✓ Has this function or can use this accessory

-- Does not have this function or cannot use this accessory

[1] For symmetrical loading of the three phases.

[2] With molded-plastic enclosure 500 V AC. For DC applications see "Technical Specifications" → "DC Short-Circuit Breaking Capacity" on page 7/40.

[3] For overload protection of the motors, appropriate overload relays must be used.

[4] According to UL 489
- at 480 Y/277 V AC: 65 kA;
- at 480 V AC: 65 kA (10 A to 30 A).

[5] Only lateral auxiliary switches can be fitted.

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Introduction





Type		3RV10			3RV13					
SIRIUS 3RV1 molded case motor starter protectors up to 800 A										
Applications										
Motor protection		✓			--					
Starter combinations		--			✓					
Switching capacity		Standard switching capacity			Standard switching capacity				Increased switching capacity	
Size		3RV10 63	3RV10 73	3RV10 83	3RV13 53	3RV13 63	3RV13 73	3RV13 83	3RV13 64	3RV13 74
Rated current I_n	A	100 ... 200	400	630	1 ... 32	100 ... 250	400, 630	630, 800	100 ... 250	400
Rated operational voltage U_e according to IEC	V	690 AC			690 AC					
Rated frequency	Hz	50/60			50/60					
Trip class		CLASS 10A, 10, 20, 30			--[1]					
Thermal overload releases	A A	40 ... 100 up to 252 ... 630			Without[1]					
Electronic release A multiple of the rated current		Adjustable, 6 ... 13 times			Non-adjustable 1 ... 12.5 A: 13 times; adjustable 20 A, 32 A: 6 ... 12 times	1 ... 10 times				
Short-circuit breaking capacity I_{cu} at 400 V AC	kA	120	120	100	85	120	120	100	200	200
Trip unit (release)		TU 4			TU 1: 1 ... 12.5 A; TU 2: 20 A, 32 A	TU 3				
Pages		7/68			7/69					

Accessories										
For molded case motor starter protectors		3RV10 63	3RV10 73	3RV10 83	3RV13 53	3RV13 63	3RV13 73	3RV13 83	3RV13 64	3RV13 74
Auxiliary switches		✓	✓	✓	✓	✓	✓	✓	✓	✓
Undervoltage releases		✓	✓	✓	✓	✓	✓	✓	✓	✓
Shunt releases		✓	✓	✓	✓	✓	✓	✓	✓	✓
Rotary operating mechanisms		✓	✓	✓	✓	✓	✓	✓	✓	✓
Connection methods • Front-extended terminals		✓	✓	--	✓	✓	✓	--	✓	✓
• Front-accessible cable terminals		✓	✓	✓	✓	✓	✓	✓	✓	✓
• Rear terminals		✓	✓	✓	✓	✓	✓	✓	✓	✓
Pages		7/70, 7/71								

✓ Has this function or can use this accessory

-- Does not have this function or cannot use this accessory

[1] For overload protection of the motors, appropriate overload relays must be used.

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Type		3RU21	3RB30	3RB31
SIRIUS overload relays up to 40 A				
Applications				
System protection		✓[1]	✓[1]	✓[1]
Motor protection		✓	✓	✓
Alternating current, three-phase		✓	✓	✓
Alternating current, single-phase		✓	--	--
Direct current		✓	--	--
Size of contactor		S00, S0	S00, S0	S00, S0
Rated operational current I_e • Size S00 • Size S0	A A	up to 16 up to 40	up to 16 up to 40	up to 16 up to 40
Rated operational voltage U_e	V	690 AC	690 AC	690 AC
Rated frequency	Hz	50/60	50/60	50/60
Trip class		CLASS 10	CLASS 10, 20	CLASS 5, 10, 20, 30 adjustable
Thermal overload releases	A A	0.11 ... 0.16 up to 34 ... 40	--	--
Electronic overload releases	A A	--	0.1 ... 0.4 up to 10 ... 40	0.1 ... 0.4 up to 10 ... 40
Rating for induction motor at 400 V AC	kW	0.04 ... 18.5	0.04 ... 18.5	0.04 ... 18.5
Pages		7/85, 7/86	7/104, 7/105	7/106

Accessories						
For sizes	S00	S0	S00	S0	S00	S0
Terminal brackets for stand-alone installation	✓	✓	✓	✓	✓	✓
Mechanical RESET	✓	✓	✓	✓	✓	✓
Cable releases for RESET	✓	✓	✓	✓	✓	✓
Electrical remote RESET	✓	✓	--	--	Integrated in the unit	
Terminal covers for ring terminal lug connections	✓[2]	✓[2]	--	--	--	--
Sealable covers for setting knobs	✓	✓	✓	✓	✓	✓
Pages	7/87, 7/88		7/107, 7/108		7/107, 7/108	

✓ Has this function or can use this accessory

-- Does not have this function or cannot use this accessory

[1] The devices are responsible in the main circuit for overload protection of the assigned electrical loads (e.g. motors), feeder cable and other switching and protection devices in the respective load feeder.

[2] Terminal covers for ensuring finger-safe touch protection are available for 3RU21 overload relays with ring terminal lug connections for mounting onto contactors.

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Introduction







Type		3RU11	3RB20	3RB21	3RB22, 3RB23	3RB24
SIRIUS overload relays up to 630 A						
Applications						
System protection		✓[1]	✓[1]	✓[1]	✓[1]	
Motor protection		✓	✓	✓	✓	
Alternating current, three-phase		✓	✓	✓	✓	
Alternating current, single-phase		✓	--	--	✓	
Direct current		✓	--	--	--	
Size of contactor		S2, S3	S2 ... S12	S2 ... S12	S00 ... S12	
Rated operational current I_e						
• Size S2	A	up to 50	up to 50	up to 50	Up to 100[2]	
• Size S3	A	up to 100	up to 100	up to 100	Up to 100[2]	
• Size S6	A	--	up to 200	up to 200	up to 200	
• Size S10/S12, size 14 (3TF68/3TF69)	A	--	up to 630	up to 630	up to 630	
Rated operational voltage U_e	V	690/1 000 AC[3]	690/1 000 AC[4]	690/1 000 AC[4]	690/1 000 AC[5]	
Rated frequency	Hz	50/60	50/60	50/60	50/60	
Trip class		CLASS 10	CLASS 10, 20	CLASS 5, 10, 20, 30 adjustable	CLASS 5, 10, 20, 30 adjustable	
Thermal overload releases	A A	5.5 ... 8 up to 80 ... 100	--	--	--	
Electronic overload releases	A A	--	6 ... 25 up to 160 ... 630	6 ... 25 up to 160 ... 630	0.3 ... 3 up to 63 ... 630	
Rating for induction motor at 400 V AC	kW kW	3 to 45	3 ... 11 up to 90 ... 450	3 ... 11 up to 90 ... 450	0.09 ... 1.1 up to 37 ... 450	
Pages		7/94 ... 7/96	7/115, 7/116	7/117	7/125, 7/127, 7/136	7/133, 7/136

Accessories																	
For sizes	S2	S3	S2	S3	S6	S10/S12	S2	S3	S6	S10/S12	S00	S0	S2	S3	S6	S10/S12
Terminal brackets for stand-alone installation	✓	✓	6)	6)	6)	6)	6)	6)	6)	6)	6)	6)	6)	6)	6)	6)
Mechanical RESET	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	--	--	--	--	--	--
Cable releases for RESET	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	--	--	--	--	--	--
Electrical remote RESET	✓	✓	--	--	--	--	Integrated in the unit				Integrated in the unit					
Terminal covers	✓	✓	--	✓	✓	✓	--	✓	✓	✓	--	--	--	✓	✓	✓
Sealable covers for setting knobs	Integrated in the unit		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Operator panels for evaluation modules	--	--	--	--	--	--	--	--	--	--	✓	✓	✓	✓	✓	✓
Pages	7/97, 7/98		7/118, 7/119				7/118, 7/119				7/134 ... 7/138					

✓ Has this function or can use this accessory

-- Does not have this function or cannot use this accessory

1) The devices are responsible in the main circuit for overload protection of the assigned electrical loads (e.g. motors), feeder cable and other switching and protection devices in the respective load feeder.

2) Selection of current measuring modules according to the respective operational current.

3) Size S3 up to 1 000 V AC.

4) Size S2 (only with straight-through transformer), S3, S6, S10, S12 up to 1 000 V AC.

5) With reference to the 3RB29 .6 current measuring modules.

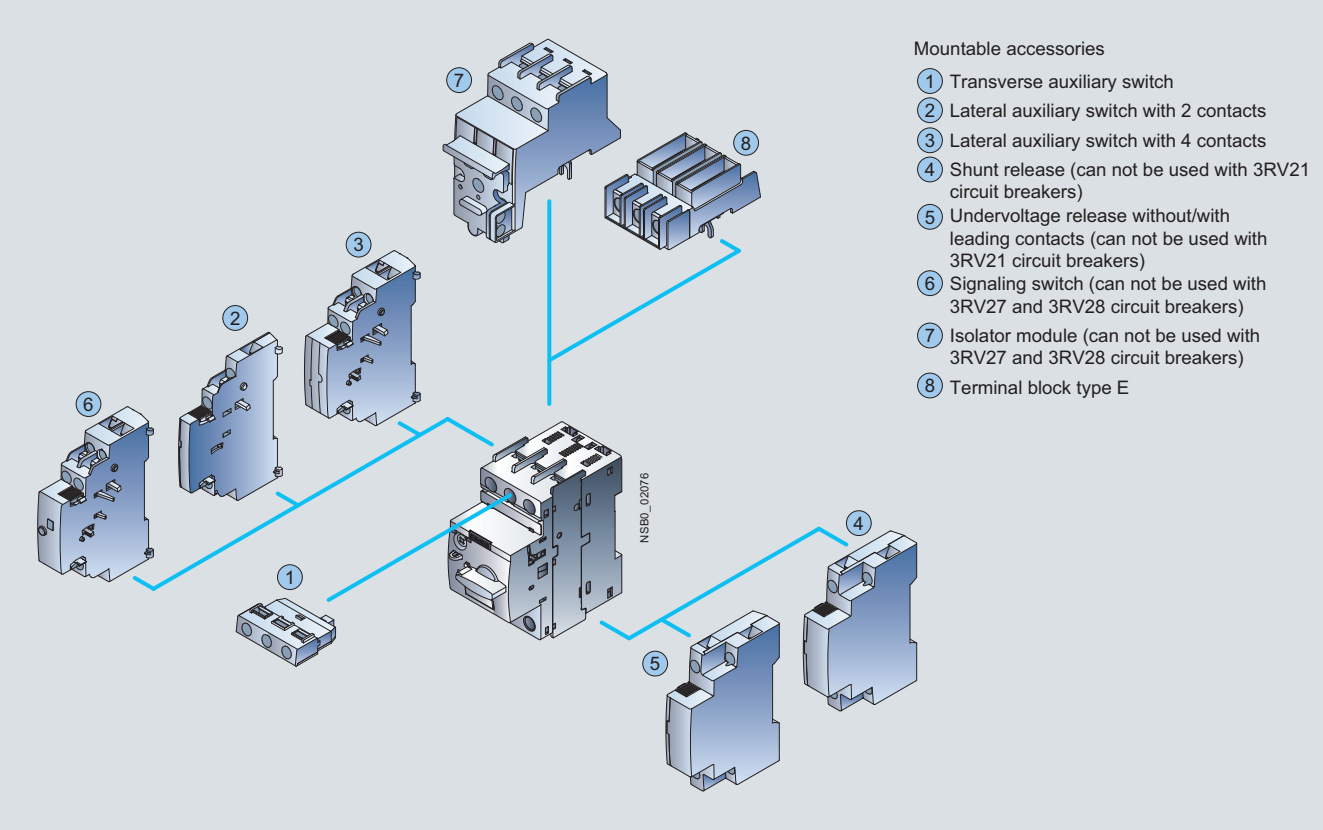
6) Stand-alone installation without accessories is possible.

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Overview

The following illustration shows our 3RV2 motor starter protector with the accessories which can be mounted for the sizes S00 and S0, see also "Introduction" → "Overview" on page 7/2.

Accessories see page 7/21 onwards.



Mountable accessories for SIRIUS 3RV2 motor starter protectors



SIRIUS motor starter protector with spring-type terminals, size S0 (left) and SIRIUS motor starter protector with screw terminals, size S00 (right)

The new SIRIUS 3RV2 motor starter protectors are compact, current limiting motor starter protectors which are optimized for load feeders. The motor starter protectors are used for switching and protecting three-phase induction motors of up to 18.5 kW at 400 V AC and for other loads with rated currents of up to 40 A.

For 3RV1 motor starter protectors in sizes S2 and S3 up to 100 A see page 7/38 onwards.

The new 3RV2 motor starter protectors are generally approved according to IEC and UL/CSA. 3RV2 motor starter protectors in sizes S00 and S0 are approved according to UL 508 as:

- "Manual Motor Controllers"
- "Manual Motor Controller" for "Group Installations"
- "Manual Motor Controllers Suitable for Tab Conductor Protection in Group Installations"
- "Self-Protected Combination Motor Controllers (Type E)" Please note that for this approval the 3RV20 motor starter protectors must be equipped with additional feeder terminals. For more information see "Accessories", page 7/28.

The 3RV27 and 3RV28 motor starter protectors are approved as circuit breakers according to UL 489; they are a special version of the 3RV2 motor starter protectors.

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General data

Type of construction

The 3RV2 motor starter protectors are available in two sizes:

- Size S00 - width 45 mm,
  max. rated current 16 A,
  at 400 V AC suitable for induction motors up to 7.5 kW
- Size S0 - width 45 mm,
  max. rated current 40 A,
  at 400 V AC suitable for induction motors up to 18.5 kW

For sizes S2 and S3 of the 3RV1 motor starter protectors up to 100 A see page 7/38 onwards.

Circuit breakers acc. to UL 489

The 3RV27 and 3RV28 circuit breakers are available in one size:

- Size S00 – width 45 mm,
  max. rated current 15 A, at 480 Y/277 V AC

For size S3 of the 3RV17 circuit breakers up to 70 A see page 7/50.

Connection methods

The 3RV2 motor starter protectors can be supplied with screw terminals, spring-type terminals and ring cable lug connections.

	Screw terminals
	Spring-type terminals
	Ring terminal lug connections
	The terminals are indicated in the corresponding tables by the symbols shown on orange backgrounds.

"Increased safety" type of protection EEx e according to ATEX directive 94/9/EC

3RV20 motor starter protectors are suitable for overload protection of explosion-protected motors with "increased safety" type of protection EEx e;
see www.siemens.com/sirius/atex.

EC type test certificate for Category (2)G/D has been submitted. More details on request.

Order No. scheme

Digit of the Order No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th		13th	14th	15th	16th
	□□□	□	□	□	□	–	□	□	□	□	□	–	□	□	□	□
Motor starter protectors	**3 R V**															
SIRIUS 2nd generation		**2**														
Type of motor starter protector			□													
Size				□												
Breaking capacity					□											
Setting range for overload release							□	□								
Trip class (CLASS)									□							
Connection methods										□						
With or without auxiliary switch											□					
Special versions													□	□	□	□
Example	**3 R V**	**2**	**0**	**1**	**1**	**–**	**1**	**A**	**A**	**1**	**0**					

Note:

The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quoted in the catalog in the Selection and ordering data.

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Application

Operating conditions

3RV2 motor starter protectors are suitable for use in any climate. They are intended for use in enclosed rooms in which no severe operating conditions (such as dust, caustic vapors, hazardous gases) prevail. When installed in dusty and damp areas, suitable enclosures must be provided.

3RV2 motor starter protectors can optionally be fed from the top or from below.

The permissible ambient temperatures, the maximum switching capacities, the tripping currents and other boundary conditions can be found in the technical specifications and tripping characteristics, see "System Manual for Industrial Controls – SIRIUS Innovations", ordering information under "Accessories" on page 7/29.

3RV2 motor starter protectors are suitable for operation in IT systems (IT networks). In this case, the different short-circuit breaking capacity in the IT system must be taken into account.

Since operational currents, starting currents and current peaks are different even for motors with identical power ratings due to the inrush current, the motor ratings in the selection tables are only guide values. The specific rated and start-up data of the motor to be protected is always paramount to the choice of the most suitable motor starter protector. This also applies to motor starter protectors for transformer protection.

Possible uses

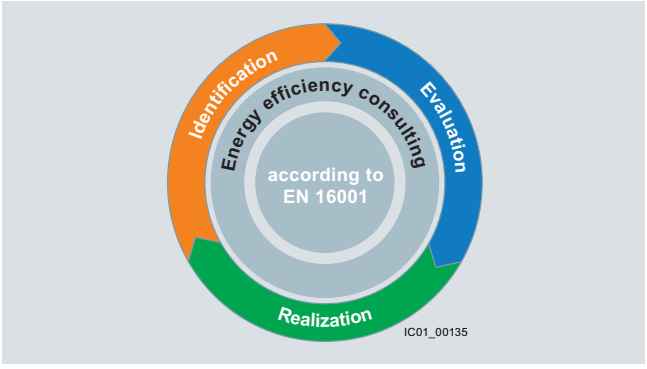
The 3RV2 motor starter protectors can be used:

- For short-circuit protection
- For motor protection (also with overload relay function)
- For system protection
- For short-circuit protection for starter combinations
- For transformer protection
- As main and EMERGENCY-STOP switches
- For operation in IT systems (IT networks)
- For switching of DC currents
- In areas subject to explosion hazard (ATEX)
- Approved as circuit breakers according to UL 489 (3RV27 and 3RV28)

For more details see "System Manual for Industrial Controls – SIRIUS Innovations", ordering information under "Accessories" on page 7/29.

Benefits

Advantages through energy efficiency



Overview of the energy management process

We offer you a unique portfolio for industrial energy management, using an energy management system that helps to optimally define your energy needs. We split up our industrial energy management into three phases – Identification, Evaluation and Realization – and we support you with the appropriate hardware and software solutions in every process phase.

The innovative products of the SIRIUS industrial controls portfolio can also make a substantial contribution to a plant's energy efficiency (see www.siemens.com/sirius/energysaving).

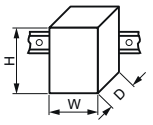
3RV2 motor starter protectors contribute to energy efficiency throughout the plant as follows:

- Minimization of energy losses through optimization of the bimetal trip units
- Reduction of inherent power loss
- Less heating of the control cabinet
- Smaller control cabinet air conditioners can be used

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General data

Technical specifications

General data					
Type			**3RV2. 1.**	**3RV27 11, 3RV28 11**	**3RV2. 2.**
Size			S00	S00	S0
Dimensions (W x H x D)					
• Screw terminals		mm	45 x 97 x 91	45 x 144 x 92	45 x 97 x 91
• Spring-type terminals		mm	45 x 109 x 91	--	45 x 119 x 91
Standards					
• IEC 60947-1, EN 60947-1			Yes		
• IEC 60947-2, EN 60947-2			Yes		
• IEC 60947-4-1, EN 60947-4-1			Yes	--	Yes
• UL 508, CSA C22.2 No.14			Yes	--	Yes
• UL 489, CSA C22.2 No.5-02			--	Yes	--
Number of poles			3		
Max. rated current $I_{n\ max}$ (= max. rated operational current I_e)		A	16		40
Permissible ambient temperature					
• Storage/transport		°C	–50 ... +80		
• Operation	I_n: 0.16 ... 32 A	°C	–20 ... +70 (current reduction above +60 °C)		
	I_n: 36 ... 40 A	°C	–20 ... +40 (The devices must not be mounted side-by-side and they must not be assembled with link modules with contactors. A lateral clearance of 9 mm is required)		
Permissible rated current at inside temperature of control cabinet					
• +60 °C		%	100		
• +70 °C		%	87		
Permissible rated current at ambient temperature of enclosure (applies for motor starter protector inside enclosure ≤ 32 A)					
• +35 °C		%	100		
• +60 °C		%	87		
Rated operational voltage U_e					
• Acc. to IEC		V AC	690 (with molded-plastic enclosure 500 V)		
• Acc. to UL/CSA		V AC	600		
Rated frequency		Hz	50/60		
Rated insulation voltage U_i		V	690		
Rated impulse withstand voltage U_{imp}		kV	6		
Utilization categories					
• IEC 60947-2 (motor starter protector/circuit breaker)			A		
• IEC 60947-4-1 (motor starter)			AC-3		
Trip class CLASS	According to IEC 60947-4-1		10	--	10
DC short-circuit breaking capacity (time constant t = 5 ms)					
• 1 conducting path 150 V DC		kA	10		
• 2 conducting paths in series 300 V DC		kA	10		
• 3 conducting paths in series 450 V DC		kA	10		
Power loss P_v for each motor starter protector Dependent on the rated current I_n (upper setting range) $R_{\text{per conducting path}} = \frac{P}{I^2 \times 3}$	I_n: 0.16 ... 0.63 A	W	5		
	I_n: 0.8 ... 6.3 A	W	6		
	I_n: 8 ... 16 A	W	7		
	I_n: 16 A	W	--		7
	I_n: 20 ... 25 A	W	--		8
	I_n: 28 ... 32 A	W	--		11
	I_n: 36 ... 40 A	W	--		14
Shock resistance	According to IEC 60068-2-27	*g*/ms	25/11 (square and sine pulse)		
Degree of protection	According to IEC 60529		IP20		
Touch protection	According to EN 50274		Finger-safe		
Temperature compensation	According to IEC 60947-4-1	°C	–20 ... +60		
Phase failure sensitivity	According to IEC 60947-4-1		Yes		
Explosion protection – Safe operation of motors with "increased safety" type of protection			Yes, only for 3RV20 motor starter protectors		
EC type test certificate number according to directive 94/9/EC (ATEX)			On request		
Isolating function	According to IEC 60947-2		Yes		
Main and EMERGENCY-STOP switch characteristics (with corresponding accessories)	According to IEC 60204-1		Yes		
Protective separation between main and auxiliary circuits, required for PELV applications	According to IEC 60947-1				
• Up to 400 V + 10 %			Yes		
• Up to 415 V + 5 % (higher voltages on request)			Yes		
Permissible mounting positions			Any, acc. to IEC 60447 start command "I" right-hand side or top		
Mechanical endurance		Operating cycles	100 000		
Electrical endurance		Operating cycles	100 000		
Max. switching frequency per hour (motor starts)		1/h	15		

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Rated data of the auxiliary switches and signaling switches

		Lateral auxiliary switch with 1 NO + 1 NC, 2 NO, 2 NC, 2 NO + 2 NC	Signaling switches	Transverse auxiliary switch with 1 CO	Transverse auxiliary switch with 1 NO + 1 NC, 2 NO
Max. rated voltage					
• Acc. to NEMA (UL)	V AC	600			250
• Acc. to NEMA (CSA)	V AC	600			250
Uninterrupted current	A	10	10	5	2.5
Switching capacity		1 NO + 1 NC, 2 NO, 2 NC: A600, Q300; 2 NO + 2 NC: A300, Q300	A600, Q300	B600, R300	C300, R300

Front transverse auxiliary switches

		Switching capacity for different voltages: 1 CO	1 NO + 1 NC, 2 NO
Rated operational current I_e			
• At AC-15, alternating voltage			
- 24 V	A	4	2
- 230 V	A	3	0.5
- 400 V	A	1.5	--
- 690 V	A	0.5	--
• At AC-12 = I_{th}, alternating voltage			
- 24 V	A	10	2.5
- 230 V	A	10	2.5
- 400 V	A	10	--
- 690 V	A	10	--
• At DC-13, direct voltage *L/R* 200 ms			
- 24 V	A	1	1
- 48 V	A	--	0.3
- 60 V	A	--	0.15
- 110 V	A	0.22	--
- 220 V	A	0.1	--
Minimum load capacity	V	17	
	mA	1	

Front transverse solid-state compatible auxiliary switches

			Switching capacity for different voltages: 1 CO
Rated operational voltage U_e	Alternating voltage	V	125
Rated operational current I_e/AC-14	at U_e = 125 V	A	0.1
Rated operational voltage U_e	Direct voltage *L/R* 200 ms	V	60
Rated operational current I_e/DC-13	at U_e = 60 V	A	0.3
Minimum load capacity		V	5
		mA	1

Lateral auxiliary switches with signaling switch

		Switching capacity for different voltages: Lateral auxiliary switch with 1 NO + 1 NC, 2 NO, 2 NC, 2 NO + 2 NC Signaling switch
Rated operational current I_e		
• At AC-15, alternating voltage		
- 24 V	A	6
- 230 V	A	4
- 400 V	A	3
- 690 V	A	1
• At AC-12 = I_{th}, alternating voltage		
- 24 V	A	10
- 230 V	A	10
- 400 V	A	10
- 690 V	A	10
• At DC-13, direct voltage *L/R* 200 ms		
- 24 V	A	2
- 110 V	A	0.5
- 220 V	A	0.25
- 440 V	A	0.1
Minimum load capacity	V	17
	mA	1

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General data

Auxiliary releases

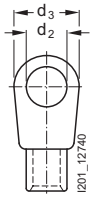
		Undervoltage releases	Shunt releases
Power consumption			
• During pick-up			
- AC voltages	VA/W	20.2/13	20.2/13
- DC voltages	W	20	13 ... 80
• During uninterrupted duty			
- AC voltages	VA/W	7.2/2.4	--
- DC voltages	W	2.1	--
Response voltage			
• Tripping	V	0.35 ... 0.7 x U_s	0.7 ... 1.1 x U_s
• Pickup	V	0.85 ... 1.1 x U_s	--
Opening time maximum	ms	20	

Short-circuit protection for auxiliary and control circuits

Melting fuses operational class gG	A	10
Miniature circuit breakers C characteristic	A	6 (prospective short-circuit current < 0.4 kA)

Conductor cross-sections of main circuit

Type		**3RV2. 11**	**3RV2. 21**	**3RV27 11, 3RV28 11**
Size		S00	S0	S00
Connection type		**Screw terminals**		
Terminal screw		M3, Pozidriv size 2	M4, Pozidriv size 2	M4, Pozidriv size 2
Operating devices	mm	⌀ 5 ... 6	⌀ 5 ... 6	⌀ 5 ... 6
Prescribed tightening torque	Nm	0.8 ... 1.2	2 ... 2.5	2.5 ... 3
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected				
• Solid	mm^2	2 x (0.75 ... 2.5)[1], 2 x 4	2 x (1 ... 2.5)[1], 2 x (2.5 ... 10)[1]	1 ... 10, max. 2 x 10
• Stranded	mm^2	2 x (0.75 ... 2.5)[1], 2 x 4	2 x (1 ... 2.5)[1], 2 x (2.5 ... 10)[1]	1.5 ... 25, max. 10 + 25
• Finely stranded with end sleeves (DIN 46228 T1)	mm^2	2 x (0.5 ... 1.5)[1], 2 x (0.75 ... 2.5)[1]	2 x (1 ... 2.5)[1], 2 x (2.5 ... 6)[1], 1 x 10	1 ... 16, max. 6 + 16
• AWG cables, solid or stranded	AWG	2 x (18 ... 14)[1], 2 x 12	2 x (16 ... 12)[1], 2 x (14 ... 8)[1]	2 x (14 ... 10)
Connection type		**Spring-type terminals**		
Operating devices	mm	3.0 x 0.5 and 3.5 x 0.5		
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected				
• Solid	mm^2	2 x (0.5 ... 4)	2 x (1 ... 10)	--
• Finely stranded without end sleeve	mm^2	2 x (0.5 ... 2.5)	2 x (1 ... 6)	--
• Finely stranded with end sleeves (DIN 46228 T1)	mm^2	2 x (0.5 ... 2.5)	2 x (1 ... 6)	--
• AWG cables, solid or stranded	AWG	2 x (20 ... 12)	2 x (18 ... 8)	--
Max. external diameter of the conductor insulation	mm	3.6	3.6	--
Connection type		**Ring terminal lug connections**		
Terminal screw		M3, Pozidriv size 2	M4, Pozidriv size 2	--
Operating devices	mm	⌀ 5 ... 6	⌀ 5 ... 6	--
Prescribed tightening torque	Nm	0.8 ... 1.2	2 ... 2.5	--
Usable ring terminal lugs	mm	d_2 = min. 3.2, d_3 = max. 7.5	d_2 = min. 4.3, d_3 = max. 12.2	--
• DIN 46234 without insulation sleeve				
• DIN 46225 without insulation sleeve				
• DIN 46237 with insulation sleeve				
• JIS C2805 Type R without insulation sleeve				
• JIS C2805 Type RAV with insulation sleeve				
• JIS C2805 Type RAP with insulation sleeve				

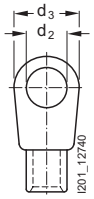


[1] If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in the range specified.

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Conductor cross-sections for auxiliary and control circuits

Type		3RV2. 11	3RV2. 21	3RV27 11, 3RV28 11
Size		S00	S0	S00
Connection type		**Screw terminals**		
Terminal screw		M3, Pozidriv size 2		
Operating devices	mm	⌀ 5 ... 6		
Prescribed tightening torque	Nm	0.8 ... 1.2		
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected				
• Solid or stranded	mm^2	2 x (0.5 ... 1.5)[1], 2 x (0.75 ... 2.5)[1]		
• Finely stranded with end sleeves (DIN 46228 T1)	mm^2	2 x (0.5 ... 1.5)[1], 2 x (0.75 ... 2.5)[1]		
• AWG cables, solid or stranded	AWG	2 x (18 ... 14)[1], 2 x (20 ... 16)[1]		
Connection type		**Spring-type terminals**		
Operating devices	mm	3.0 x 0.5 and 3.5 x 0.5		
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected				
• Solid	mm^2	2 x (0.5 ... 2.5)		
• Finely stranded without end sleeve	mm^2	2 x (0.5 ... 1.5)		
• Finely stranded with end sleeves (DIN 46228 T1)	mm^2	2 x (0.5 ... 1.5)		
• AWG cables, solid or stranded	AWG	2 x (20 ... 14)		
Max. external diameter of the conductor insulation	mm	3.6		
Connection type		**Ring terminal lug connections**		
Terminal screw		M3, Pozidriv size 2		
Operating devices	mm	⌀ 5 ... 6		
Tightening torque	Nm	0.8 ... 1.2		
Usable ring terminal lugs	mm	d_2 = min. 3.2, d_3 = max. 7.5		
• DIN 46234 without insulation sleeve				
• DIN 46225 without insulation sleeve				
• DIN 46237 with insulation sleeve				
• JIS C2805 Type R without insulation sleeve				
• JIS C2805 Type RAV with insulation sleeve				
• JIS C2805 Type RAP with insulation sleeve				



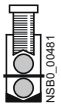
[1] If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in the range specified.

Terminals for "Self-Protected Combination Motor Controller (Type E)" according to UL 508

Type		3RV29 28-1H
Prescribed tightening torque	Nm	2.5 ... 3
Conductor cross-sections		
• Front clamping point connected		
- Solid	mm^2	1 ... 10
- Finely stranded with end sleeve	mm^2	1 ... 16
- Stranded	mm^2	2.5 ... 25
- AWG cables, solid or stranded	AWG	14 ... 3
- Terminal screw		M4
• Rear clamping point connected		
- Solid	mm^2	1 ... 10
- Finely stranded with end sleeve	mm^2	1 ... 16
- Stranded	mm^2	1.5 ... 25
- AWG cables, solid or stranded	AWG	16 ... 3
- Terminal screw		M4
• Both clamping points connected		
- Front clamping point:		
Solid	mm^2	1 ... 10
Finely stranded with end sleeve	mm^2	1 ... 10
Stranded	mm^2	2.5 ... 10
AWG cables, solid or stranded	AWG	14 ... 6
Terminal screw		M4
- Rear clamping point:		
Solid	mm^2	1 ... 10
Finely stranded with end sleeve	mm^2	1 ... 10
Stranded	mm^2	5 ... 25
AWG cables, solid or stranded	AWG	16 ... 3
Terminal screw		M4





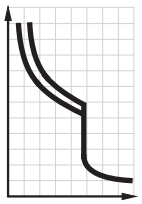


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Selection and ordering data

CLASS 10, without auxiliary switches [1]

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41E





3RV20 11-0AA10



3RV20 11-0EA20



3RV20 21-4AA10



3RV20 21-4AA20

Rated current	Suitable for three-phase induction motors[2] with *P*	Setting range for thermal overload release	Instantaneous overcurrent release	Short-circuit breaking capacity at 400 V AC	DT	**Screw terminals**		DT	**Spring-type terminals**	
I_n			$I >$	I_{cu}		Order No.	Price per PU		Order No.	Price per PU
A	kW	A	A	kA						
Size S00										
0.16	0.04	0.11 ... 0.16	2.1	100	▶	**3RV20 11-0AA10**		▶	**3RV20 11-0AA20**	
0.2	0.06	0.14 ... 0.2	2.6	100	▶	**3RV20 11-0BA10**		▶	**3RV20 11-0BA20**	
0.25	0.06	0.18 ... 0.25	3.3	100	▶	**3RV20 11-0CA10**		▶	**3RV20 11-0CA20**	
0.32	0.09	0.22 ... 0.32	4.2	100	▶	**3RV20 11-0DA10**		▶	**3RV20 11-0DA20**	
0.4	0.09	0.28 ... 0.4	5.2	100	▶	**3RV20 11-0EA10**		▶	**3RV20 11-0EA20**	
0.5	0.12	0.35 ... 0.5	6.5	100	▶	**3RV20 11-0FA10**		▶	**3RV20 11-0FA20**	
0.63	0.18	0.45 ... 0.63	8.2	100	▶	**3RV20 11-0GA10**		▶	**3RV20 11-0GA20**	
0.8	0.18	0.55 ... 0.8	10	100	▶	**3RV20 11-0HA10**		▶	**3RV20 11-0HA20**	
1	0.25	0.7 ... 1	13	100	▶	**3RV20 11-0JA10**		▶	**3RV20 11-0JA20**	
1.25	0.37	0.9 ... 1.25	16	100	▶	**3RV20 11-0KA10**		▶	**3RV20 11-0KA20**	
1.6	0.55	1.1 ... 1.6	21	100	▶	**3RV20 11-1AA10**		▶	**3RV20 11-1AA20**	
2	0.75	1.4 ... 2	26	100	▶	**3RV20 11-1BA10**		▶	**3RV20 11-1BA20**	
2.5	0.75	1.8 ... 2.5	33	100	▶	**3RV20 11-1CA10**		▶	**3RV20 11-1CA20**	
3.2	1.1	2.2 ... 3.2	42	100	▶	**3RV20 11-1DA10**		▶	**3RV20 11-1DA20**	
4	1.5	2.8 ... 4	52	100	▶	**3RV20 11-1EA10**		▶	**3RV20 11-1EA20**	
5	1.5	3.5 ... 5	65	100	▶	**3RV20 11-1FA10**		▶	**3RV20 11-1FA20**	
6.3	2.2	4.5 ... 6.3	82	100	▶	**3RV20 11-1GA10**		▶	**3RV20 11-1GA20**	
8	3	5.5 ... 8	104	100	▶	**3RV20 11-1HA10**		▶	**3RV20 11-1HA20**	
10	4	7 ... 10	130	100	▶	**3RV20 11-1JA10**		▶	**3RV20 11-1JA20**	
12.5	5.5	9 ... 12.5	163	100	▶	**3RV20 11-1KA10**		▶	**3RV20 11-1KA20**	
16	7.5	11 ... 16	208	55	▶	**3RV20 11-4AA10**		▶	**3RV20 11-4AA20**	
Size S0										
16	7.5	11 ... 16	208	55	▶	**3RV20 21-4AA10**		▶	**3RV20 21-4AA20**	
20	7.5	14 ... 20	260	55	▶	**3RV20 21-4BA10**		▶	**3RV20 21-4BA20**	
22	11	17 ... 22	286	55	▶	**3RV20 21-4CA10**		▶	**3RV20 21-4CA20**	
25	11	20 ... 25	325	55	▶	**3RV20 21-4DA10**		▶	**3RV20 21-4DA20**	
28	15	23 ... 28	364	55	▶	**3RV20 21-4NA10**		▶	**3RV20 21-4NA20**	
32	15	27 ... 32	400	55	▶	**3RV20 21-4EA10**		▶	**3RV20 21-4EA20**	
36[3]	18.5	30 ... 36	432	20	▶	**3RV20 21-4PA10**			--	
40[3]	18.5	34 ... 40	480	20	▶	**3RV20 21-4FA10**			--	
Motor starter protectors size S0 for small rated currents [4]										
1.6	0.55	1.1 ... 1.6	21	100	B	**3RV20 21-1AA10**			--	
2	0.75	1.4 ... 2	26	100	B	**3RV20 21-1BA10**			--	
2.5	0.75	1.8 ... 2.5	33	100	B	**3RV20 21-1CA10**			--	
3.2	1.1	2.2 ... 3.2	42	100	B	**3RV20 21-1DA10**			--	
4	1.5	2.8 ... 4	52	100	B	**3RV20 21-1EA10**			--	
5	1.5	3.5 ... 5	65	100	B	**3RV20 21-1FA10**			--	
6.3	2.2	4.5 ... 6.3	82	100	B	**3RV20 21-1GA10**			--	
8	3	5.5 ... 8	104	100	B	**3RV20 21-1HA10**			--	
10	4	7 ... 10	130	100	B	**3RV20 21-1JA10**			--	
12.5	5.5	9 ... 12.5	163	100	B	**3RV20 21-1KA10**			--	

[1] The 3RV20 .1-..A.0 motor starter protectors up to 32 A are also available with ring terminal lug connection. The Order No. must be changed in the 11th position to **"4"**: e.g. 3RV20 11-0AA**4**0.

[2] Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

[3] The devices must not be mounted side-by-side and they must not be assembled with link modules with contactors. A lateral clearance of 9 mm is required.

[4] For customized applications requiring the use of size S0: e.g. feeders with type of coordination "2", larger conductor cross-sections for large cable lengths, etc.

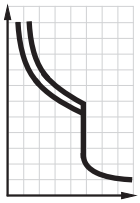
Auxiliary switches and other accessories can be ordered separately (see "Mountable accessories" on page 7/22 onwards).

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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CLASS 10, with transverse auxiliary switch (1 NO + 1 NC)

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41E





3RV20 11-4AA15
with integrated trans-
verse auxiliary switch



3RV20 11-0EA25
with integrated trans-
verse auxiliary switch



3RV20 21-4AA15
with integrated trans-
verse auxiliary switch



3RV20 21-4AA25
with integrated trans-
verse auxiliary switch

Rated current	Suitable for three-phase induction motors[1] with *P*	Setting range for thermal overload release	Instantaneous overcurrent release	Short-circuit breaking capacity at 400 V AC	DT	**Screw terminals**	DT	**Spring-type terminals**
						Order No. / Price per PU		Order No. / Price per PU
I_n			$I >$	I_{cu}				
A	kW	A	A	kA				
Size S00								
0.16	0.04	0.11 ... 0.16	2.1	100	▶	**3RV20 11-0AA15**	▶	**3RV20 11-0AA25**
0.2	0.06	0.14 ... 0.2	2.6	100	▶	**3RV20 11-0BA15**	▶	**3RV20 11-0BA25**
0.25	0.06	0.18 ... 0.25	3.3	100	▶	**3RV20 11-0CA15**	▶	**3RV20 11-0CA25**
0.32	0.09	0.22 ... 0.32	4.2	100	▶	**3RV20 11-0DA15**	▶	**3RV20 11-0DA25**
0.4	0.09	0.28 ... 0.4	5.2	100	▶	**3RV20 11-0EA15**	▶	**3RV20 11-0EA25**
0.5	0.12	0.35 ... 0.5	6.5	100	▶	**3RV20 11-0FA15**	▶	**3RV20 11-0FA25**
0.63	0.18	0.45 ... 0.63	8.2	100	▶	**3RV20 11-0GA15**	▶	**3RV20 11-0GA25**
0.8	0.18	0.55 ... 0.8	10	100	▶	**3RV20 11-0HA15**	▶	**3RV20 11-0HA25**
1	0.25	0.7 ... 1	13	100	▶	**3RV20 11-0JA15**	▶	**3RV20 11-0JA25**
1.25	0.37	0.9 ... 1.25	16	100	▶	**3RV20 11-0KA15**	▶	**3RV20 11-0KA25**
1.6	0.55	1.1 ... 1.6	21	100	▶	**3RV20 11-1AA15**	▶	**3RV20 11-1AA25**
2	0.75	1.4 ... 2	26	100	▶	**3RV20 11-1BA15**	▶	**3RV20 11-1BA25**
2.5	0.75	1.8 ... 2.5	33	100	▶	**3RV20 11-1CA15**	▶	**3RV20 11-1CA25**
3.2	1.1	2.2 ... 3.2	42	100	▶	**3RV20 11-1DA15**	▶	**3RV20 11-1DA25**
4	1.5	2.8 ... 4	52	100	▶	**3RV20 11-1EA15**	▶	**3RV20 11-1EA25**
5	1.5	3.5 ... 5	65	100	▶	**3RV20 11-1FA15**	▶	**3RV20 11-1FA25**
6.3	2.2	4.5 ... 6.3	82	100	▶	**3RV20 11-1GA15**	▶	**3RV20 11-1GA25**
8	3	5.5 ... 8	104	100	▶	**3RV20 11-1HA15**	▶	**3RV20 11-1HA25**
10	4	7 ... 10	130	100	▶	**3RV20 11-1JA15**	▶	**3RV20 11-1JA25**
12.5	5.5	9 ... 12.5	163	100	▶	**3RV20 11-1KA15**	▶	**3RV20 11-1KA25**
16	7.5	11 ... 16	208	55	▶	**3RV20 11-4AA15**	▶	**3RV20 11-4AA25**
Size S0								
16	7.5	11 ... 16	208	55	▶	**3RV20 21-4AA15**	▶	**3RV20 21-4AA25**
20	7.5	14 ... 20	260	55	▶	**3RV20 21-4BA15**	▶	**3RV20 21-4BA25**
22	11	17 ... 22	286	55	▶	**3RV20 21-4CA15**	▶	**3RV20 21-4CA25**
25	11	20 ... 25	325	55	▶	**3RV20 21-4DA15**	▶	**3RV20 21-4DA25**
28	15	23 ... 28	364	55	▶	**3RV20 21-4NA15**	▶	**3RV20 21-4NA25**
32	15	27 ... 32	400	55	▶	**3RV20 21-4EA15**	▶	**3RV20 21-4EA25**
36[2]	18.5	30 ... 36	432	20	▶	**3RV20 21-4PA15**		**--**
40[2]	18.5	34 ... 40	480	20	▶	**3RV20 21-4FA15**		**--**

[1] Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

[2] The devices must not be mounted side-by-side and they must not be assembled with link modules with contactors. A lateral clearance of 9 mm is required.

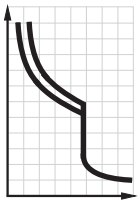
Auxiliary switches and other accessories can be ordered separately (see "Mountable accessories" on page 7/22 onwards).

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For motor protection with overload relay function

Selection and ordering data

CLASS 10, with overload relay function (automatic RESET), without auxiliary switches





3RV21 11-0FA10



3RV21 21-4BA10

Rated current	Suitable for induction motors[1] with *P*	Setting range for thermal overload release	Instantaneous overcurrent release	Short-circuit breaking capacity at 400 V AC	DT	**Screw terminals**	PU (UNIT, SET, M)	PS*	PG
I_n		⊏	$I >$	I_{cu}		Order No. Price per PU			
A	kW	A	A	kA					
Size S00[2]									
0.16	0.04	0.11 ... 0.16	2.1	100	A	**3RV21 11-0AA10**	1	1 unit	41E
0.2	0.06	0.14 ... 0.2	2.6	100	A	**3RV21 11-0BA10**	1	1 unit	41E
0.25	0.06	0.18 ... 0.25	3.3	100	A	**3RV21 11-0CA10**	1	1 unit	41E
0.32	0.09	0.22 ... 0.32	4.2	100	A	**3RV21 11-0DA10**	1	1 unit	41E
0.4	0.09	0.28 ... 0.4	5.2	100	A	**3RV21 11-0EA10**	1	1 unit	41E
0.5	0.12	0.35 ... 0.5	6.5	100	A	**3RV21 11-0FA10**	1	1 unit	41E
0.63	0.18	0.45 ... 0.63	8.2	100	A	**3RV21 11-0GA10**	1	1 unit	41E
0.8	0.18	0.55 ... 0.8	10	100	A	**3RV21 11-0HA10**	1	1 unit	41E
1	0.25	0.7 ... 1	13	100	A	**3RV21 11-0JA10**	1	1 unit	41E
1.25	0.37	0.9 ... 1.25	16	100	A	**3RV21 11-0KA10**	1	1 unit	41E
1.6	0.55	1.1 ... 1.6	21	100	A	**3RV21 11-1AA10**	1	1 unit	41E
2	0.75	1.4 ... 2	26	100	A	**3RV21 11-1BA10**	1	1 unit	41E
2.5	0.75	1.8 ... 2.5	33	100	A	**3RV21 11-1CA10**	1	1 unit	41E
3.2	1.1	2.2 ... 3.2	42	100	A	**3RV21 11-1DA10**	1	1 unit	41E
4	1.5	2.8 ... 4	52	100	A	**3RV21 11-1EA10**	1	1 unit	41E
5	1.5	3.5 ... 5	65	100	A	**3RV21 11-1FA10**	1	1 unit	41E
6.3	2.2	4.5 ... 6.3	82	100	A	**3RV21 11-1GA10**	1	1 unit	41E
8	3	5.5 ... 8	104	100	A	**3RV21 11-1HA10**	1	1 unit	41E
10	4	7 ... 10	130	100	A	**3RV21 11-1JA10**	1	1 unit	41E
12.5	5.5	9 ... 12.5	163	100	A	**3RV21 11-1KA10**	1	1 unit	41E
16	7.5	11 ... 16	208	55	A	**3RV21 11-4AA10**	1	1 unit	41E
Size S0[2]									
16	7.5	11 ... 16	208	55	A	**3RV21 21-4AA10**	1	1 unit	41E
20	7.5	14 ... 20	260	55	A	**3RV21 21-4BA10**	1	1 unit	41E
22	11	17 ... 22	286	55	A	**3RV21 21-4CA10**	1	1 unit	41E
25	11	20 ... 25	325	55	A	**3RV21 21-4DA10**	1	1 unit	41E
28	15	23 ... 28	364	55	A	**3RV21 21-4NA10**	1	1 unit	41E
32	15	27 ... 32	400	55	A	**3RV21 21-4EA10**	1	1 unit	41E

[1] Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

[2] Accessories for mounting on the right and 3RV29 15 three-phase busbars cannot be used.

Auxiliary switches and other accessories can be ordered separately (see "Mountable accessories" on page 7/22 onwards).

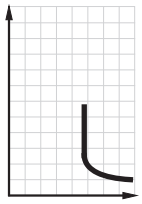
* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

Without auxiliary switches

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41E





3RV23 11-4AC10



3RV23 11-0JC20



3RV23 21-4AC10



3RV23 21-4AC20

Rated current	Suitable for induction motors[1] with *P*	Thermal overload release[2]	Instantaneous overcurrent release	Short-circuit breaking capacity at 400 V AC	DT	**Screw terminals**	DT	**Spring-type terminals**
I_n			$I >$	I_{cu}		Order No. / Price per PU		Order No. / Price per PU
A	kW	A	A	kA				
Size S00								
0.16	0.04	Without	2.1	100	B	**3RV23 11-0AC10**	B	**3RV23 11-0AC20**
0.2	0.06	Without	2.6	100	B	**3RV23 11-0BC10**	B	**3RV23 11-0BC20**
0.25	0.06	Without	3.3	100	B	**3RV23 11-0CC10**	B	**3RV23 11-0CC20**
0.32	0.09	Without	4.2	100	B	**3RV23 11-0DC10**	B	**3RV23 11-0DC20**
0.4	0.09	Without	5.2	100	B	**3RV23 11-0EC10**	B	**3RV23 11-0EC20**
0.5	0.12	Without	6.5	100	B	**3RV23 11-0FC10**	B	**3RV23 11-0FC20**
0.63	0.18	Without	8.2	100	B	**3RV23 11-0GC10**	B	**3RV23 11-0GC20**
0.8	0.18	Without	10	100	B	**3RV23 11-0HC10**	B	**3RV23 11-0HC20**
1	0.25	Without	13	100	B	**3RV23 11-0JC10**	B	**3RV23 11-0JC20**
1.25	0.37	Without	16	100	B	**3RV23 11-0KC10**	B	**3RV23 11-0KC20**
1.6	0.55	Without	21	100	B	**3RV23 11-1AC10**	B	**3RV23 11-1AC20**
2	0.75	Without	26	100	B	**3RV23 11-1BC10**	B	**3RV23 11-1BC20**
2.5	0.75	Without	33	100	B	**3RV23 11-1CC10**	B	**3RV23 11-1CC20**
3.2	1.1	Without	42	100	B	**3RV23 11-1DC10**	B	**3RV23 11-1DC20**
4	1.5	Without	52	100	B	**3RV23 11-1EC10**	B	**3RV23 11-1EC20**
5	1.5	Without	65	100	B	**3RV23 11-1FC10**	B	**3RV23 11-1FC20**
6.3	2.2	Without	82	100	B	**3RV23 11-1GC10**	B	**3RV23 11-1GC20**
8	3	Without	104	100	B	**3RV23 11-1HC10**	B	**3RV23 11-1HC20**
10	4	Without	130	100	B	**3RV23 11-1JC10**	B	**3RV23 11-1JC20**
12.5	5.5	Without	163	100	B	**3RV23 11-1KC10**	B	**3RV23 11-1KC20**
16	7.5	Without	208	55	B	**3RV23 11-4AC10**	B	**3RV23 11-4AC20**
Size S0								
16	7.5	Without	208	55	B	**3RV23 21-4AC10**	B	**3RV23 21-4AC20**
20	7.5	Without	260	55	B	**3RV23 21-4BC10**	B	**3RV23 21-4BC20**
22	11	Without	286	55	B	**3RV23 21-4CC10**	B	**3RV23 21-4CC20**
25	11	Without	325	55	B	**3RV23 21-4DC10**	B	**3RV23 21-4DC20**
28	15	Without	364	55	B	**3RV23 21-4NC10**	B	**3RV23 21-4NC20**
32	15	Without	400	55	B	**3RV23 21-4EC10**	B	**3RV23 21-4EC20**
36[3]	18.5	Without	432	20	B	**3RV23 21-4PC10**		--
40[3]	18.5	Without	480	20	B	**3RV23 21-4FC10**		--
Motor starter protectors size S0 for small rated currents [4]								
1.6	0.55	Without	21	100	B	**3RV23 21-1AC10**		--
2	0.75	Without	26	100	B	**3RV23 21-1BC10**		--
2.5	0.75	Without	33	100	B	**3RV23 21-1CC10**		--
3.2	1.1	Without	42	100	B	**3RV23 21-1DC10**		--
4	1.5	Without	52	100	B	**3RV23 21-1EC10**		--
5	1.5	Without	65	100	B	**3RV23 21-1FC10**		--
6.3	2.2	Without	82	100	B	**3RV23 21-1GC10**		--
8	3	Without	104	100	B	**3RV23 21-1HC10**		--
10	4	Without	130	100	B	**3RV23 21-1JC10**		--
12.5	5.5	Without	163	100	B	**3RV23 21-1KC10**		--

1) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

2) For overload protection of the motors, appropriate overload relays must be used.

3) The devices must not be mounted side-by-side and they must not be assembled with link modules with contactors. A lateral clearance of 9 mm is required.

4) For customized applications requiring the use of size S0: e.g. feeders with type of coordination "2", larger conductor cross-sections for large cable lengths, etc.

Auxiliary switches and other accessories can be ordered separately (see "Mountable accessories" on page 7/22 onwards).

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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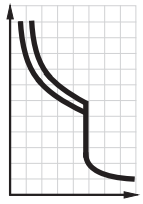
For transformer protection

Selection and ordering data

CLASS 10, without auxiliary switches

Motor starter protectors for the protection of transformers with high inrush current

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41E





3RV24 11-0AA10



3RV24 11-0AA20



3RV24 21-4AA10



3RV24 21-4AA20

Rated current	Setting range for thermal overload release	Instantaneous overcurrent release	Short-circuit breaking capacity at 400 V AC	DT	Screw terminals		DT	Spring-type terminals	
I_n		$I >$	I_{cu}		Order No.	Price per PU		Order No.	Price per PU
A	A	A	kA						
Size S00									
0.16	0.11 ... 0.16	3.3	100	▶	**3RV24 11-0AA10**		A	**3RV24 11-0AA20**	
0.2	0.14 ... 0.2	4.2	100	▶	**3RV24 11-0BA10**		A	**3RV24 11-0BA20**	
0.25	0.18 ... 0.25	5.2	100	▶	**3RV24 11-0CA10**		A	**3RV24 11-0CA20**	
0.32	0.22 ... 0.32	6.5	100	▶	**3RV24 11-0DA10**		A	**3RV24 11-0DA20**	
0.4	0.28 ... 0.4	8.2	100	▶	**3RV24 11-0EA10**		A	**3RV24 11-0EA20**	
0.5	0.35 ... 0.5	10	100	▶	**3RV24 11-0FA10**		A	**3RV24 11-0FA20**	
0.63	0.45 ... 0.63	13	100	▶	**3RV24 11-0GA10**		A	**3RV24 11-0GA20**	
0.8	0.55 ... 0.8	16	100	▶	**3RV24 11-0HA10**		A	**3RV24 11-0HA20**	
1	0.7 ... 1	21	100	▶	**3RV24 11-0JA10**		A	**3RV24 11-0JA20**	
1.25	0.9 ... 1.25	26	100	▶	**3RV24 11-0KA10**		A	**3RV24 11-0KA20**	
1.6	1.1 ... 1.6	33	100	▶	**3RV24 11-1AA10**		A	**3RV24 11-1AA20**	
2	1.4 ... 2	42	100	▶	**3RV24 11-1BA10**		A	**3RV24 11-1BA20**	
2.5	1.8 ... 2.5	52	100	▶	**3RV24 11-1CA10**		A	**3RV24 11-1CA20**	
3.2	2.2 ... 3.2	65	100	▶	**3RV24 11-1DA10**		A	**3RV24 11-1DA20**	
4	2.8 ... 4	82	100	▶	**3RV24 11-1EA10**		A	**3RV24 11-1EA20**	
5	3.5 ... 5	104	100	▶	**3RV24 11-1FA10**		A	**3RV24 11-1FA20**	
6.3	4.5 ... 6.3	130	100	▶	**3RV24 11-1GA10**		A	**3RV24 11-1GA20**	
8	5.5 ... 8	163	100	▶	**3RV24 11-1HA10**		A	**3RV24 11-1HA20**	
10	7 ... 10	208	100	▶	**3RV24 11-1JA10**		A	**3RV24 11-1JA20**	
12.5	9 ... 12.5	260	100	▶	**3RV24 11-1KA10**		A	**3RV24 11-1KA20**	
16	11 ... 16	286	55	▶	**3RV24 11-4AA10**		A	**3RV24 11-4AA20**	
Size S0									
16	11 ... 16	286	55	▶	**3RV24 21-4AA10**		A	**3RV24 21-4AA20**	
20	14 ... 20	325	55	▶	**3RV24 21-4BA10**		A	**3RV24 21-4BA20**	
22	17 ... 22	364	55	▶	**3RV24 21-4CA10**		A	**3RV24 21-4CA20**	
25	20 ... 25	400	55	▶	**3RV24 21-4DA10**		A	**3RV24 21-4DA20**	

Auxiliary switches and other accessories can be ordered separately (see "Mountable accessories" on page 7/22 onwards).

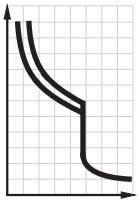
* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

Without auxiliary switches

Circuit breakers for system protection and non-motor loads according to UL/CSA





3RV27 11-0AD10

Rated current[1]	Thermal overload releases (non-adjustable)	Instantaneous overcurrent release	Short-circuit breaking capacity at 480 Y/277 V AC[2]	DT	Screw terminals		PU (UNIT, SET, M)	PS*	PG
I_n[1]		$I >$	I_{bc}		Order No.	Price per PU			
A	A	A	kA						
Size S00									
0.16	0.16	2.1	65	C	**3RV27 11-0AD10**		1	1 unit	41E
0.2	0.2	2.6	65	C	**3RV27 11-0BD10**		1	1 unit	41E
0.25	0.25	3.3	65	C	**3RV27 11-0CD10**		1	1 unit	41E
0.32	0.32	4.2	65	C	**3RV27 11-0DD10**		1	1 unit	41E
0.4	0.4	5.2	65	C	**3RV27 11-0ED10**		1	1 unit	41E
0.5	0.5	6.5	65	C	**3RV27 11-0FD10**		1	1 unit	41E
0.63	0.63	8.2	65	C	**3RV27 11-0GD10**		1	1 unit	41E
0.8	0.8	10	65	C	**3RV27 11-0HD10**		1	1 unit	41E
1	1	13	65	C	**3RV27 11-0JD10**		1	1 unit	41E
1.25	1.25	16	65	C	**3RV27 11-0KD10**		1	1 unit	41E
1.6	1.6	21	65	C	**3RV27 11-1AD10**		1	1 unit	41E
2	2	26	65	C	**3RV27 11-1BD10**		1	1 unit	41E
2.5	2.5	33	65	C	**3RV27 11-1CD10**		1	1 unit	41E
3.2	3.2	42	65	C	**3RV27 11-1DD10**		1	1 unit	41E
4	4	52	65	C	**3RV27 11-1ED10**		1	1 unit	41E
5	5	65	65	C	**3RV27 11-1FD10**		1	1 unit	41E
6.3	6.3	82	65	C	**3RV27 11-1GD10**		1	1 unit	41E
8	8	104	65	C	**3RV27 11-1HD10**		1	1 unit	41E
10	10	130	65	C	**3RV27 11-1JD10**		1	1 unit	41E
12.5	12.5	163	65	C	**3RV27 11-1KD10**		1	1 unit	41E
15	15	208	65	C	**3RV27 11-4AD10**		1	1 unit	41E

1) Rated value 100 % according to UL 489 and IEC 60947-2 ("100 % rated breaker").

2) For values for 600 Y/347 V AC see "Technical Specifications" → "Permissible rated data of devices approved for North America (UL/CSA)" → "3RV27 and 3RV28 Motor Starter Protectors as Circuit Breakers" in "System Manual for Industrial Controls – SIRIUS Innovations", ordering information under "Accessories" on page 7/29.

Lateral and transverse auxiliary switches can be ordered separately (see "Mountable Accessories" on page 7/22 onwards).

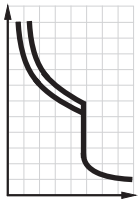
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For transformer protection according to UL 489/CSA C22.2 No. 5-02

Selection and ordering data

Without auxiliary switches

Circuit breakers for system and transformer protection according to UL/CSA, specially designed for transformers with high inrush current





3RV28 11-0AD10

Rated current[1]	Thermal overload releases (non-adjustable)	Instantaneous over-current release	Short-circuit breaking capacity at 480 Y/277 V AC[2]	DT	**Screw terminals**	PU (UNIT, SET, M)	PS*	PG
I_n[1]		$I >$	I_{bc}		Order No. Price per PU			
A	A	A	kA					
Size S00								
0.16	0.16	3.3	65	C	**3RV28 11-0AD10**	1	1 unit	41E
0.2	0.2	4.2	65	C	**3RV28 11-0BD10**	1	1 unit	41E
0.25	0.25	5.2	65	C	**3RV28 11-0CD10**	1	1 unit	41E
0.32	0.32	6.5	65	C	**3RV28 11-0DD10**	1	1 unit	41E
0.4	0.4	8.2	65	C	**3RV28 11-0ED10**	1	1 unit	41E
0.5	0.5	10	65	C	**3RV28 11-0FD10**	1	1 unit	41E
0.63	0.63	13	65	C	**3RV28 11-0GD10**	1	1 unit	41E
0.8	0.8	16	65	C	**3RV28 11-0HD10**	1	1 unit	41E
1	1	21	65	C	**3RV28 11-0JD10**	1	1 unit	41E
1.25	1.25	26	65	C	**3RV28 11-0KD10**	1	1 unit	41E
1.6	1.6	33	65	C	**3RV28 11-1AD10**	1	1 unit	41E
2	2	42	65	C	**3RV28 11-1BD10**	1	1 unit	41E
2.5	2.5	52	65	C	**3RV28 11-1CD10**	1	1 unit	41E
3.2	3.2	65	65	C	**3RV28 11-1DD10**	1	1 unit	41E
4	4	82	65	C	**3RV28 11-1ED10**	1	1 unit	41E
5	5	104	65	C	**3RV28 11-1FD10**	1	1 unit	41E
6.3	6.3	130	65	C	**3RV28 11-1GD10**	1	1 unit	41E
8	8	163	65	C	**3RV28 11-1HD10**	1	1 unit	41E
10	10	208	65	C	**3RV28 11-1JD10**	1	1 unit	41E
12.5	12.5	260	65	C	**3RV28 11-1KD10**	1	1 unit	41E
15	15	286	65	C	**3RV28 11-4AD10**	1	1 unit	41E

[1] Rated value 100 % according to UL 489 and IEC 60947-2 ("100 % rated breaker").

[2] For values for 600 Y/347 V AC see "Technical Specifications" → "Permissible rated data of devices approved for North America (UL/CSA)" → "3RV27 and 3RV28 Motor Starter Protectors as Circuit Breakers" in "System Manual for Industrial Controls – SIRIUS Innovations", ordering information under "Accessories" on page 7/29.

Lateral and transverse auxiliary switches can be ordered separately (see "Mountable Accessories" on page 7/22 onwards).

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Mounting location and function

The 3RV2 motor starter protectors have three main contact elements. In order to achieve maximum flexibility, auxiliary switches, signaling switches, auxiliary releases and isolator modules can be supplied separately.

These components are easily fitted to the switches without the use of any tools according to requirements.

Overview graphic see page 7/7.

Front side Note: • A maximum of 4 auxiliary contacts with auxiliary switches can be attached to each motor starter protector.	**Transverse auxiliary switches, solid-state compatible transverse auxiliary switches** 1 NO + 1 NC or 2 NO or 1 CO	An auxiliary switch block can be inserted transversely on the front. The overall width of the motor starter protectors remains unchanged.
Left-hand side Notes: • A maximum of 4 auxiliary contacts with auxiliary switches can be attached to each motor starter protector. • Auxiliary switches (2 contacts) and signaling switches can be mounted separately or together. • The signaling switch cannot be used for the 3RV27 and 3RV28 circuit breakers.	**Lateral auxiliary switches (2 contacts)** 1 NO + 1 NC or 2 NO or 2 NC	One of the three lateral auxiliary switches can be mounted on the left side per motor starter protector. The contacts of the auxiliary switch close and open together with the main contacts of the motor starter protector. The width of the lateral auxiliary switch with 2 contacts is 9 mm.
	Lateral auxiliary switches (4 contacts) 2 NO + 2 NC	One lateral auxiliary switch with four contacts can be mounted on the left side per motor starter protector. The contacts of the auxiliary switch close and open together with the main contacts of the motor starter protector. The width of the lateral auxiliary switch with 4 contacts is 18 mm.
	Signaling switches Tripping 1 NO + 1 NC Short circuit 1 NO + 1 NC	One signaling switch can be mounted on the left side of each motor starter protector. The signaling switch has two contact systems. One contact system always signals tripping irrespective of whether this was caused by a short circuit, an overload or an auxiliary release. The other contact system only switches in the event of a short circuit. There is no signaling as a result of switching off with the handle. In order to be able to switch on the motor starter protector again after a short circuit, the signaling switch must be reset manually after the error cause has been eliminated. The overall width of the signaling switch is 18 mm.
Right-hand side Notes: • One auxiliary release can be mounted per motor starter protector. • Accessories cannot be mounted at the right-hand side of the 3RV21 motor starter protectors for motor protection with overload relay function.	**Auxiliary releases**	
	Shunt releases	For remote-controlled tripping of the motor starter protector. The release coil should only be energized for short periods (see circuit diagrams).
	or	
	Undervoltage releases	Trips the motor starter protector when the voltage is interrupted and prevents the motor from being restarted accidentally when the voltage is restored. Used for remote-controlled tripping of the motor starter protector. Particularly suitable for EMERGENCY-STOP disconnection by way of the corresponding EMERGENCY-STOP pushbutton according to IEC 60204-1.
	or	
	Undervoltage releases with leading auxiliary contacts 2 NO	Function and use as for the undervoltage release without leading auxiliary contacts, but with the following additional function: the auxiliary contacts will open in switch position OFF to deenergize the coil of the undervoltage release, thus interrupting energy consumption. In the "tripped" position, these auxiliary contacts are not guaranteed to open. The leading contacts permit the motor starter protector to reclose. The overall width of the auxiliary release is 18 mm.
Top Notes: • The isolator module cannot be used for the 3RV27 and 3RV28 circuit breakers. • The isolator module covers the terminal screws of the transverse auxiliary switch. If the isolator module is used, we therefore recommend that either the lateral auxiliary switches be fitted or that the isolator module not be mounted until the auxiliary switch has been wired.	**Isolator module**	Isolator modules can be mounted to the upper connection side of the motor starter protectors. The supply cable is connected to the motor starter protector through the isolator module. The plug can only be unplugged when the motor starter protector is open and isolates all 3 poles of the motor starter protector from the network. The shock-protected isolation point is clearly visible and secured with a padlock to prevent reinsertion of the plug.

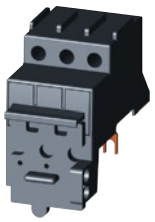
For a complete overview of which accessories can be used for the various motor starter protectors, see page 7/2.

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Accessories
Mountable accessories

Selection and ordering data

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41E

	Version	For motor starter protectors Size	DT	Screw terminals Order No.	Price per PU	DT	Spring-type terminals Order No.	Price per PU
Auxiliary switches[1]								
 3RV29 01-1E	**Transverse auxiliary switches** for front mounting							
	1 CO	S00, S0	▶	**3RV29 01-1D**			**--**	
	1 NO + 1 NC[3]		▶	**3RV29 01-1E**		▶	**3RV29 01-2E**	
	2 NO		▶	**3RV29 01-1F**		▶	**3RV29 01-2F**	
 3RV29 01-2E	**Solid-state compatible transverse auxiliary switch** mountable on the front, for operation in dusty atmosphere and in solid-state circuits with low operating currents							
 3RV29 01-1G	1 CO	S00, S0	A	**3RV29 01-1G**			**--**	
 3RV29 01-0H	**Covers for transverse auxiliary switches**	S00, S0	▶	**3RV29 01-0H**			**--**	
 3RV29 01-1A 3RV29 01-2A	**Lateral auxiliary switches** mountable on the left							
	1 NO + 1 NC[3]	S00, S0	▶	**3RV29 01-1A**		▶	**3RV29 01-2A**	
	2 NO		▶	**3RV29 01-1B**		▶	**3RV29 01-2B**	
	2 NC		▶	**3RV29 01-1C**		▶	**3RV29 01-2C**	
	2 NO + 2 NC		A	**3RV29 01-1J**			**--**	
Signaling switches[2]								
 3RV29 21-1M 3RV29 21-2M	**Signaling switches**[3] One signaling switch can be mounted on the left per motor starter protector. Separate tripped and short-circuit alarms, 1 NO + 1 NC each	S00, S0	▶	**3RV29 21-1M**		▶	**3RV29 21-2M**	
Isolator modules[2]								
 3RV29 28-1A with padlock	**Isolator module** Visible isolating distance for isolating individual motor starter protectors from the network, lockable in disconnected position	S00, S0	▶	**3RV29 28-1A**			**--**	

[1] Each motor starter protector can be fitted with one transverse and one lateral auxiliary switch. The lateral auxiliary switch with 2 NO + 2 NC is used without a transverse auxiliary switch.

[2] This accessory cannot be used for the 3RV27 and 3RV28 circuit breakers.

[3] The 3RV29 auxiliary and signaling switches with 1 NO + 1 NC are also available with ring terminal lug connection. The Order No. must be changed in the 8th position to **"4"**: e.g. 3RV29 01-**4**E**.**

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41E


3RV29 02-1AV0


3RV29 02-2AV0


3RV29 22-1CP0


3RV29 02-2DB0

Rated control supply voltage U_s					For motor starter protectors	DT	Screw terminals	DT	Spring-type terminals
AC 50 Hz	AC 60 Hz	AC 50/60 Hz 100 % ON period[1]	AC/DC 50/60 Hz, DC 5 s ON period[2]	DC			Order No. / Price per PU		Order No. / Price per PU
V	V	V	V	V	Size				
Auxiliary releases[3]									
Undervoltage releases									
--	--	--	--	24	S00, S0	A	**3RV29 02-1AB4**		**--**
24	--	--	--	--	S00, S0	A	**3RV29 02-1AB0**		**--**
110	120	--	--	--	S00, S0	A	**3RV29 02-1AF0**		**--**
--	208	--	--	--	S00, S0	A	**3RV29 02-1AM1**		**--**
230	240	--	--	--	S00, S0	4) ▶	**3RV29 02-1AP0**	▶	**3RV29 02-2AP0**
400	440	--	--	--	S00, S0	4) ▶	**3RV29 02-1AV0**	▶	**3RV29 02-2AV0**
415	480	--	--	--	S00, S0	A	**3RV29 02-1AV1**		**--**
500	600	--	--	--	S00, S0	A	**3RV29 02-1AS0**		**--**
Undervoltage releases with leading auxiliary contacts 2 NO									
230	240	--	--	--	S00, S0	A	**3RV29 22-1CP0**	A	**3RV29 22-2CP0**
400	440	--	--	--	S00, S0	A	**3RV29 22-1CV0**	A	**3RV29 22-2CV0**
415	480	--	--	--	S00, S0	4) A	**3RV29 22-1CV1**	A	**3RV29 22-2CV1**
Shunt releases									
--	--	20 ... 24	20 ... 70	--	S00, S0	▶	**3RV29 02-1DB0**	▶	**3RV29 02-2DB0**
--	--	90 ... 110	70 ... 190	--	S00, S0	4) A	**3RV29 02-1DF0**	A	**3RV29 02-2DF0**
--	--	210 ... 240	190 ... 330	--	S00, S0	4) ▶	**3RV29 02-1DP0**	▶	**3RV29 02-2DP0**
--	--	350 ... 415	330 ... 500	--	S00, S0	A	**3RV29 02-1DV0**		**--**
--	--	500	500	--	S00, S0	A	**3RV29 02-1DS0**		**--**

1) The voltage range is valid for 100 % (infinite) ON period. The response voltage lies at 0.9 of the lower limit of the voltage range.

2) The voltage range is valid for 5 s ON period at AC 50/60Hz and DC. The response voltage lies at 0.85 of the lower limit of the voltage range.

3) One auxiliary release can be mounted on the right per motor starter protector (does not apply to 3RV21 motor starter protectors with overload relay function).

4) The 3RV29 auxiliary releases are also available with ring terminal lug connection. The Order No. must be changed in the 8th position to **"4"**: e.g. 3RV29 02-**4**AP0.

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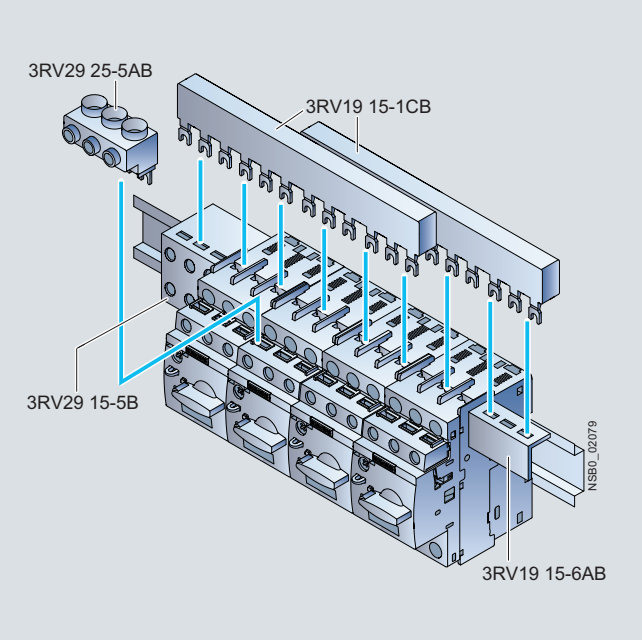
Overview

Insulated three-phase busbar system

Three-phase busbar systems provide an easy, time-saving and clearly arranged means of feeding 3RV2 motor starter protectors with screw terminals. They can be used for the different types of motor starter protector up to 32 A. The 3RV19 15 three-phase busbar systems are generally unsuitable for the 3RV21 motor starter protectors for motor protection with overload relay function and for the 3RV27 and 3RV28 circuit breakers according to UL 489 / CSA C22.2 No. 5-02.

The busbars are suitable for between 2 and 5 circuit breakers/motor starter protectors. However, any kind of extension is possible by clamping the tags of an additional busbar (rotated by 180°) underneath the terminals of the respective last motor starter protector.

A combination of motor starter protectors of different sizes is possible. The motor starter protectors are supplied by appropriate feeder terminals.



SIRIUS three-phase busbar system size S00/S0

The three-phase busbar systems are finger-safe. They are designed for any short-circuit stress which can occur at the output side of connected motor starter protectors.

The three-phase busbar systems can also be used to construct "Type E Starters" according to UL/CSA. Special feeder terminals must be used for this purpose however (see "Selection and Ordering Data" on page 7/25).

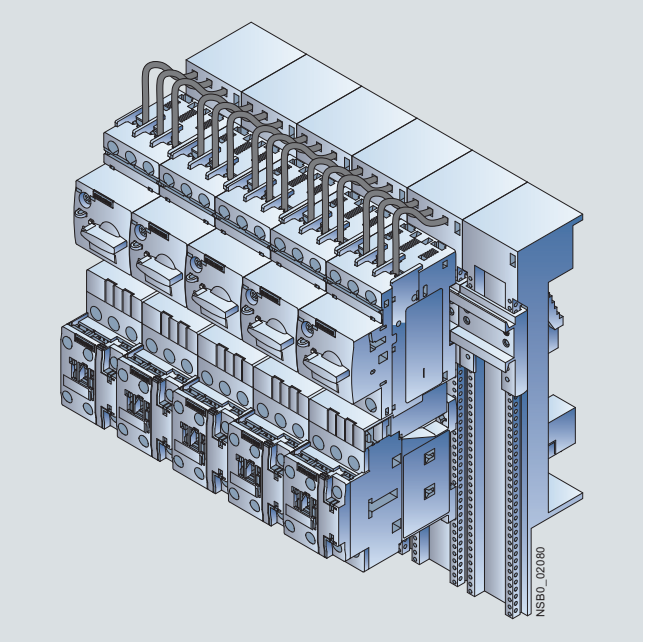
8US busbar adapters for 60 mm systems

The motor starter protectors are mounted directly with the aid of busbar adapters on busbar systems with 60 mm center-to-center clearance in order to save space and to reduce infeed times and costs.

The busbar adapters for busbar systems with 60 mm center-to-center clearance are suitable for copper busbars with a width of 12 mm to 30 mm. The busbars can be 5 mm or 10 mm thick.

The motor starter protectors are snapped onto the adapter and connected on the line side. This prepared unit is then plugged directly onto the busbar system, and is thus connected both mechanically and electrically at the same time.

For further busbar adapters for snap-mounting direct-on-line starters and reversing starters as well as additional accessories such as line terminals and outgoing terminals, flat copper profile, etc., see Catalog LV 10.1.



SIRIUS load feeders with busbar adapters snapped onto busbars

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Selection and ordering data

	Modular spacing	Number of motor starter protectors that can be connected: Without lateral accessories	With lateral auxiliary switch	With auxiliary release	Rated current I_n at 690 V	For motor starter protectors	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	mm				A	Size						
Three-phase busbars[1][2]												
 3RV19 15-1AB	For feeding several motor starter protectors with screw terminals, mounted side by side on standard mounting rails, insulated, with touch protection											
	45[3]	2	--	--	63	S00, S0	▶	**3RV19 15-1AB**		1	1 unit	41E
		3				S00, S0	▶	**3RV19 15-1BB**		1	1 unit	41E
 3RV19 15-1BB		4				S00, S0	▶	**3RV19 15-1CB**		1	1 unit	41E
		5				S00, S0	▶	**3RV19 15-1DB**		1	1 unit	41E
	55[4]	--	2	--	63	S00, S0	▶	**3RV19 15-2AB**		1	1 unit	41E
			3			S00, S0	▶	**3RV19 15-2BB**		1	1 unit	41E
 3RV19 15-1CB			4			S00, S0	▶	**3RV19 15-2CB**		1	1 unit	41E
			5			S00, S0	▶	**3RV19 15-2DB**		1	1 unit	41E
	63[5]	--	--	2	63	S00, S0	▶	**3RV19 15-3AB**		1	1 unit	41E
				4		S00, S0	▶	**3RV19 15-3CB**		1	1 unit	41E
 3RV19 15-1DB												

1) Not suitable for 3RV21 motor starter protectors for motor protection with overload relay function and for 3RV27 and 3RV28 circuit breakers according to UL 489 / CSA C22.2 No.5-02.

2) Approved for motor starter protectors with $I_n \leq 32$ A.

3) For 3RV2 motor starter protectors without accessories mounted on the side.

4) For 3RV2 motor starter protectors with auxiliary switches with 1 NO + 1 NC, 2 NO and 2 NC mounted on the left (9 mm wide).

5) For 3RV2 motor starter protectors with mounted accessories (18 mm wide). Auxiliary switches with 2 NO + 2 NC or signaling switch (mounted on the left) or with auxiliary release (mounted on the right).

	Conductor cross-section: Solid or stranded	Finely stranded with end sleeve	AWG cables, solid or stranded	Tightening torque	For motor starter protectors	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	mm²	mm²	AWG	Nm	Size						
Three-phase feeder terminals											
	Connection from top										
 3RV29 25-5AB	2.5 ... 16	2.5 ... 16	10 ... 4	3 ... 4	S00, S0	▶	**3RV29 25-5AB**		1	1 unit	41E
	Connection from below This terminal is connected in place of a switch, please take the space requirement into account.										
 3RV29 15-5B	2.5 ... 16	2.5 ... 16	10 ... 4	Input: 4, Output: 2 ... 2.5	S00, S0	▶	**3RV29 15-5B**		1	1 unit	41E
Three-phase feeder terminals for constructing "Type E Starters"											
	Connection from top										
 3RV29 25-5EB	2.5 ... 16	2.5 ... 16	10 ... 4	3 ... 4	S00, S0	A	**3RV29 25-5EB**		1	1 unit	41E

	Version	For motor starter protectors	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		Size						
Covers for connection tags								
 3RV19 15-6AB	Touch protection for empty positions	S00, S0	▶	**3RV19 15-6AB**		1	10 units	41E

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Accessories
Busbar accessories

Busbar adapters


8US12 51-5DS10


8US12 51-5DT11


8US12 50-5AS10


8US12 50-5AT10

For motor starter protectors	Rated current	Connecting cable	Adapter length	Adapter width	Rated voltage	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Size	A	AWG	mm	mm	V						
Busbar adapters for 60 mm systems											
For flat copper profiles according to DIN 46433 Width: 12 mm and 30 mm Thickness: 5 mm and 10 mm also for T and double-T special profiles											
• For motor starter protectors with screw terminals							**Screw terminals**				
S00/S0	25	12	200	45	690	▶	**8US12 51-5DS10**		1	1 unit	143
S0	32	10	260	45	690	▶	**8US12 51-5NT10**		1	1 unit	143
• For motor starter protectors with spring-type terminals							**Spring-type terminals**				
S00/S0	25	12	200	45	690	▶	**8US12 51-5DS11**		1	1 unit	143
S00/S0	25	12	260	45	690	▶	**8US12 51-5DT11**		1	1 unit	143
S0	32	10	260	45	690	▶	**8US12 51-5NT11**		1	1 unit	143
Accessories											
Device holders For lateral mounting to busbar adapters	-- --	-- --	200 260	45 45	-- --	▶ ▶	**8US12 50-5AS10** **8US12 50-5AT10**		1 1	1 unit 1 unit	143 143
Side modules For widening of busbar adapters	--	--	200	9	--	A	**8US19 98-2BJ10**		1	1 unit	143
Spacers For fixing the load feeder onto the busbar adapter	--	--	--	--	--	▶	**8US19 98-1BA10**		1	10 units	143
Vibration and shock kits For high vibration and shock loads	--	--	--	--	--	▶	**8US19 98-1CA10**		1	2 units	143

For additional busbar adapters see Catalog LV 10.1.

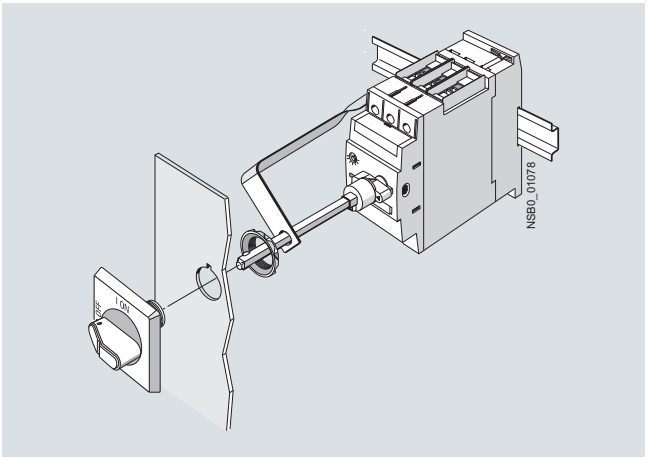
* You can order this quantity or a multiple thereof.
Illustrations are approximate

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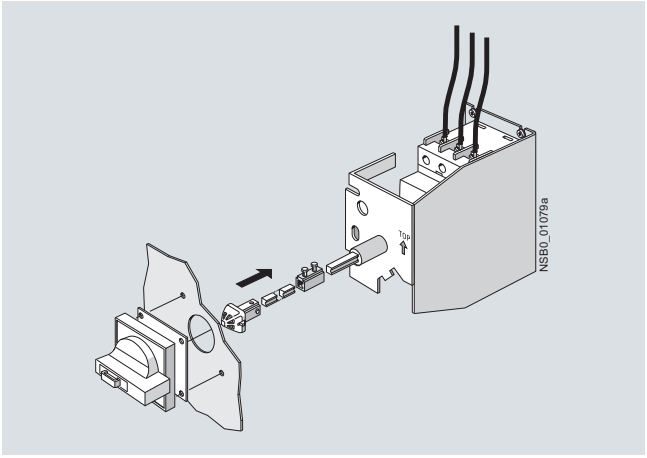
Overview

Door-coupling rotary operating mechanisms

Motor starter protectors with a rotary operating mechanism can be mounted in a control cabinet and operated externally by means of a door-coupling rotary operating mechanism. When the cabinet door with motor starter protector is closed, the operating mechanism is coupled. When the motor starter protector closes, the coupling is locked which prevents the door from being opened unintentionally. This interlock can be defeated by the maintenance personnel. In the OPEN position, the rotary operating mechanism can be secured against reclosing with up to 3 padlocks. Inadvertent opening of the door is not possible in this case either.



SIRIUS 3RV29 26-0K door-coupling rotary operating mechanism



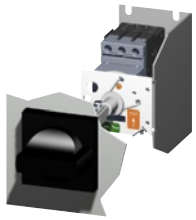
SIRIUS 3RV29 26-2B door-coupling rotary operating mechanism for arduous conditions

Selection and ordering data

Version	Color of handle	Version of extension shaft	For motor starter protectors	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		mm	Size						
Door-coupling rotary operating mechanisms									
The door-coupling rotary operating mechanisms consist of a knob, a coupling driver and a 130/330 mm long extension shaft (6 mm x 6 mm). The door-coupling rotary operating mechanisms are designed to degree of protection IP64. The door locking device prevents accidental opening of the control cabinet door in the ON position of the motor starter protector. The OFF position can be locked with up to 3 padlocks.									
Door-coupling rotary operating mechanisms	Black	130	S00, S0	▶	**3RV29 26-0B**		1	1 unit	41E
		330	S00, S0	▶	**3RV29 26-0K**		1	1 unit	41E
EMERGENCY-STOP door-coupling rotary operating mechanisms	Red/yellow	130	S00, S0	▶	**3RV29 26-0C**		1	1 unit	41E
		330	S00, S0	▶	**3RV29 26-0L**		1	1 unit	41E
Door-coupling rotary operating mechanisms for arduous conditions									
The door-coupling rotary operating mechanisms consist of a knob, a coupling driver, an extension shaft of 300 mm in length (8 mm x 8 mm), a spacer and two metal brackets, into which the motor starter protector is inserted. The door-coupling rotary operating mechanisms are designed to degree of protection IP65. The door interlocking reliably prevents opening of the control cabinet door in the ON position of the motor starter protector. The OFF position can be locked with up to 3 padlocks. Laterally mountable auxiliary releases and two-pole auxiliary switches can be used. The door-coupling rotary operating mechanisms thus meet the requirements for isolating functions according to IEC 60947-2.									
Door-coupling rotary operating mechanisms	Gray	300	S00, S0	▶	**3RV29 26-2B**		1	1 unit	41E
EMERGENCY-STOP door-coupling rotary operating mechanisms	Red/yellow	300	S00, S0	▶	**3RV29 26-2C**		1	1 unit	41E



3RV29 26-0B



3RV29 26-2B

* You can order this quantity or a multiple thereof.
Illustrations are approximate

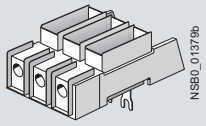
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Overview

Accessories for "Self-Protected Combination Motor Controllers (Type E)" according to UL 508

The 3RV20 motor starter protectors with screw terminals are approved according to UL 508 as "Self-Protected Combination Motor Controllers (Type E)".

This requires increased clearance and creepage distances (1 inch and 2 inches respectively) at the input side of the device, which are achieved by mounting terminal blocks.
The 3RV29 28-1H terminal block is simply screwed onto the basic unit.



SIRIUS 3RV29 28-1H terminal block

Another way to obtain the increased clearance and creepage distances for Type E is to mount the 3RV29 28-1K phase barriers.

Special three-phase feeder terminals are required for constructing "Type E Starters" with an insulated three-phase busbar system (see "Busbar Accessories" on page 7/25).

The 3RV29 infeed system also enables the assembly of "Type E Starters", see page 7/34 onwards.

Note:

According to CSA, these terminal blocks and the phase barriers can be omitted when the device is used as a "Self-Protected Combination Motor Controller" (Type E).

Link modules

Feeders can be easily assembled from single devices with the help of the link modules. The following table shows the different combination options for devices with screw or spring-type terminals.

Combination devices	3RV2 motor starter protectors Size	3RT2 contactors; 3RW30, 3RW40 soft starters; 3RF34 solid-state contactors Size	Link modules Screw terminals	 Spring-type terminals
Link modules for connecting switching devices to 3RV2 motor starter protectors[1)]				
3RT2 contactors with AC or DC coil	S00	S00	3RA19 21-1DA00	3RA29 11-2AA00
	S0	S00		--
3RT2 contactors with AC coil	S0	S0	3RA29 21-1AA00	3RA29 21-2AA00
	S00	S0		--
3RT2 contactors with DC coil	S0	S0	3RA29 21-1BA00	3RA29 21-2AA00
	S00	S0		--
3RW30 soft starters	S00	S00	3RA29 21-1BA00	3RA29 11-2GA00
	S0	S00		--
3RW30/3RW40 soft starters	S0	S0	3RA29 21-1BA00	3RA29 21-2GA00
	S00	S0		--
3RF34 solid-state contactors	S00/S0	S00	3RA29 21-1BA00	--
Hybrid link modules for connecting contactors with spring-type terminals to 3RV2 motor starter protectors with screw terminals[1)]				
3RT2 contactors with AC or DC coil	S00	S00	3RA29 11-2FA00	--
	S0	S0	3RA29 21-2FA00	--

Note:

Link modules and hybrid link modules up to max. 32 A can be used.

1) The link modules and the hybrid link modules cannot be used for the 3RV2. 21-4PA1., 3RV2. 21-4FA1., 3RV27 and 3RV28 circuit breakers/motor starter protectors.

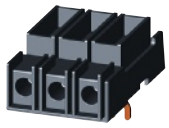
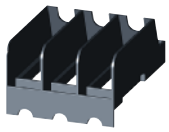
Selection and ordering data

Accessories

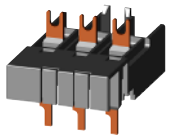
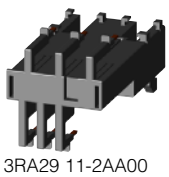
	Version	For motor starter protectors Size	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Covers								
 3RV29 08-0P	**Scale covers** Sealable, for covering the set current scale	3RV20, 3RV21, 3RV24: S00, S0	►	**3RV29 08-0P**		100	10 units	41E
 3RV29 28-4AA00	**Covers for devices with ring terminal lug connection** (ensure finger-safety)			**Ring terminal lug connections**				
	• Main current level	3RV20: S00, S0	B	**3RV29 28-4AA00**		1	1 unit	41E
 3RV29 08-4AA10	• For transverse auxiliary switches		B	**3RV29 08-4AA10**		1	1 unit	41E

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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	Version	For motor starter protectors Size	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Fixing accessories								
 3RV29 28-0B	**Push-in lugs** For screwing the motor starter protector onto mounting plates For each motor starter protector, 2 units are required.	S00, S0	A	**3RV29 28-0B**		100	10 units	41E
Tools for opening spring-type terminals								
 3RA29 08-1A	**Screwdrivers** For all SIRIUS devices with spring-type terminals			**Spring-type terminals**				
	Length approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray/black, partially insulated	S00, S0	A	**3RA29 08-1A**		1	1 unit	41B
System manuals								
	System manuals: Industrial Controls – SIRIUS Innovations							
	• German	S00, S0	C	**3ZX1012-0RA01-1AB1**		1	1 unit	401
	• English	S00, S0	C	**3ZX1012-0RA01-1AC1**		1	1 unit	401
	• French	S00, S0	C	**3ZX1012-0RA01-1AD1**		1	1 unit	401
	• Spanish	S00, S0	C	**3ZX1012-0RA01-1AE1**		1	1 unit	401
Terminal blocks and phase barriers for "Self-Protected Combination Motor Controllers (Type E)" according to UL 508								
 3RV29 28-1H	Note: UL 508 demands 1-inch clearance and 2-inch creepage distance at line side for "Combination Motor Controller Type E". The following terminal blocks or phase barriers must be used in 3RV20 motor starter protectors. The terminal blocks or phase barriers cannot be used in combination with the 3RV19 .5 three-phase busbars. For construction with three-phase busbars see "Busbar Accessories" page 7/24 onwards.							
	Terminal block type E For extended clearance and creepage distances (1 and 2 inch)	S00, S0	►	**3RV29 28-1H**		1	1 unit	41E
 3RV29 28-1K	**Phase barriers** For extended clearance and creepage distances (1 and 2 inch)	S00, S0	►	**3RV29 28-1K**		1	1 unit	41E

Link modules

	Actuating voltage of contactor	Size 3RT2 contactors	Size 3RV2 motor starter protectors	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Link modules for motor starter protector to contactor[1]									
 3RA29 21-1AA00	For mechanical and electrical connection between motor starter protector and contactor with screw terminals				**Screw terminals**				
	Single-unit packaging								
	AC/DC	S00	S00/S0	►	**3RA19 21-1DA00**		1	1 unit	41B
	AC	S0	S00/S0	A	**3RA29 21-1AA00**		1	1 unit	41B
	DC	S0	S00/S0	A	**3RA29 21-1BA00**		1	1 unit	41B
	Multi-unit packaging								
	AC/DC	S00	S00/S0	►	**3RA19 21-1D**		1	10 units	41B
	AC	S0	S00/S0	A	**3RA29 21-1A**		1	10 units	41B
	DC	S0	S00/S0	A	**3RA29 21-1B**		1	10 units	41B
 3RA29 11-2AA00	For mechanical and electrical connection between motor starter protector and contactor with spring-type terminals				**Spring-type terminals**				
	Single-unit packaging								
	AC/DC	S00	S00	►	**3RA29 11-2AA00**		1	1 unit	41B
	AC[2]	S0	S0	►	**3RA29 21-2AA00**		1	1 unit	41B
	DC	S0	S0	►	**3RA29 21-2AA00**		1	1 unit	41B
	Multi-unit packaging								
	AC/DC	S00	S00	►	**3RA29 11-2A**		1	10 units	41B
	AC[2]	S0	S0	►	**3RA29 21-2A**		1	10 units	41B
	DC	S0	S0	►	**3RA29 21-2A**		1	10 units	41B
	Spacers[2] for compensating the height on AC contactors								
	Single-unit packaging	S0	S0	A	**3RA29 11-1CA00**		1	1 unit	41B
	Multi-unit packaging	S0	S0	A	**3RA29 11-1C**		1	5 units	41B

Note:

Link modules up to max. 32 A can be used.

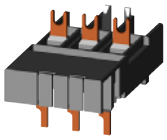
[1] The link modules for motor starter protector to contactor cannot be used for the 3RV2 motor starter protectors. 21-4PA1., 3RV2. 21-4FA1., 3RV27 and 3RV28 circuit breakers/motor starter protectors.

[2] A spacer for height compensation on AC contactors size S0 is optionally available.

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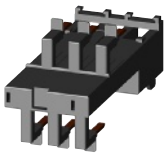
Accessories
Mounting accessories

Link modules for motor starter protector to soft starter[1] and motor starter protector to solid-state contactor


3RA29 21-1BA00

Connection between motor starter protector and soft starter / solid-state contactor with screw terminals

Size		DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Screw terminals							
Single-unit packaging							
S00	S00/S0	A	**3RA29 21-1BA00**		1	1 unit	41B
S0	S00/S0	A	**3RA29 21-1BA00**		1	1 unit	41B
Multi-unit packaging							
S00	S00/S0	A	**3RA29 21-1B**		1	10 units	41B
S0	S00/S0	A	**3RA29 21-1B**		1	10 units	41B


3RA29 21-2GA00

Connection between motor starter protector and soft starter spring-type terminals

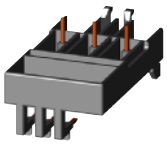
Size		DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Spring-type terminals							
Single-unit packaging							
S00	S00	▶	**3RA29 11-2GA00**		1	1 unit	41B
S0	S0	▶	**3RA29 21-2GA00**		1	1 unit	41B
Multi-unit packaging							
S00	S00	▶	**3RA29 11-2G**		1	10 units	41B
S0	S0	▶	**3RA29 21-2G**		1	10 units	41B

Note:

Link modules up to max. 32 A can be used.

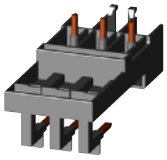
[1] The link modules for motor starter protector to soft starter and for motor starter protector to solid-state contactor cannot be used for the 3RV2. 21-4PA1., 3RV2. 21-4FA1., 3RV27 and 3RV28 circuit breakers/motor starter protectors.

Hybrid link modules for motor starter protector to contactor[1]


3RA29 11-2FA00

Mechanical and electrical connection between motor starter protector with screw terminals and contactor with spring-type terminals

Actuating voltage of contactor	Size 3RT2 contactors	Size 3RV2 motor starter protectors	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Single-unit packaging								
AC/DC	S00	S00	▶	**3RA29 11-2FA00**		1	1 unit	41B
AC[2]/DC	S0	S0	▶	**3RA29 21-2FA00**		1	1 unit	41B
Multi-unit packaging								
AC/DC	S00	S00	▶	**3RA29 11-2F**		1	10 units	41B
AC[2]/DC	S0	S0	▶	**3RA29 21-2F**		1	10 units	41B


3RA29 21-2FA00

Spacers[2]
for compensating the height on AC contactors

Single-unit packaging	S0	S0	A	**3RA29 11-1CA00**		1	1 unit	41B
Multi-unit packaging	S0	S0	A	**3RA29 11-1C**		1	5 units	41B

Note:

Link modules up to max. 32 A can be used.

[1] The hybrid link modules for motor starter protector to contactor cannot be used for the 3RV2. 21-4PA1., 3RV2. 21-4FA1., 3RV27 and 3RV28 circuit breakers/motor starter protectors.

[2] A spacer for height compensation on AC contactors size S0 is optionally available.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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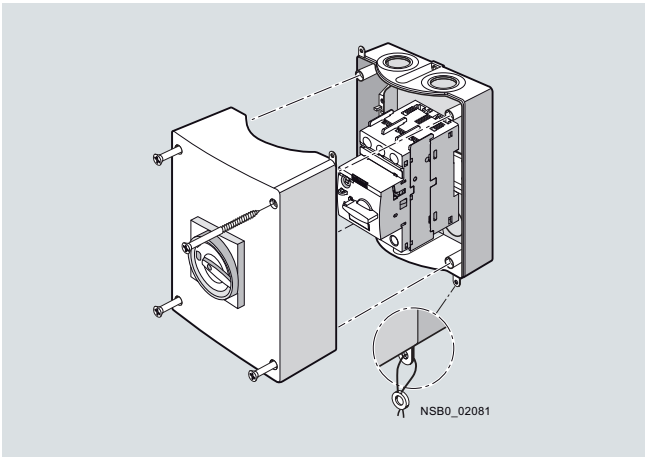
Overview

Enclosure

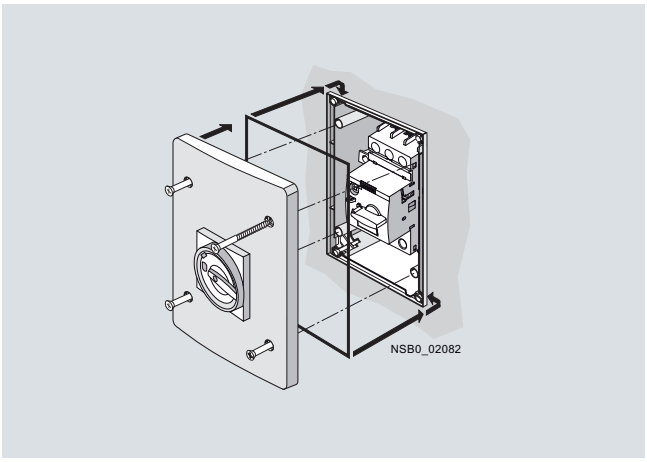
For stand-alone installation of 3RV20 to 3RV24 motor starter protectors size S00 ($I_{n\,max}$ = 16 A) and S0 ($I_{n\,max}$ = 32 A), cast aluminum enclosures for surface mounting and molded-plastic enclosures for flush mounting are available in various dimensions.

When installed in a molded-plastic enclosure the motor starter protectors have a rated operational voltage U_e of 500 V.

The enclosures for surface mounting have the degree of protection IP55; the enclosures for flush mounting also comply with the degree of protection IP55 at the front (the flush-mounted section complies with IP20).



Enclosures for surface mounting



Enclosures for flush mounting

All enclosures are equipped with N and PE terminals. There are two knock-out cable entries for cable glands at the top and two at the bottom; also on the rear corresponding cable entries are scored. There is a knockout on the top of the enclosure for indicator lights that are available as accessories.

The narrow enclosure can accommodate a motor starter protector without accessories, with transverse auxiliary switch and with lateral auxiliary switch. There is no provision for installing a motor starter protector with a signaling switch.

With the motor starter protectors size S00 and S0, the molded-plastic enclosures are equipped with a rotary operating mechanism.

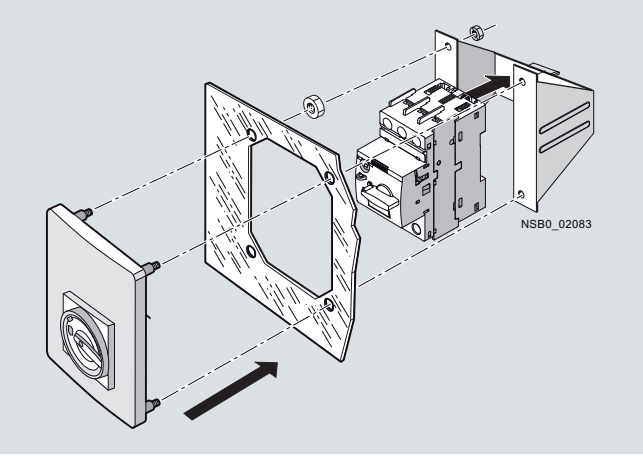
The enclosures can be supplied with either a black rotary operating mechanism or with an EMERGENCY-STOP rotary operating mechanism with a red/yellow knob.

All rotary operating mechanisms can be locked in the Open position with up to 3 padlocks.

Front plates

Motor starter protectors are frequently required to be actuated in any enclosure. Front plates equipped with a rotary operating mechanism for 3RV20 to 3RV24 motor starter protectors size S00 and S0 are available for this purpose.

A holder for the motor starter protectors size S00 and S0, into which the motor starter protectors can be snapped, is available for the front plates.



Front plate (including holder) for sizes S00 and S0

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Selection and ordering data

	Version	Degree of protection	Integrated terminals	Width	For 3RV20 to 3RV24 motor starter protectors	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
				mm	Size						
Molded-plastic enclosures for surface mounting[1]											
 3RV19 23-1FA00	**With rotary operating mechanism**, lockable in 0 position	IP55	N and PE/ground	54 (for switch + lateral auxiliary switch)	S00, S0	▶	**3RV19 23-1CA00**		1	1 unit	41E
				72 (for switch + lateral auxiliary switch[4] + auxiliary release)	S00, S0	▶	**3RV19 23-1DA00**		1	1 unit	41E
	With EMERGENCY-STOP rotary operating mechanism, lockable in 0 position	IP55	N and PE/ground	54 (for switch + lateral auxiliary switch)	S00, S0	▶	**3RV19 23-1FA00**		1	1 unit	41E
				72 (for switch + lateral auxiliary switch[4] + auxiliary release)	S00, S0	▶	**3RV19 23-1GA00**		1	1 unit	41E
Cast aluminum enclosures for surface mounting[1]											
 3RV19 23-1DA01	**With rotary operating mechanism**, lockable in 0 position	IP65	PE[3]	72 (for switch + lateral auxiliary switch[4] + auxiliary release)	S00, S0	▶	**3RV19 23-1DA01**		1	1 unit	41E
	With EMERGENCY-STOP rotary operating mechanism, lockable in 0 position	IP65	PE[3]	72 (for switch + lateral auxiliary switch[4] + auxiliary release)	S00, S0	▶	**3RV19 23-1GA01**		1	1 unit	41E
Molded-plastic enclosures for flush mounting[2]											
 3RV19 23-2DA00	**With rotary operating mechanism**, lockable in 0 position	IP55 (front side)	N and PE/ground	72 (for switch + lateral auxiliary switch[4] + auxiliary release)	S00, S0	A	**3RV19 23-2DA00**		1	1 unit	41E
	With EMERGENCY-STOP rotary operating mechanism, lockable in 0 position	IP55 (front side)	N and PE/ground	72 (for switch + lateral auxiliary switch[4] + auxiliary release)	S00, S0	A	**3RV19 23-2GA00**		1	1 unit	41E

1) The rear cable glands cannot be used on 3RV2. 11-...2. and 3RV2. 21-...2. devices with spring-type terminals.

2) Not suitable for 3RV2. 11-...2. and 3RV2. 21-...2. devices with spring-type terminals.

3) If required, an additional N terminal can be mounted (e.g. 8WA1 011-1BG11).

4) Only valid for lateral auxiliary switches with two auxiliary contacts.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	Degree of protection	For 3RV20 to 3RV24 motor starter protectors	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		Size						
Front plates								
 3RV19 23-4B + 3RV19 23-4G								
Molded-plastic front plates with rotary operating mechanism, lockable in 0 position For actuation of 3RV2 motor starter protectors in any enclosure	IP55 (front side)	S00, S0	▶	**3RV19 23-4B**		1	1 unit	41E
Molded-plastic front plates with EMERGENCY-STOP rotary operating mechanism, red/yellow, lockable in 0 position EMERGENCY-STOP actuation of 3RV2 motor starter protectors in any enclosure	IP55 (front side)	S00, S0	A	**3RV19 23-4E**		1	1 unit	41E
Holders for front plates Holder is mounted on front plate, motor starter protector with and without accessories is snapped in.	--	S00, S0	▶	**3RV19 23-4G**		1	1 unit	41E

Version	Rated control supply voltage U_s	For 3RV20 to 3RV24 motor starter protectors	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	V	Size						
Indicator lights								
 3RV19 03-5B								
Indicator lights For all enclosures and front plates With glow lamp and colored lenses red, green, yellow-orange and clear	110 ... 120	S00, S0	C	**3RV19 03-5B**		1	1 unit	41E
	220 ... 240		C	**3RV19 03-5C**		1	1 unit	41E
	380 ... 415		C	**3RV19 03-5E**		1	1 unit	41E
	480 ... 500		C	**3RV19 03-5G**		1	1 unit	41E

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3RV29 infeed system

Overview

The 3RV29 infeed system is a convenient means of energy supply and distribution for a group of several motor starter protectors or complete load feeders with a screw or spring-type connection in sizes S00 and S0 (exception: this system cannot be used for the 3RV21, 3RV27 and 3RV28 motor starter protectors/circuit breakers).

The system is based on a basic module complete with a lateral incoming unit (three-phase busbar with infeed). This infeed with spring-type terminals is mounted on the right or left depending on the version and can be supplied with a maximum conductor cross-section of 25 mm^2 (with end sleeve). A basic module has two sockets onto each of which a motor starter protector can be snapped.

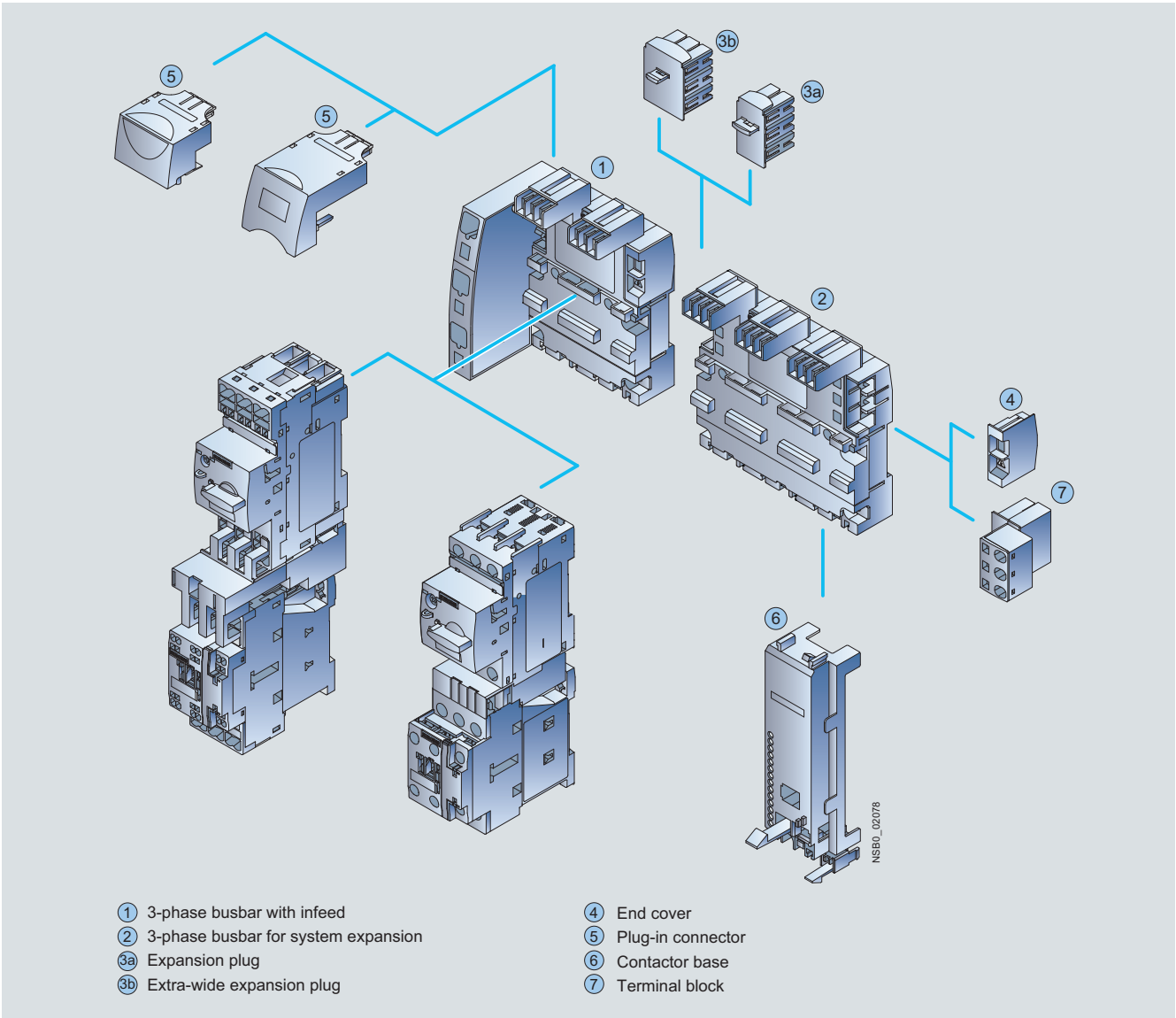
Expansion modules are available for extending the system (three-phase busbars for system expansion). The individual modules are connected through an expansion plug.

The electrical connection between the three-phase busbars and the motor starter protectors is implemented through plug-in connectors.

The complete system can be mounted on a TH 35 standard mounting rail to IEC 60715 and can be expanded as required up to a maximum current carrying capacity of 63 A.

The system is mounted extremely quickly and easily thanks to the simple plug-in technique. Thanks to the lateral infeed, the system also saves space in the control cabinet. The additional overall height required for the infeed unit is only 30 mm. The alternative infeed possibilities on each side offer a high degree of flexibility for configuring the control cabinet: Infeed on left-hand or right-hand side as well as infeed on one side and outfeed on the other side to supply further loads are all possible. A terminal block with spring-type connections in combination with a standard mounting rail enables the integration of not only SIRIUS motor starter protectors but also single-phase, 2-phase and 3-phase components such as 5SY miniature circuit breakers or SIRIUS relay components.

The 3RV29 infeed system is UL-approved for the assembly of "Self-Protected Combination Motor Controllers" (Type E Starters) as well as Type F Starters (Type E Starters + contactor).



SIRIUS 3RV29 infeed systems

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① *Three-phase busbars with infeed*

A three-phase busbar with infeed unit is required for connecting the incoming supply. These modules comprise one infeed module and 2 sockets which each accept one motor starter protector. A choice of two versions with infeed on the left or right is available. The infeed is connected to spring-type terminals. They permit an infeed with conductor cross-sections of up to 25 mm^2 with end sleeves. An end cover is supplied with each module.

② *Three-phase busbars for system expansion*

The three-phase busbars for system expansion support expansion of the system. There is a choice of modules with 2 or 3 sockets. The system can be expanded as required up to a maximum current carrying capacity of 63 A. An expansion plug is supplied with each module.

③a *Expansion plug*

The expansion plug is used for electrical connection of adjacent three-phase busbars. The current carrying capacity of this plug equals 63 A. One expansion plug is supplied with each three-phase busbar for system expansion. Additional expansion plugs are therefore only required as spare parts.

③b *Extra-wide expansion plug*

The wide expansion plug makes the electrical connection between two three-phase busbars, thus performing the same function as the 3RV29 17-5BA00 expansion plug; the electrical characteristics (e.g. a current carrying capacity of 63 A) are identical.

The 3RV29 17-5E expansion plug is 10 mm wider than the 3RV29 17-5BA00 expansion plug, hence in the plugged state there is a distance of 10 mm between the connected three-phase busbars. This distance can be used to lay the auxiliary current and control current wiring ("wiring duct"). The motor starter protector and contactor can be wired from underneath, which means that the complete cable duct above the system can be omitted.

④ *End cover*

The end cover is used to cover the three-phase busbar at the open end of the system. This cover is therefore only required once for each system. An end cover is supplied with each three-phase busbar system with infeed. Further end covers are therefore only required as spare parts.

⑤ *Plug-in connector*

The plug-in connector is used for the electrical connection between the three-phase busbar and the 3RV2 motor starter protector. These plug-in connectors are available for screw or spring-type terminals.

⑥ *Contactor base*

Load feeders can be assembled in the system using the contactor base. The contactor bases are suitable for contactors sizes S00 and S0 with spring-type and screw terminals and are simply snapped onto the three-phase busbars. Direct-on-line starters and reversing starters are possible. One contactor base is required for direct-on-line starters and two are required for reversing starters.

To assemble load feeders for reversing starters, the contactor bases can be arranged alongside each other (90 mm overall width). In this case the mechanical interlocking of the contactors is possible. The contactor bases are also suitable for soft starters size S00 and S0 with screw connection.

The infeed system is designed for mounting on a TH 35 standard mounting rail with 7.5 mm overall depth. This standard mounting rail gives the contactor base a stable mounting surface to sit on. If standard mounting rails with a depth of 15 mm are used, the spacer connected to the bottom of the contactor base must be knocked out and plugged into the mating piece that is also on the underside. Then, the contactor base also has a stable mounting surface. When standard mounting rails with a depth of 7.5 mm are used, the spacer has no function and can be removed.

The link modules are used for direct start load feeders, in which case the use of a contactor base is not absolutely necessary. Motor starter protector and contactor assemblies can then be directly snapped onto the sockets of the three-phase busbars. For feeders of size S00 and S0, the corresponding 3RA19 21-1...., 3RA29 11-2...., 3RA29 21-1.... or 3RA29 21-2.... link modules should generally be used.

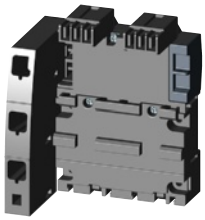
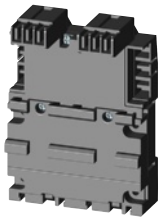
⑦ *Terminal block*

The 3RV29 17-5D terminal block enables the integration of not only SIRIUS motor starter protectors but also single-phase, 2-phase and 3-phase components. Using the terminal block the 3 phases can be fed out of the system; which means that single-phase loads can also be integrated in the system. The terminal block is plugged into the slot of the expansion plug and thus enables outfeeding from the middle or end of the infeed system. The terminal block can be rotated through 180° and be locked to the support modules of the infeed system. The 3RV19 17-7B 45 mm wide TH 35 standard mounting rail for screwing onto the support plate is available in addition in order to be able to plug the single-phase, 2-phase and 3-phase components onto the infeed system.

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3RV29 infeed system

Selection and ordering data

Type	Version	For 3RV20, 3RV23, 3RV24 motor starter protectors Size	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Three-phase busbars with infeed								
 3RV29 17-1A	**3-phase busbars with infeed** incl. 3RV29 17-6A end cover	For 2 motor starter protectors with screw or spring-type terminals						
	• With infeed on the left	S00, S0	A	**3RV29 17-1A**		1	1 unit	41E
	• With infeed on the right	S00, S0	A	**3RV29 17-1E**		1	1 unit	41E
Three-phase busbars for system expansion								
 3RV29 17-4A	**Three-phase busbars** incl. 3RV29 17-5BA00 expansion plug	For motor starter protectors with screw or spring-type terminals						
	• For 2 motor starter protectors	S00, S0	A	**3RV29 17-4A**		1	1 unit	41E
	• For 3 motor starter protectors	S00, S0	A	**3RV29 17-4B**		1	1 unit	41E
Plug-in connectors								
 3RV29 17-5AA00	**Plug-in connectors** to make contact with the motor starter protectors	• For spring-type terminals		**Spring-type terminals**				
	- Single-unit packaging	S00[1])	A	**3RV29 17-5AA00**		1	1 unit	41E
		S0[2])	A	**3RV29 27-5AA00**		1	1 unit	41E
	- Multi-unit packaging	S00[1])	A	**3RV29 17-5A**		1	10 units	41E
		S0[2])	A	**3RV29 27-5A**		1	10 units	41E
 3RV29 17-5CA00	• For screw terminals			**Screw terminals**				
	- Single-unit packaging	S00[1])	A	**3RV29 17-5CA00**		1	1 unit	41E
		S0[2])	A	**3RV19 27-5AA00**		1	1 unit	41E
	- Multi-unit packaging	S00[1])	A	**3RV29 17-5C**		1	10 units	41E
		S0[2])	A	**3RV19 27-5A**		1	10 units	41E

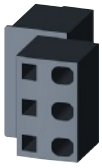
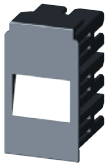
Type	Version	For contactors Size	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Contactor bases								
 3RV29 27-7AA00	**Contactor bases** for mounting direct-on-line or reversing starters	Single-unit packaging						
		S00, S0	A	**3RV29 27-7AA00**		1	1 unit	41E

[1]) I > 14 A, please note derating; see "System Manual for Industrial Controls – SIRIUS Innovations", Chapter "Motor Starter Protectors".

[2]) I > 16 A, please note derating; see "System Manual for Industrial Controls – SIRIUS Innovations", Chapter "Motor Starter Protectors".

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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	Type	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Terminal blocks								
 3RV29 17-5D	**Terminal blocks** For integration of single-phase, two-phase and three-phase components	Single-unit packaging	A	**3RV29 17-5D**		1	1 unit	41E
TH 35 standard mounting rails								
 3RV19 17-7B	**TH 35 standard mounting rails, width 45 mm** For mounting onto three-phase busbars	Single-unit packaging	A	**3RV19 17-7B**		1	1 unit	41E
Extra-wide expansion plugs								
 3RV29 17-5E	**Extra-wide expansion plugs** As accessory	Single-unit packaging	A	**3RV29 17-5E**		1	1 unit	41E
Expansion plug								
 3RV29 17-5BA00	**Expansion plugs**[1] As spare part	Single-unit packaging	A	**3RV29 17-5BA00**		1	1 unit	41E
End covers								
 3RV29 17-6A	**End covers**[2] As spare part	Multi-unit packaging	A	**3RV29 17-6A**		100	10 units	41E

[1] The expansion plug is included in the scope of supply of the 3RV29 17-4. three-phase busbars for system expansion.

[2] The end cover is included in the scope of supply of the 3RV29 17-1. three-phase busbars with infeed system.

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General data

Overview

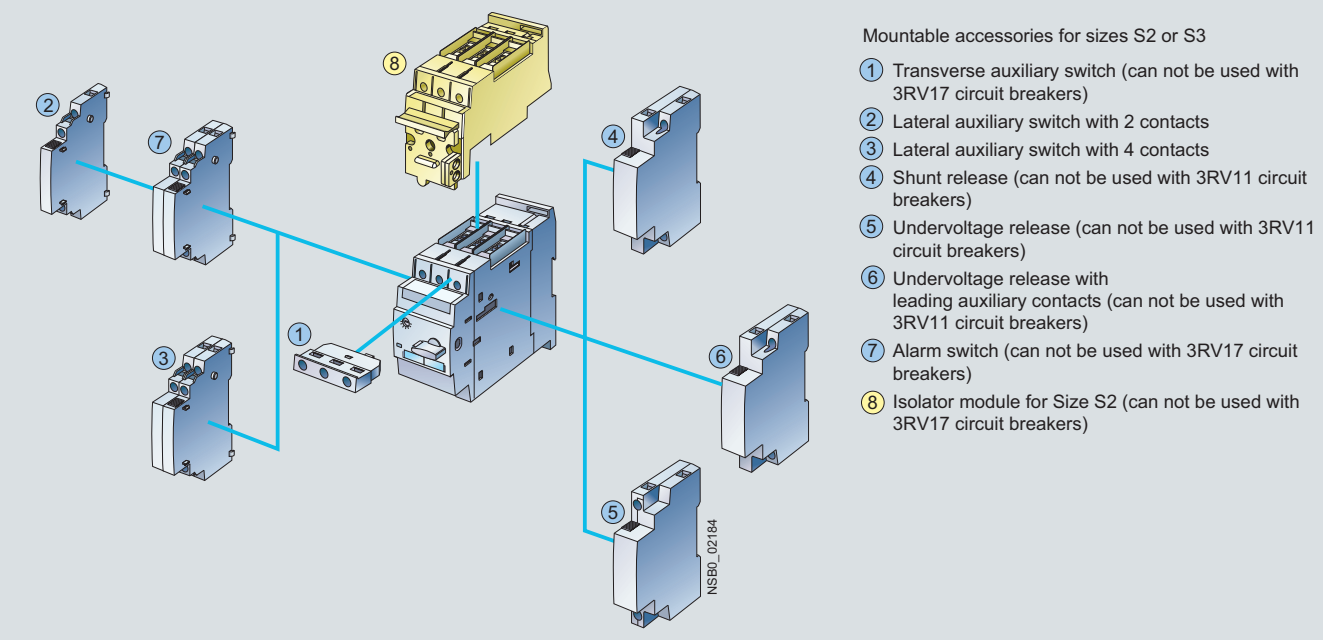
The following illustration shows our 3RV1 motor starter protector with the accessories which can be mounted for the sizes S2 and S3, see also "Introduction" → "Overview" on page 7/3.

"Accessories" see page 7/52 onwards.

Note:

The 3RV1 devices (sizes S00/S0 to S3) can be found

- in the Catalog Add-On IC 10 AO · 2012 in the CD/DVD box
- in the Catalog Add-On IC 10 AO · 2012 at the Information and Download Center
- in the interactive catalog CA 01
- in the Industry Mall



SIRIUS 3RV1 motor starter protector sizes S2 and S3 with mountable accessories



SIRIUS motor starter protector size S2

3RV1 motor starter protectors are compact, current limiting motor starter protectors which are optimized for load feeders. The motor starter protectors are used in accordance with IEC 60947-2 for switching and protecting three-phase induction motors of up to 45 kW at 400 V AC and for other loads with rated currents of up to 100 A.

3RV2 motor starter protector sizes S00 and S0 up to 40 A see page 7/14 onwards.

3RV1 motor starter protectors are generally approved according to IEC and UL/CSA.

3RV1 motor starter protectors in sizes S2 and S3 are approved according to UL 508 as:

- "Manual Motor Controllers"
- "Manual Motor Controller" for "Group Installations"
- "Manual Motor Controllers Suitable for Tab Conductor Protection in Group Installations"
- "Self-Protected Combination Motor Controllers (Type E)" Please note that for this approval the 3RV10 motor starter protectors in size S3 must be equipped with additional feeder terminals.

3RV17 and 3RV18 motor starter protectors are approved as circuit breakers according to UL 489; they are a special version of the 3RV1 motor starter protectors.

Type of construction

The 3RV1 motor starter protectors are available in four sizes:

- Size S00 - width 45 mm, max. rated current 12 A, at 400 V AC suitable for induction motors up to 5.5 kW
- Size S0 - width 45 mm, max. rated current 25 A, at 400 V AC suitable for induction motors up to 11 kW
- Size S2 - width 55 mm, max. rated current 50 A, at 400 V AC suitable for induction motors up to 22 kW
- Size S3 - width 70 mm, max. rated current 100 A, at 400 V AC suitable for induction motors up to 45 kW

For sizes S00 and S0 of the 3RV2 motor starter protectors up to 40 A see page 7/14 onwards.

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Circuit breakers acc. to UL 489

3RV17 and 3RV18 are available in 2 sizes:

- Size S0 – width 45 mm
  3RV17 21: Max. rated current 22 A at 480 Y/277 V AC
  3RV18 21: Max. rated current 20 A at 480 Y/277 V AC
- Size S3 – width 70 mm
  3RV17 42:
  Max. rated current 70 A at 480 Y/277 V AC,
  max. rated current 10 A to 30 A at 480 V AC.

Size S00 of the 3RV27 and 3RV28 circuit breakers up to 15 A see pages 7/19 and 7/20.

Connection methods

The SIRIUS 3RV1 motor starter protectors can be supplied with screw terminals and spring-type terminals.

	Screw terminals
	Spring-type terminals
	The terminals are indicated in the corresponding tables by the symbols shown on orange backgrounds.

"Increased safety" type of protection EEx e according to ATEX directive 94/9/EC

3RV10 motor starter protectors are suitable for overload protection of explosion-protected motors with "increased safety" type of protection EEx e; see www.siemens.com/sirius/atex.

Order No. scheme

Digit of the Order No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th		13th	14th	15th	16th
	□□□	□	□	□	□	–	□	□	□	□	□	–	□	□	□	□
Motor starter protectors	**3 R V**															
SIRIUS 1st generation		**1**														
Type of motor starter protector			□													
Size				□												
Breaking capacity					□											
Setting range for overload release							□	□								
Trip class (CLASS)									□							
Connection methods										□						
With or without auxiliary switch											□					
Special versions													□	□	□	□
Example	**3 R V**	**1**	**0**	**3**	**1**	**–**	**4**	**A**	**A**	**1**	**0**					

Note:

The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quoted in the catalog in the Selection and ordering data.

Application

Operating conditions

3RV1 motor starter protectors are suitable for use in any climate. They are intended for use in enclosed rooms in which no severe operating conditions (such as dust, caustic vapors, hazardous gases) prevail. When installed in dusty and damp areas, suitable enclosures must be provided.

3RV1 motor starter protectors can optionally be fed from the top or from below.

The permissible ambient temperatures, the maximum switching capacities, the tripping currents and other boundary conditions can be found in the technical specifications and tripping characteristics, see "Reference Manual for Protection Equipment – Motor Starter Protectors · 3RV1 Molded Case Motor Starter protectors".

3RV1 motor starter protectors are suitable for operation in IT systems (IT networks). In this case, the different short-circuit breaking capacity in the IT system must be taken into account.

Since operational currents, starting currents and current peaks are different even for motors with identical power ratings due to the inrush current, the motor ratings in the selection tables are only guide values. The specific rated and start-up data of the motor to be protected is always paramount to the choice of the most suitable motor starter protector. This also applies to motor starter protectors for transformer protection.

Possible uses

The 3RV1 motor starter protectors can be used:

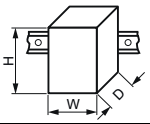
- For short-circuit protection
- For motor protection (also with overload relay function)
- For system protection
- For short-circuit protection for starter combinations
- For transformer protection
- As main and EMERGENCY-STOP switches
- For fuse monitoring
- For operation in IT systems (IT networks)
- For switching of DC currents
- As voltage transformer circuit breakers
- In areas subject to explosion hazard (ATEX)
- Approved as circuit breakers according to UL 489 (3RV17)

For more details see "Reference Manual for Protection Equipment – Motor Starter Protectors · 3RV1 Molded Case Motor Starter protectors".

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General data

Technical specifications

General data						
Type			**3RV16 1.**[1]	**3RV1. 3.**	**3RV1. 4.**	**3RV17 42**
Size			S00	S2	S3	S3
Dimensions (W x H x D)		mm	45 x 90 x 70	55 x 140 x 144	70 x 165 x 169	70 x 168 x 169
Standards						
• IEC 60947-1, EN 60947-1			Yes			
• IEC 60947-2, EN 60947-2			Yes			
• IEC 60947-4-1, EN 60947-4-1			Yes			No
• UL 508, CSA C22.2 No.14			Yes			No
• UL 489, CSA C22.2 No.5-02			No			Yes
Number of poles			3			
Max. rated current $I_{n\,max}$ (= max. rated operational current I_e)		A	12	50	100	70
Permissible ambient temperature						
• Storage/transport		°C	–50 ... +80			
• Operation		°C	–20 ... +70 (current reduction above +60 °C)			
Permissible rated current at inside temperature of control cabinet						
• +60 °C		%	100			
• +70 °C		%	87			
Permissible rated current at ambient temperature of enclosure (applies for motor starter protector inside enclosure)						
• +35 °C		%	100			
• +60 °C		%	87			
Rated operational voltage U_e						
• Acc. to IEC		V AC	690 (with molded-plastic enclosure 500 V)			
• Acc. to UL/CSA		V AC	600			
Rated frequency		Hz	50/60			
Rated insulation voltage U_i		V	690			
Rated impulse withstand voltage U_{imp}		kV	6			
Utilization categories						
• IEC 60947-2 (motor starter protector/circuit breaker)			A			
• IEC 60947-4-1 (motor starter)			AC-3			--
Trip class CLASS	According to IEC 60947-4-1		10	10/20		--
DC short-circuit breaking capacity (time constant t = 5 ms)						
• 1 conducting path 150 V DC		kA	10			
• 2 conducting paths in series 300 V DC		kA	10			
• 3 conducting paths in series 450 V DC		kA	10			
Power loss P_v for each motor starter protector Dependent on the rated current I_n (upper setting range) $R_{\text{per conducting path}} = \frac{P}{I^2 \times 3}$	I_n: 16 ... 25 A	W	--	12	--	
	I_n: 32 A	W	--	15	--	
	I_n: 40 ... 50 A	W	--	20	--	
	I_n: 16 ... 63 A	W	--		20	
	I_n: 75 and 90 A	W	--		30	
	I_n: 100 A	W	--		38	
	I_n: 10 A	W	--			8
	I_n: 15 ... 35 A	W	--			12
	I_n: 40 ... 70 A	W	--			21
Shock resistance	According to IEC 60068-2-27	*g*/ms	25/11 (square and sine pulse)			
Degree of protection	According to IEC 60529		IP20 (IP00 terminal compartment)			
Touch protection	According to EN 50274		Finger-safe			
Temperature compensation	According to IEC 60947-4-1	°C	–20 ... +60			
Phase failure sensitivity	According to IEC 60947-4-1		Yes			No
Explosion protection – Safe operation of motors with "increased safety" type of protection EC type test certificate number according to directive 94/9/EC (ATEX)			Yes, for 3RV10 (CLASS 10) DMT 02 ATEX F 001 Ex II (2) GD, DMT 02 ATEX F 001 N1 Ex II (2) GD			No
Isolating function	According to IEC 60947-2		Yes			
Main and EMERGENCY-STOP switch characteristics (with corresponding accessories)	According to IEC 60204-1		Yes			
Protective separation between main and auxiliary circuits, required for PELV applications	According to IEC 60947-1					
• Up to 400 V + 10 %			Yes			
• Up to 415 V + 5 % (higher voltages on request)			Yes			
Permissible mounting positions			Any, acc. to IEC 60447 start command "I" right-hand side or top			
Mechanical endurance	Operating cycles		100 000	50 000		
Electrical endurance	Operating cycles		100 000	25 000		
Max. switching frequency per hour (motor starts)		1/h	15			

[1] "Technical Specifications" for 3RV16 voltage transformer circuit breakers see page 7/42.

For short-circuit breaking capacity I_{cu}, I_{cs} see "Reference Manual for Protection Equipment – Motor Starter Protectors · 3RV1 Molded Case Motor Starter Protectors".

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Conductor cross-sections of main circuit

Type		3RV16 11[4]	3RV1. 3.	3RV1. 4./ 3RV17 42
Connection type		Screw terminals	Screw terminals with box terminal	
Terminal screw		Pozidriv size 2		4 mm Allen screw
Prescribed tightening torque	Nm	0.8 ... 1.2	3 ... 4.5	4 ... 6
Conductor cross-sections (1 or 2 conductors connectable)				
• Solid	mm^2	2 x (0.5 ... 1.5)[5], 2 x (0.75 ... 2.5)[5]	2 x (0.75 ... 16)	2 x (2.5 ... 16)
• Finely stranded with end sleeve	mm^2	2 x (0.5 ... 1.5)[5], 2 x (0.75 ... 2.5)[5]	2 x (0.75 ... 16), 1 x (0.75 ... 25)	2 x (2.5 ... 35), 1 x (2.5 ... 50)
• Stranded	mm^2	2 x (0.5 ... 1.5)[5], 2 x (0.75 ... 2.5)[5]	2 x (0.75 ... 25), 1 x (0.75 ... 35)	2 x (10 ... 50), 1 x (10 ... 70)
• AWG cables, solid or stranded	AWG	2 x (18 ... 14)	2 x (18 ... 2), 1 x (18 ... 2)	2 x (10 ... 1/0), 1 x (10 ... 2/0)
Ribbon cable conductors (Number x Width x Thickness)	mm	--	2 x (6 x 9 x 0.8)	
Removable box terminals[1]				
• With copper bars[2]		--		18 x 10
• With cable lugs[3]		--		up to 2 x 70

1) Cable lug and busbar connection possible after removing the box terminals.

2) If bars larger than 12 mm x 10 mm are connected, a 3RT19 46-4EA1 terminal cover is needed to comply with the phase clearance.

3) When connecting conductors which are larger than 25 mm^2, the 3RT19 46-4EA1 terminal cover must be used to keep the phase clearance.

4) "Technical Specifications" for 3RV16 voltage transformer circuit breakers see page 7/42.

5) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in the range specified.

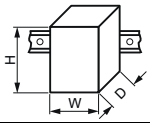
Rated data of the auxiliary switches and signaling switches

Type 3RV19		Lateral auxiliary switch with	Transverse auxiliary switches with	
		1 NO + 1 NC, 2 NO, 2 NC, 2 NO + 2 NC; Signaling switches	1 CO	1 NO + 1 NC, 2 NO
Max. Rated voltage				
• Acc. to NEMA (UL)	V AC	600		250
• According to NEMA (CSA)	V AC	600		250
Uninterrupted current	A	10	5	2.5
Switching capacity		A600 Q300	B600 R300	C300 R300

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General data

Voltage transformer circuit breakers

General data					
Type			**3RV16 11-1AG14**	**3RV16 11-1CG14**	**3RV16 11-1DG14**
Size			S00	S00	S00
Dimensions (W x H x D)		mm	45 x 90 x 70	45 x 90 x 70	45 x 90 x 70
Rated current I_n		A	1.4	2.5	3
Ambient temperature					
• During storage/transport		°C	–50 ... +80		
• During operation		°C	–20 ... +60 (up to +70 °C is possible with current reduction)		
Rated operational voltage U_e		V	400		
Rated frequency		Hz	16.66 ... 60		
Rated insulation voltage U_i		V	690		
Short-circuit breaking capacity I_{cu} at 400 V AC		kA	50		
Set value of the thermal overload release		A	1.4	2.5	3
Response value of the instantaneous overcurrent release		A	6 ± 20 %	10.5 ± 20 %	20 ± 20 %
Tripping time of the instantaneous overcurrent release		ms	approx. 6 at 12 A	approx. 6 at 20 A	approx. 6 at 40 A
Internal resistance					
• In cold state		Ω	> 0.25 ± 6.5 %		
• In heated state		Ω	> 0.30 ± 6.5 %		
Shock resistance acc. to IEC 60068 Part 2-27		*g*	15		
Degree of protection acc. to IEC 60529			IP20		
Touch protection acc. to EN 50274			Finger-safe		
Endurance					
• Mechanical		Operating cycles	10 000		
• Electrical		Operating cycles	10 000		
Permissible mounting positions			Any		

Type			**3RV16 11-1AG14**	**3RV16 11-1CG14**	**3RV16 11-1DG14**
Conductor cross-sections, main circuit, 1 or 2 conductors					
Connection type			**Screw terminals**		
Terminal screw			Pozidriv size 2		
Conductor cross-sections					
• Solid		mm^2	2 x (0.5 ... 1.5)[1], 2 x (0.75 ... 2.5)[1], max. 4		
• Finely stranded with end sleeve		mm^2	2 x (0.5 ... 1.5)[1], 2 x (0.75 ... 2.5)[1]		
• Stranded		mm^2	2 x (0.5 ... 1.5)[1], 2 x (0.75 ... 2.5)[1], max. 4		
Auxiliary switch for blocking the distance protection					
With defined lateral assignment for blocking distance protection			1 CO (for use as 1 NO or 1 NC)		
Rated operational voltage U_e	Alternating voltage	V	250		
Rated operational current I_e/AC-14	at U_e = 250 V	A	0.5		
	at U_e = 125 V	A	1		
Rated operational voltage U_e	Direct voltage *L/R* 200 ms	V	250		
Rated operational current I_e/DC-13	at U_e = 250 V	A	0.27		
	at U_e = 125 V	A	0.44		
Short-circuit protection for auxiliary circuit					
Melting fuses operational class gG		A	10		
Miniature circuit breakers C characteristic		A	6 (prospective short-circuit current < 0.4 kA)		
Auxiliary switches for other signaling purposes					

For technical specifications see the next page.

[1] If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in the range specified.

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Mountable accessories

Front transverse auxiliary switches

			Switching capacity for different voltages	
			1 CO	**1 NO + 1 NC, 2 NO**
Rated operational current I_e				
• At AC-15, alternating voltage				
- 24 V		A	4	2
- 230 V		A	3	0.5
- 400 V		A	1.5	--
- 690 V		A	0.5	--
• At AC-12 = I_{th}, alternating voltage				
- 24 V		A	10	2.5
- 230 V		A	10	2.5
- 400 V		A	10	--
- 690 V		A	10	--
• At DC-13, direct voltage *L/R* 200 ms				
- 24 V		A	1	1
- 48 V		A	--	0.3
- 60 V		A	--	0.15
- 110 V		A	0.22	--
- 220 V		A	0.1	--
Minimum load capacity		V	17	
		mA	1	

Front transverse solid-state compatible auxiliary switches

			Switching capacity for different voltages
			1 CO
Rated operational voltage U_e	Alternating voltage	V	250
Rated operational current I_e/AC-14	at U_e = 250 V	A	0.5
	at U_e = 125 V	A	1
Rated operational voltage U_e	Direct voltage *L/R* 200 ms	V	250
Rated operational current I_e/DC-13	at U_e = 250 V	A	0.27
	at U_e = 125 V	A	0.44
Minimum load capacity		V	5
		mA	1

Lateral auxiliary switches with signaling switch

			Switching capacity for different voltages: Lateral auxiliary switch with 1 NO + 1 NC, 2 NO, 2 NC, 2 NO + 2 NC Signaling switch
Rated operational current I_e			
• At AC-15, alternating voltage			
- 24 V		A	6
- 230 V		A	4
- 400 V		A	3
- 690 V		A	1
• At AC-12 = I_{th}, alternating voltage			
- 24 V		A	10
- 230 V		A	10
- 400 V		A	10
- 690 V		A	10
• At DC, direct voltage *L/R* 200 ms			
- 24 V		A	2
- 110 V		A	0.5
- 220 V		A	0.25
- 440 V		A	0.1
Minimum load capacity		V	17
		mA	1

Auxiliary releases

			Undervoltage releases	Shunt releases
Power consumption				
• During pick-up				
- AC voltages		VA/W	20.2/13	20.2/13
- DC voltages		W	20	13 ... 80
• During uninterrupted duty				
- AC voltages		VA/W	7.2/2.4	--
- DC voltages		W	2.1	--
Response voltage				
• Tripping		V	0.35 ... 0.7 x U_s	0.7 ... 1.1 x U_s
• Pickup		V	0.85 ... 1.1 x U_s	--
Opening time maximum		ms	20	

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General data

Short-circuit protection for auxiliary and control circuits		
Melting fuses operational class gG	A	10
Miniature circuit breakers C characteristic	A	6 (prospective short-circuit current < 0.4 kA)

Conductor cross-sections for auxiliary and control circuits		
Connection type		**Screw terminals**
Terminal screw		Pozidriv size 2
Prescribed tightening torque	Nm	0.8 ... 1.2
Conductor cross-sections (1 or 2 conductors connectable)		
• Solid	mm^2	2 x (0.5 ... 1.5)[1]/2 x (0.75 ... 2.5)[1]
• Finely stranded with end sleeve	mm^2	2 x (0.5 ... 1.5)[1]/2 x (0.75 ... 2.5)[1]
• Stranded	mm^2	2 x (0.5 ... 1.5)[1]/2 x (0.75 ... 2.5)[1]
• AWG cables	AWG	2 x (18 ... 14)
Connection type		**Spring-type terminals**[2)3)]
Conductor cross-sections (1 or 2 conductors connectable)		
• Solid	mm^2	2 x (0.25 ... 2.5)
• Finely stranded with end sleeve	mm^2	2 x (0.25 ... 1.5)
• Finely stranded without end sleeve	mm^2	2 x (0.25 ... 2.5)
• AWG cables, solid or stranded	AWG	2 x (24 ... 14)
Max. external diameter of the conductor insulation	mm	3.6

1) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in the range specified.

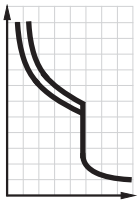
2) With conductor cross-sections ≤ 1 mm^2 an "insulation stop" must be used; see Chapter 3 "Controls – Contactors and Contactor Assemblies". → "Accessories".

3) Corresponding opening tool 3RA29 08-1A see "Accessories" on page 7/60.

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Selection and ordering data

CLASS 10, without auxiliary switches



Rated current	Suitable for three-phase induction motors[1] with *P*	Setting range for thermal overload release	Instantaneous overcurrent releases	Short-circuit breaking capacity at 400 V AC	DT	Screw terminals — Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
I_n			$I >$	I_{cu}						
A	kW	A	A	kA						
Size S2										
16	7.5	11 ... 16	208	50	▶	**3RV10 31-4AA10**		1	1 unit	41E
20	7.5	14 ... 20	260	50	▶	**3RV10 31-4BA10**		1	1 unit	41E
25	11	18 ... 25	325	50	▶	**3RV10 31-4DA10**		1	1 unit	41E
32	15	22 ... 32	416	50	▶	**3RV10 31-4EA10**		1	1 unit	41E
40	18.5	28 ... 40	520	50	▶	**3RV10 31-4FA10**		1	1 unit	41E
45	22	36 ... 45	585	50	▶	**3RV10 31-4GA10**		1	1 unit	41E
50	22	40 ... 50	650	50	▶	**3RV10 31-4HA10**		1	1 unit	41E
Size S3										
40	18.5	28 ... 40	520	50	▶	**3RV10 41-4FA10**		1	1 unit	41E
50	22	36 ... 50	650	50	▶	**3RV10 41-4HA10**		1	1 unit	41E
63	30	45 ... 63	819	50	▶	**3RV10 41-4JA10**		1	1 unit	41E
75	37	57 ... 75	975	50	▶	**3RV10 41-4KA10**		1	1 unit	41E
90	45	70 ... 90	1 170	50	▶	**3RV10 41-4LA10**		1	1 unit	41E
100	45	80 ... 100	1 235	50	▶	**3RV10 41-4MA10**		1	1 unit	41E
Size S3, with increased switching capacity										
16	7.5	11 ... 16	208	100	▶	**3RV10 42-4AA10**		1	1 unit	41E
20	7.5	14 ... 20	260	100	▶	**3RV10 42-4BA10**		1	1 unit	41E
25	11	18 ... 25	325	100	▶	**3RV10 42-4DA10**		1	1 unit	41E
32	15	22 ... 32	416	100	▶	**3RV10 42-4EA10**		1	1 unit	41E
40	18.5	28 ... 40	520	100	▶	**3RV10 42-4FA10**		1	1 unit	41E
50	22	36 ... 50	650	100	▶	**3RV10 42-4HA10**		1	1 unit	41E
63	30	45 ... 63	819	100	▶	**3RV10 42-4JA10**		1	1 unit	41E
75	37	57 ... 75	975	100	▶	**3RV10 42-4KA10**		1	1 unit	41E
90	45	70 ... 90	1 170	100	▶	**3RV10 42-4LA10**		1	1 unit	41E
100	45	80 ... 100	1 235	100	▶	**3RV10 42-4MA10**		1	1 unit	41E


3RV10 31-4HA10


3RV10 41-4LA10


3RV10 42-4JA10

CLASS 20, without auxiliary switches

Size S2										
16	7.5	11 ... 16	208	50	A	**3RV10 31-4AB10**		1	1 unit	41E
20	7.5	14 ... 20	260	50	A	**3RV10 31-4BB10**		1	1 unit	41E
25	11	18 ... 25	325	50	A	**3RV10 31-4DB10**		1	1 unit	41E
32	15	22 ... 32	416	50	A	**3RV10 31-4EB10**		1	1 unit	41E
40	18.5	28 ... 40	520	50	A	**3RV10 31-4FB10**		1	1 unit	41E
45	22	36 ... 45	585	50	A	**3RV10 31-4GB10**		1	1 unit	41E
50	22	40 ... 50	650	50	A	**3RV10 31-4HB10**		1	1 unit	41E
Size S3, with increased switching capacity										
40	18.5	28 ... 40	520	100	A	**3RV10 42-4FB10**		1	1 unit	41E
50	22	36 ... 50	650	100	A	**3RV10 42-4HB10**		1	1 unit	41E
63	30	45 ... 63	819	100	A	**3RV10 42-4JB10**		1	1 unit	41E
75	37	57 ... 75	975	100	A	**3RV10 42-4KB10**		1	1 unit	41E
90	45	70 ... 90	1 170	100	A	**3RV10 42-4LB10**		1	1 unit	41E
100	45	80 ... 100	1 235	100	A	**3RV10 42-4MB10**		1	1 unit	41E


3RV10 31-4AB10


3RV10 42-4KB10

[1] Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

Auxiliary switches and other accessories can be ordered separately (see "Mountable accessories" on page 7/53 onwards).

Multi-unit packing and reusable packaging see Chapter 16, "Appendix" → "Ordering Notes".

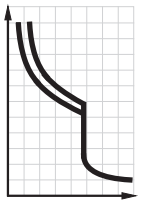
* You can order this quantity or a multiple thereof.
Illustrations are approximate

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For motor protection with overload relay function

Selection and ordering data

CLASS 10, with overload relay function (automatic RESET), without auxiliary switches



Rated current I_n	Suitable for three-phase induction motors[1] with *P*	Setting range for thermal overload release	Instantaneous overcurrent release $I >$	Short-circuit breaking capacity at 400 V AC I_{cu}	DT	Screw terminals — Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	kW	A	A	kA						
Size S2[2]										
16	7.5	11 ... 16	208	50	A	**3RV11 31-4AA10**		1	1 unit	41E
20	7.5	14 ... 20	260	50	A	**3RV11 31-4BA10**		1	1 unit	41E
25	11	18 ... 25	325	50	A	**3RV11 31-4DA10**		1	1 unit	41E
32	15	22 ... 32	416	50	A	**3RV11 31-4EA10**		1	1 unit	41E
40	18.5	28 ... 40	520	50	A	**3RV11 31-4FA10**		1	1 unit	41E
45	22	36 ... 45	585	50	A	**3RV11 31-4GA10**		1	1 unit	41E
50	22	40 ... 50	650	50	A	**3RV11 31-4HA10**		1	1 unit	41E
Size S3, with increased switching capacity[2]										
16	7.5	11 ... 16	208	100	A	**3RV11 42-4AA10**		1	1 unit	41E
20	7.5	14 ... 20	260	100	A	**3RV11 42-4BA10**		1	1 unit	41E
25	11	18 ... 25	325	100	A	**3RV11 42-4DA10**		1	1 unit	41E
32	15	22 ... 32	416	100	A	**3RV11 42-4EA10**		1	1 unit	41E
40	18.5	28 ... 40	520	100	A	**3RV11 42-4FA10**		1	1 unit	41E
50	22	36 ... 50	650	100	A	**3RV11 42-4HA10**		1	1 unit	41E
63	30	45 ... 63	819	100	A	**3RV11 42-4JA10**		1	1 unit	41E
75	37	57 ... 75	975	100	A	**3RV11 42-4KA10**		1	1 unit	41E
90	45	70 ... 90	1 170	100	A	**3RV11 42-4LA10**		1	1 unit	41E
100	45	80 ... 100	1 235	100	A	**3RV11 42-4MA10**		1	1 unit	41E



3RV11 31-4EA10



3RV11 42-4AA10

[1] Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

[2] Accessories (auxiliary releases) for mounting on the right cannot be used.

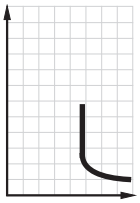
Auxiliary switches and other accessories can be ordered separately (see "Mountable accessories" on page 7/53 onwards).

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

Without auxiliary switches



Rated current	Suitable for three-phase induction motors[1] with *P*	Thermal overload release[2]	Instantaneous overcurrent releases	Short-circuit breaking capacity at 400 V AC	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
I_n			$I >$	I_{cu}		Order No. / Price per PU			
A	kW	A	A	kA					
Size S2									
16	7.5	Without	208	50	A	**3RV13 31-4AC10**	1	1 unit	41E
20	7.5	Without	260	50	A	**3RV13 31-4BC10**	1	1 unit	41E
25	11	Without	325	50	A	**3RV13 31-4DC10**	1	1 unit	41E
32	15	Without	416	50	A	**3RV13 31-4EC10**	1	1 unit	41E
40	18.5	Without	520	50	A	**3RV13 31-4FC10**	1	1 unit	41E
45	22	Without	585	50	A	**3RV13 31-4GC10**	1	1 unit	41E
50	22	Without	650	50	A	**3RV13 31-4HC10**	1	1 unit	41E



3RV13 31-4AC10

Size S3									
40	18.5	Without	520	50	A	**3RV13 41-4FC10**	1	1 unit	41E
50	22	Without	650	50	A	**3RV13 41-4HC10**	1	1 unit	41E
63	30	Without	819	50	A	**3RV13 41-4JC10**	1	1 unit	41E
75	37	Without	975	50	A	**3RV13 41-4KC10**	1	1 unit	41E
90	45	Without	1 170	50	A	**3RV13 41-4LC10**	1	1 unit	41E
100	45	Without	1 235	50	A	**3RV13 41-4MC10**	1	1 unit	41E



3RV13 41-4JC10

Size S3, with increased switching capacity									
16	7.5	Without	208	100	A	**3RV13 42-4AC10**	1	1 unit	41E
20	7.5	Without	260	100	A	**3RV13 42-4BC10**	1	1 unit	41E
25	11	Without	325	100	A	**3RV13 42-4DC10**	1	1 unit	41E
32	15	Without	416	100	A	**3RV13 42-4EC10**	1	1 unit	41E
40	18.5	Without	520	100	A	**3RV13 42-4FC10**	1	1 unit	41E
50	22	Without	650	100	A	**3RV13 42-4HC10**	1	1 unit	41E
63	30	Without	819	100	A	**3RV13 42-4JC10**	1	1 unit	41E
75	37	Without	975	100	A	**3RV13 42-4KC10**	1	1 unit	41E
90	45	Without	1 170	100	A	**3RV13 42-4LC10**	1	1 unit	41E
100	45	Without	1 235	100	A	**3RV13 42-4MC10**	1	1 unit	41E



3RV13 42-4JC10

[1] Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

[2] For overload protection of the motors, appropriate overload relays must be used.

Auxiliary switches and other accessories can be ordered separately (see "Mountable accessories" on page 7/53 onwards).

For multi-unit packing and reusable packaging see Chapter 16, "Appendix" → "Ordering Notes".

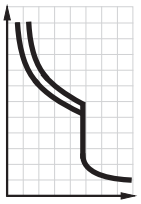
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For transformer protection

Selection and ordering data

CLASS 10, without auxiliary switches

Motor starter protectors for the protection of transformers with high inrush current



Rated current	Setting range for thermal overload release	Instantaneous overcurrent release	Short-circuit breaking capacity at 400 V AC	DT	**Screw terminals**	PU (UNIT, SET, M)	PS*	PG
I_n		$I >$	I_{cu}		Order No. Price per PU			
A	A	A	kA					
Size S2								
16	11 ... 16	325	50	▶	**3RV14 31-4AA10**	1	1 unit	41E
20	14 ... 20	416	50	▶	**3RV14 31-4BA10**	1	1 unit	41E
25	18 ... 25	520	50	▶	**3RV14 31-4DA10**	1	1 unit	41E
32	22 ... 32	660	50	▶	**3RV14 31-4EA10**	1	1 unit	41E
40	28 ... 40	836	50	▶	**3RV14 31-4FA10**	1	1 unit	41E



3RV14 31-4DA10

Auxiliary switches and other accessories can be ordered separately (see "Mountable accessories" on page 7/53 onwards).

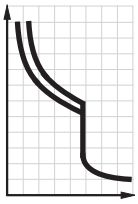
Multi-unit packing and reusable packaging see Chapter 16, "Appendix" → "Ordering Notes".

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

Without auxiliary switches



Rated current	Thermal overload releases	Instantaneous overcurrent release	Short-circuit breaking capacity at 400 V AC	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
I_n		$I >$	I_{cu}		Order No. / Price per PU			
A	A	A	kA					
Size S00								
0.2	0.2	1.2	100	▶	**3RV16 11-0BD10**	1	1 unit	41E



3RV16 11-0BD10

Note:

The auxiliary switch required for signaling must be ordered separately.

Multi-unit packing and reusable packaging see Chapter 16, "Appendix" → "Ordering Notes".

Accessories

Version	Contacts	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
			Order No. / Price per PU			
Mountable auxiliary switches (essential accessories)						
Transverse auxiliary switches With screw terminals, mountable on front	1 NO + 1 NC	▶	**3RV19 01-1E**	1	1 unit	41E
Lateral auxiliary switches With screw terminals, mountable on the left	1 NO + 1 NC	▶	**3RV19 01-1A**	1	1 unit	41E



3RV19 01-1E



3RV19 01-1A

Additional auxiliary switches and other accessories see "Mountable Accessories" on page 7/53 onwards.

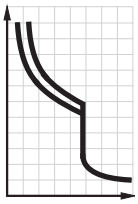
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For system protection according to UL 489/CSA C22.2 No. 5-02

Selection and ordering data

Without auxiliary switches

Circuit breakers for system protection and non-motor loads according to UL/CSA



Rated current[1] I_n[1]	Thermal overload releases (non-adjustable)	Instantaneous overcurrent release	Short-circuit breaking capacity at 480 Y/277 V AC[2] I_{bc}	Short-circuit breaking capacity at 480 V AC I_{bc}	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	A	A	kA	kA						
Size S3										
10	10	150	65	65	B	**3RV17 42-5AD10**		1	1 unit	41E
15	15	225	65	65	B	**3RV17 42-5BD10**		1	1 unit	41E
20	20	260	65	65	B	**3RV17 42-5CD10**		1	1 unit	41E
25	25	325	65	65	B	**3RV17 42-5DD10**		1	1 unit	41E
30	30	390	65	65	B	**3RV17 42-5ED10**		1	1 unit	41E
35	35	455	65	--	B	**3RV17 42-5FD10**		1	1 unit	41E
40	40	520	65	--	B	**3RV17 42-5GD10**		1	1 unit	41E
45	45	585	65	--	B	**3RV17 42-5HD10**		1	1 unit	41E
50	50	650	65	--	B	**3RV17 42-5JD10**		1	1 unit	41E
60	60	780	65	--	B	**3RV17 42-5LD10**		1	1 unit	41E
70	70	910	65	--	B	**3RV17 42-5QD10**		1	1 unit	41E



3RV17 42-5FD10

[1] Rated value 100 % according to UL 489 and IEC 60947-2 ("100 % rated breaker").

[2] Values for 600 Y/347 V AC see "Technical Specifications" → "Permissible rated data of devices approved for North America (UL/CSA)" → "3RV17 Motor Starter Protectors as Circuit Breakers" in "Reference Manual for Protection Equipment – Motor Starter Protectors · 3RV1 Molded Case Motor Starter Protector".

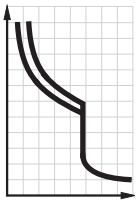
Transverse auxiliary switches must not be mounted, lateral auxiliary switches can be ordered separately
(see "Mountable Accessories" on page 7/53 onwards).

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

Voltage transformer circuit breakers with auxiliary switches (1 CO)



Rated current	Thermal overload releases	Instantaneous overcurrent release	Auxiliary switch integrated in the motor starter protector, transverse	Short-circuit breaking capacity at 400 V AC	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
I_n		$I >$		I_{cu}		Order No. / Price per PU			
A	A	A		kA					
Size S00									
1.4	1.4	6	1 CO	50	B	**3RV16 11-1AG14**	1	1 unit	41E
2.5	2.5	10.5	1 CO	50	▶	**3RV16 11-1CG14**	1	1 unit	41E
3	3	20	1 CO	50	▶	**3RV16 11-1DG14**	1	1 unit	41E



3RV16 11-1.G14

Accessories

Version	Contacts	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
			Order No. / Price per PU			
Mountable auxiliary switches for other signaling purposes						
Lateral auxiliary switches With screw terminals, mountable on the left	1 NO + 1 NC	▶	**3RV19 01-1A**	1	1 unit	41E



3RV19 01-1A

For additional auxiliary switches and other accessories
see "Mountable Accessories" on page 7/53 onwards.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Mounting location and function

The 3RV1 motor starter protectors have three main contact elements. In order to achieve maximum flexibility, auxiliary switches, signaling switches, auxiliary releases and isolator modules can be supplied separately.

These components are easily fitted to the switches without the use of any tools according to requirements.

Overview graphic see page 7/38.

Front side Notes: • A maximum of 4 auxiliary contacts with auxiliary switches are mountable on each motor starter protector. • Transverse auxiliary switches must not be used for the 3RV17 circuit breakers.	**Transverse auxiliary switches, solid-state compatible transverse auxiliary switches** 1 NO + 1 NC or 2 NO or 1 CO	An auxiliary switch block can be inserted transversely on the front. The overall width of the motor starter protectors remains unchanged.
Left-hand side Notes: • A maximum of 4 auxiliary contacts with auxiliary switches are mountable on each motor starter protector. • Auxiliary switches (2 contacts) and signaling switches can be mounted separately or together. • The signaling switch cannot be used for the 3RV17 circuit breakers.	**Lateral auxiliary switches (2 contacts)** 1 NO + 1 NC or 2 NO or 2 NC	One of the three lateral auxiliary switches can be mounted on the left side per motor starter protector. The contacts of the auxiliary switch close and open together with the main contacts of the motor starter protector. The width of the lateral auxiliary switch with 2 contacts is 9 mm.
	Lateral auxiliary switches (4 contacts) 2 NO + 2 NC	One lateral auxiliary switch with four contacts can be mounted on the left side per motor starter protector. The contacts of the auxiliary switch close and open together with the main contacts of the motor starter protector. The width of the lateral auxiliary switch with 4 contacts is 18 mm.
	Signaling switches for sizes S2 and S3 Tripping 1 NO + 1 NC Short circuit 1 NO + 1 NC	One signaling switch can be mounted on the left side of each motor starter protector. The signaling switch has two contact systems. One contact system always signals tripping irrespective of whether this was caused by a short circuit, an overload or an auxiliary release. The other contact system only switches in the event of a short circuit. There is no signaling as a result of switching off with the handle. In order to be able to switch on the motor starter protector again after a short circuit, the signaling switch must be reset manually after the error cause has been eliminated. The overall width of the signaling switch is 18 mm.
Right-hand side Notes: • One auxiliary release can be mounted per motor starter protector. • Accessories cannot be mounted at the right-hand side of the 3RV11 motor starter protectors for motor protection with overload relay function.	**Auxiliary releases**	
	Shunt releases	For remote-controlled tripping of the motor starter protector. The release coil should only be energized for short periods (see circuit diagrams).
	or	
	Undervoltage releases	Trips the motor starter protector when the voltage is interrupted and prevents the motor from being restarted accidentally when the voltage is restored. Used for remote-controlled tripping of the motor starter protector. Particularly suitable for EMERGENCY-STOP disconnection by way of the corresponding EMERGENCY-STOP pushbutton according to IEC 60204-1.
	or	
	Undervoltage releases with leading auxiliary contacts 2 NO	Function and use as for the undervoltage release without leading auxiliary contacts, but with the following additional function: the auxiliary contacts will open in switch position OFF to deenergize the coil of the undervoltage release, thus interrupting energy consumption. In the "tripped" position, these auxiliary contacts are not guaranteed to open. The leading contacts permit the motor starter protector to reclose. The overall width of the auxiliary release is 18 mm.
Top Notes: • The isolator module cannot be used for the 3RV17 circuit breakers. • The isolator module covers the terminal screws of the transverse auxiliary switch. If the isolator module is used, we therefore recommend that either the lateral auxiliary switches be fitted or that the isolator module not be mounted until the auxiliary switch has been wired.	**Isolator modules for size S2**	Isolator modules can be mounted to the upper terminal end of the size S2 motor starter protectors. The supply cable is connected to the motor starter protector through the isolator module. The plug can only be unplugged when the motor starter protector is open and isolates all 3 poles of the motor starter protector from the network. The shock-protected isolation point is clearly visible and secured with a padlock to prevent reinsertion of the plug.

For a complete overview of which accessories can be used for the various motor starter protectors, see page 7/3.

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Selection and ordering data

	Version	Contacts	For motor starter protectors Size	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Auxiliary switches[1]									
 3RV19 01-1E	**Transverse auxiliary switches** with screw terminals, mountable on front	1 CO	S00, S2, S3	▶	**3RV19 01-1D**		1	1 unit	41E
		1 NO + 1 NC		▶	**3RV19 01-1E**		1	1 unit	41E
		2 NO		▶	**3RV19 01-1F**		1	1 unit	41E
 3RV19 01-1G	**Solid-state compatible transverse auxiliary switches** with screw terminals, front mountable, for operation in dusty atmosphere and in solid-state circuits with low operating currents	1 CO	S00, S2, S3	A	**3RV19 01-1G**		1	1 unit	41E
 3RV19 01-0H	**Covers for transverse auxiliary switches**	--	S00, S2, S3	▶	**3RV19 01-0H**		1	10 units	41E
 3RV19 01-1A	**Lateral auxiliary switches** With screw terminals, mountable on the left	1 NO + 1 NC	S00, S2, S3	▶	**3RV19 01-1A**		1	1 unit	41E
		2 NO		▶	**3RV19 01-1B**		1	1 unit	41E
		2 NC		▶	**3RV19 01-1C**		1	1 unit	41E
 3RV19 01-1J		2 NO + 2 NC		A	**3RV19 01-1J**		1	1 unit	41E

[1] Each motor starter protector can be fitted with one transverse and one lateral auxiliary switch. The lateral auxiliary switch with 2 NO + 2 NC is used without a transverse auxiliary switch. Transverse auxiliary switches must not be used for the 3RV17 circuit breakers.

	Version	Contacts	For motor starter protectors Size	DT	Spring-type terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Auxiliary switches[1]									
 3RV19 01-2E	**Transverse auxiliary switches** With spring-type terminals, mountable on the front	1 NO + 1 NC	S00, S0, S2, S3	▶	**3RV19 01-2E**		1	1 unit	41E
		2 NO		▶	**3RV19 01-2F**		1	1 unit	41E
 3RV19 01-2A	**Lateral auxiliary switches** With spring-type terminals, mountable on the left	1 NO + 1 NC	S00, S0, S2, S3	▶	**3RV19 01-2A**		1	1 unit	41E
		2 NO		▶	**3RV19 01-2B**		1	1 unit	41E
		2 NC		▶	**3RV19 01-2C**		1	1 unit	41E

[1] Each motor starter protector can be fitted with one transverse and one lateral auxiliary switch. Transverse auxiliary switches must not be used for the 3RV17 circuit breakers.

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Accessories
Mountable accessories

	Version		For motor starter protectors Size	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Signaling switches[1]									
 3RV19 21-1M	**Signaling switches** One signaling switch can be mounted on the left per motor starter protector.	Separate tripped and short-circuit alarms, 1 NO + 1 NC each	S2, S3	▶	**3RV19 21-1M**		1	1 unit	41E
Isolator modules[1]									
 3RV19 38-1A with padlock	**Isolator module**	Visible isolating distance for isolating individual motor starter protectors from the network, lockable in disconnected position	S2	▶	**3RV19 38-1A**		1	1 unit	41E

[1] These accessories cannot be used for the 3RV17 circuit breakers.

	Rated control supply voltage U_s AC 50 Hz	AC 60 Hz	AC 50/60 Hz 100 % ON period[1]	AC/DC 50/60 Hz, DC 5 s ON period[2]	DC	For motor starter protectors Size	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	V	V	V	V	V							
Auxiliary releases[3]												
 3RV19 02-1DP0	**Undervoltage releases**											
	--	--	--	--	24	S2, S3	A	**3RV19 02-1AB4**		1	1 unit	41E
	24	--	--	--	--	S2, S3	A	**3RV19 02-1AB0**		1	1 unit	41E
	110	120	--	--	--	S2, S3	A	**3RV19 02-1AF0**		1	1 unit	41E
	--	208	--	--	--	S2, S3	A	**3RV19 02-1AM1**		1	1 unit	41E
	230	240	--	--	--	S2, S3	▶	**3RV19 02-1AP0**		1	1 unit	41E
	400	440	--	--	--	S2, S3	▶	**3RV19 02-1AV0**		1	1 unit	41E
	415	480	--	--	--	S2, S3	A	**3RV19 02-1AV1**		1	1 unit	41E
	500	600	--	--	--	S2, S3	A	**3RV19 02-1AS0**		1	1 unit	41E
	Undervoltage releases with leading auxiliary contacts 2 NO											
	230	240	--	--	--	S2, S3	A	**3RV19 22-1CP0**		1	1 unit	41E
	400	440	--	--	--	S2, S3	A	**3RV19 22-1CV0**		1	1 unit	41E
	415	480	--	--	--	S2, S3	A	**3RV19 22-1CV1**		1	1 unit	41E
	Shunt releases											
	--	--	20 ... 24	20 ... 70	--	S2, S3	▶	**3RV19 02-1DB0**		1	1 unit	41E
	--	--	90 ... 110	70 ... 190	--	S2, S3	A	**3RV19 02-1DF0**		1	1 unit	41E
	--	--	210 ... 240	190 ... 330	--	S2, S3	▶	**3RV19 02-1DP0**		1	1 unit	41E
	--	--	350 ... 415	330 ... 500	--	S2, S3	A	**3RV19 02-1DV0**		1	1 unit	41E
	--	--	500	500	--	S2, S3	A	**3RV19 02-1DS0**		1	1 unit	41E

[1] The voltage range is valid for 100 % (infinite) ON period. The response voltage lies at 0.9 of the lower limit of the voltage range.

[2] The voltage range is valid for 5 s ON period at 50/60 Hz AC and DC. The response voltage lies at 0.85 of the lower limit of the voltage range.

[3] One auxiliary release can be mounted on the right per motor starter protector (does not apply to 3RV11 motor starter protectors with overload relay function).

* You can order this quantity or a multiple thereof.
Illustrations are approximate

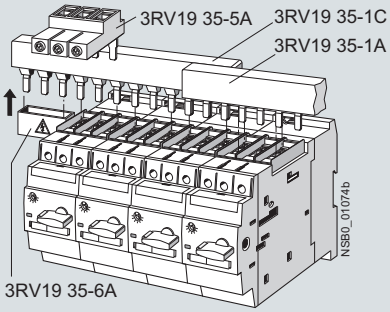
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Overview

Insulated three-phase busbar system

Three-phase busbar systems provide an easy, time-saving and clearly arranged means of feeding 3RV1 motor starter protectors with screw terminals. Different versions are available for size S2 and can be used for the various different types of motor starter protectors.

The busbars are suitable for between 2 and 4 circuit breakers/motor starter protectors. However, any kind of extension is possible by clamping the tags of an additional busbar (rotated by 180°) underneath the terminals of the respective last motor starter protector.



SIRIUS three-phase busbar system size S2

The three-phase busbar systems are finger-safe. They are designed for any short-circuit stress which can occur at the output side of connected motor starter protectors.

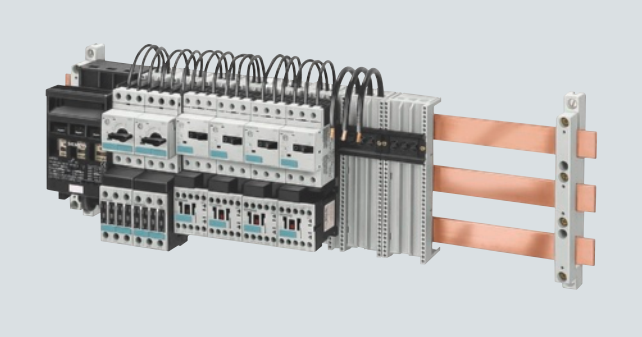
The three-phase busbar systems can also be used to construct "Type E Starters" size S2 according to UL/CSA. Special feeder terminals must be used for this purpose however (see page 7/56).

8US busbar adapters for 40 and 60 mm systems

The motor starter protectors are mounted directly with the aid of busbar adapters on busbar systems with 40 mm and 60 mm center-to-center clearance in order to save space and to reduce infeed times and costs. Busbar adapters for busbar systems with 40 mm center-to-center clearance are suitable for copper busbars with a width of 12 mm to 15 mm, while those with 60 mm center-to-center clearance are suitable for copper busbars with a width of 12 mm to 30 mm. The busbars can be 4 to 5 mm or 10 mm thick.

The motor starter protectors are snapped onto the adapter and connected on the line side. This prepared unit is then plugged directly onto the busbar system, and is thus connected both mechanically and electrically at the same time.

Further busbar adapters for snap-mounting direct-on-line starters and reversing starters as well as additional accessories such as line terminals and outgoing terminals, flat copper profile, etc. see Catalog LV 10.1.



SIRIUS load feeders with busbar adapters snapped onto busbars

Selection and ordering data

Modular spacing	Number of motor starter protectors that can be connected: Without lateral accessories	With lateral auxiliary switch	With auxiliary release	Rated current I_n at 690 V	For motor starter protectors	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
mm				A	Size						
Three-phase busbar systems											
For feeding several motor starter protectors with screw terminals, mounted side by side on standard mounting rails, insulated, with touch protection											
55[1]	2	--	--	108	S2	▶	**3RV19 35-1A**		1	1 unit	41E
	3				S2	▶	**3RV19 35-1B**		1	1 unit	41E
	4				S2	▶	**3RV19 35-1C**		1	1 unit	41E
75[2]	--	2	2	108	S2	▶	**3RV19 35-3A**		1	1 unit	41E
		3	3		S2	▶	**3RV19 35-3B**		1	1 unit	41E
		4	4		S2	▶	**3RV19 35-3C**		1	1 unit	41E

[1] Not suitable for 3RV11 motor starter protectors for motor protection with overload relay function.

[2] For 3RV1 motor starter protectors with accessories mounted on the side. Auxiliary releases and lateral auxiliary/signaling switches cannot be used in combination.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Accessories
Busbar accessories

Conductor cross-section			Tightening torque	For motor starter protectors	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Solid or stranded	Finely stranded with end sleeve	AWG cables, solid or stranded								
mm²	mm²	AWG	Nm	Size						
Three-phase feeder terminals										
Connection from top										
2.5 ... 50	1.5 ... 35	14 ... 0	4	S2	▶	**3RV19 35-5A**		1	1 unit	41E
Three-phase feeder terminals for constructing "Type E Starters"										
Connection from top										
10 ... 50	--	8 ... 0	4.5 ... 6	S2	▶	**3RV19 35-5E**		1	1 unit	41E

Version	For motor starter protectors	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	Size						
Covers for connection tags							
Touch protection for empty positions	S2	▶	**3RV19 35-6A**		1	5 units	41E

8US busbar adapters


8US10 61-5FK08


8US11 11-4SM00


8US12 61-5FM08


8US12 11-4TR00

For motor starter protectors	Rated current	Connecting cable	Adapter length	Adapter width	Rated voltage	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Size	A	AWG	mm	mm	V						
Busbar adapters for 40 mm systems											
For flat copper profiles according to DIN 46433 Width: 12 mm and 15 mm Thickness: 5 mm and 10 mm											
S2	56	8	139	55	690	▶	**8US10 61-5FK08**		1	1 unit	143
S3	100	4	182	70	400[1]	▶	**8US11 11-4SM00**		1	1 unit	143
S3	100	4	182	72	415 ... 690[2]	▶	**8US10 11-4TM00**		1	1 unit	143
Busbar adapters for 60 mm systems											
For flat copper profiles according to DIN 46433 Width: 12 mm and 30 mm Thickness: 5 mm and 10 mm also for T and double-T special profiles											
S2	56	8	182	55	690	▶	**8US12 61-5FM08**		1	1 unit	143
S3	100	4	182	70	400[1]	▶	**8US11 11-4SM00**		1	1 unit	143
S3	100	4	182	72	415 ... 690[2]	A	**8US12 11-4TM00**		1	1 unit	143
S3[3]	70[4]	4	215	72	600[4]	A	**8US12 11-4TR00**		1	1 unit	143

Additional busbar adapters see Catalog LV 10.1.

[1] At rated voltage
≤ 400 V: short-circuit breaking capacity 50 kA,
> 400 to 460 V: short-circuit breaking capacity 25 kA.

[2] Short-circuit breaking capacity 415/500/525 V AC
- up to I_n = 25 A: max. 30 kA
- up to I_n = 90 A: max. 16 kA
- up to I_n = 100 A: max. 6 kA
Short-circuit breaking capacity 690 V AC:
- max. 12 kA.

[3] This busbar adapter is approved specially for 3RV17 42 circuit breakers for applications according to UL/CSA.

[4] Values according to UL/CSA
- Rated current: 70 A at 600 V AC;
- Short-circuit breaking capacity:
480 V AC: 65 kA, up to I_n = 30 A;
480 Y/277 V AC: 65 kA;
600 Y/347 V AC: 20 kA.

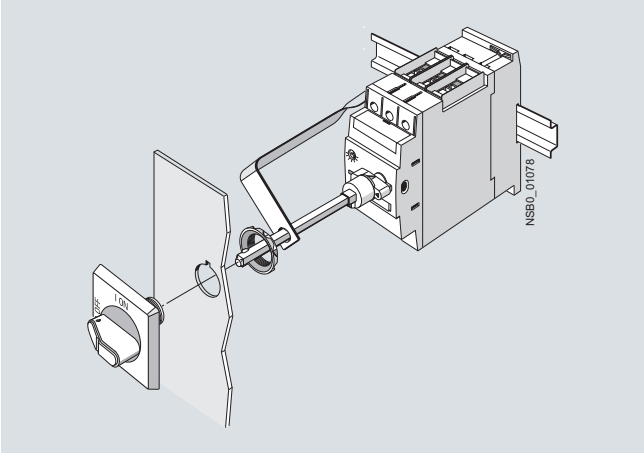
*** You can order this quantity or a multiple thereof.**
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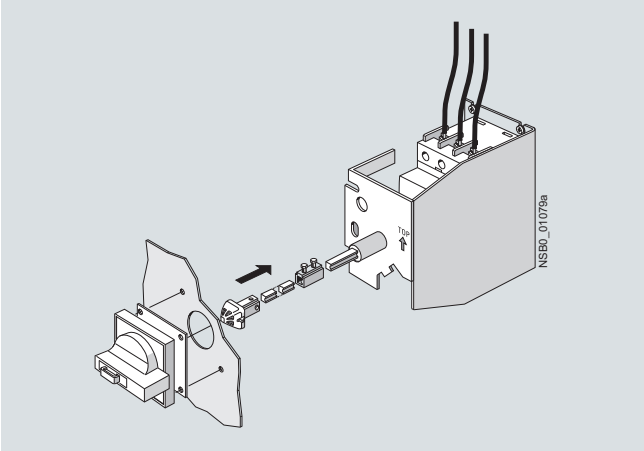
Overview

Door-coupling rotary operating mechanisms

Motor starter protectors with a rotary operating mechanism can be mounted in a control cabinet and operated externally by means of a door-coupling rotary operating mechanism. When the cabinet door with motor starter protector is closed, the operating mechanism is coupled. When the motor starter protector closes, the coupling is locked which prevents the door from being opened unintentionally. This interlock can be defeated by the maintenance personnel. In the OPEN position, the rotary operating mechanism can be secured against reclosing with up to 3 padlocks. Inadvertent opening of the door is not possible in this case either.



SIRIUS 3RV19 26-0K door-coupling rotary operating mechanism



SIRIUS 3RV29 36-2B door-coupling rotary operating mechanism for arduous conditions

Remote motorized operating mechanisms

3RV1 motor starter protectors are manually operated controls. They automatically trip in case of an overload or short circuit. Intentional remote-controlled tripping is possible by means of a shunt release or an undervoltage release. Reclosing is only possible directly at the motor starter protector.

The remote motorized operating mechanism allows the motor starter protectors to be opened and closed by electrical commands. This enables a load or an installation to be isolated from the network or reconnected to it from an operator panel.

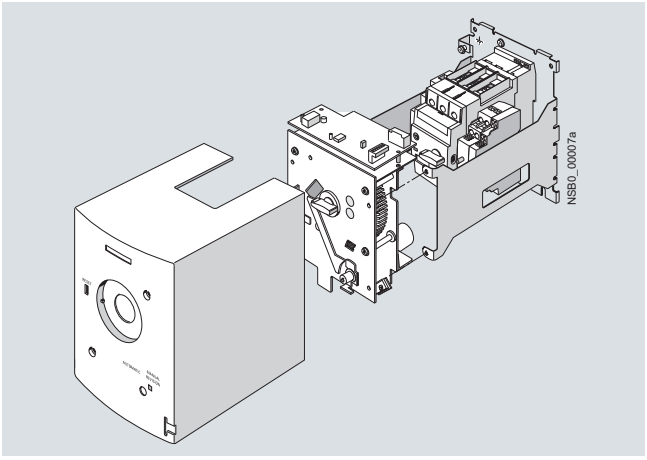
If the motor starter protector is tripped as a result of overload or short circuit, it will be in tripped position. For reclosing, the remote motorized operating mechanism must first be set manually or electrically to the 0 position (electrically by means of the Open command). Then it can be reclosed.

The remote motorized operating mechanism is available for motor starter protectors of size S2 ($I_{n\,max}$ = 50 A) and S3 ($I_{n\,max}$ = 100 A) that are designed for control voltages of 230 V AC and 24 V DC. The motor starter protector is fitted into the remote motorized operating mechanism as shown in the drawing.

In the "MANUAL" position, the motor starter protector in the remote motorized operating mechanism can continue to be switched manually on site. In the "AUTOMATIC" position, the motor starter protector is switched by means of electrical commands. The switching command must be applied for a minimum of 100 ms. The remote motorized operating mechanism closes the motor starter protector after a maximum of 1 second. On voltage failure during the switching operation it is ensured that the motor starter protector remains in the OPEN or CLOSED position. In the "MANUAL" and "OFF" position, the remote motorized operating mechanism can be locked with a padlock.

RESET function

The RESET button on the motorized operating mechanism serves to reset any 3RV19 21-1M signaling switch that might be installed.



SIRIUS 3RV19 .6-3A.. remote motorized operating mechanism

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Accessories
Rotary operating mechanisms

Technical specifications

Remote motorized operating mechanisms

Type		3RV19 36, 3RV19 46
Max. power consumption		
• At U_s = 24 V DC	W	48
• At U_s = 230 V AC	VA	170
Operating range		0.85 ... 1.1 x U_s
Minimum command duration at U_s	s	0.1
Max. command duration		Unlimited (uninterrupted operation)
Max. make/break time, remote-controlled	s	2
Ready to reclose after approx.	s	2.5
Switching frequency	1/h	25
Internal back-up fuse		
• 230 V AC	A	0.8
• 24 V DC	A	1.6
Connection type of control cables		Plug-in connectors with screw terminals
Shock resistance acc. to IEC 60068-2-27	*g*/ms	25/11 (square and sine pulse)

Selection and ordering data

Door-coupling rotary operating mechanisms



3RV29 26-0B

The door-coupling rotary operating mechanisms consist of a knob, a coupling driver and a 130/330 mm long extension shaft (6 mm x 6 mm).

The door-coupling rotary operating mechanisms are designed to degree of protection IP64. The door locking device prevents accidental opening of the control cabinet door in the ON position of the motor starter protector. The OFF position can be locked with up to 3 padlocks.

Version	Color of handle	Version of extension shaft mm	For motor starter protectors Size	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Door-coupling rotary operating mechanisms	Black	130	S2, S3	▶	**3RV29 26-0B**	1	1 unit		41E
		330	S2, S3	▶	**3RV29 26-0K**	1	1 unit		41E
EMERGENCY-STOP door-coupling rotary operating mechanisms	Red/yellow	130	S2, S3	▶	**3RV29 26-0C**	1	1 unit		41E
		330	S2, S3	▶	**3RV29 26-0L**	1	1 unit		41E

Door-coupling rotary operating mechanisms for arduous conditions



3RV29 36-2B

The door-coupling rotary operating mechanisms consist of a knob, a coupling driver, an extension shaft of 300 mm in length (8 mm x 8 mm), a spacer and two metal brackets, into which the motor starter protector is inserted.

The door-coupling rotary operating mechanisms are designed to degree of protection IP65. The door interlocking reliably prevents opening of the control cabinet door in the ON position of the motor starter protector. The OFF position can be locked with up to 3 padlocks.

Laterally mountable auxiliary releases and two-pole auxiliary switches can be used.
The door-coupling rotary operating mechanisms thus meet the requirements for isolating functions according to IEC 60947-2.

Version	Color of handle	Version of extension shaft mm	For motor starter protectors Size	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Door-coupling rotary operating mechanisms	Gray	300	S2	▶	**3RV29 36-2B**	1	1 unit		41E
			S3	▶	**3RV29 46-2B**	1	1 unit		41E
EMERGENCY-STOP door-coupling rotary operating mechanisms	Red/yellow	300	S2	▶	**3RV29 36-2C**	1	1 unit		41E
			S3	▶	**3RV29 46-2C**	1	1 unit		41E

Remote motorized operating mechanisms



3RV19 .6-3A..

Version	Rated control supply voltage U_s	For motor starter protectors Size	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Remote motorized operating mechanisms	AC 50/60 Hz, 230 V	S2	B	**3RV19 36-3AP0**	1	1 unit		41E
	24 V DC	S2	B	**3RV19 36-3AB4**	1	1 unit		41E
	AC 50/60 Hz, 230 V	S3	B	**3RV19 46-3AP0**	1	1 unit		41E
	24 V DC	S3	B	**3RV19 46-3AB4**	1	1 unit		41E

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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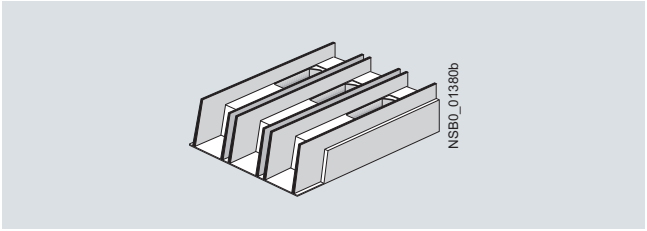
Overview

Terminals for "Self-Protected Combination Motor Controller (Type E)" according to UL 508

The 3RV10 motor starter protector sizes S2 and S3 are approved according to UL 508 as "Self-Protected Combination Motor Controllers (Type E)".

This requires increased clearance and creepage distances (1 inch and 2 inches respectively) at the input side of the device, which are achieved by mounting terminal blocks.

- Size S2: The basic unit is already compliant with the increased clearance and creepage distance requirements.
- Size S3: The standard box terminal must be replaced by the 3RT19 46-4GA07 terminal block.



Terminal block (Type E) SIRIUS 3RT19 46-4GA07

According to CSA, the terminal blocks can be omitted when the device is used as a "Self-Protected Combination Motor Controller" (Type E).

Three-phase feeder terminals are required for constructing "Type E Starters" with an insulated busbar system (see "Busbar Accessories" on page 7/56).

Selection and ordering data

Accessories

	Version	For motor starter protectors Size	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Covers								
 3RV1 (size S3) with 3RT19 46-4EA1 (left), 3RV19 08-0P (right)	**Terminal covers for box terminals** Additional touch protection to be fitted at the box terminals (2 units mountable per device)	S2 S3	▶ ▶	**3RT19 36-4EA2** **3RT19 46-4EA2**		1 1	1 unit 1 unit	41B 41B
	Terminal covers For cable lug and busbar connection for maintaining the required voltage clearance and as touch protection if box terminal is removed (2 units can be mounted per motor starter protector)	S3	▶	**3RT19 46-4EA1**		1	1 unit	41B
	Scale covers Sealable, for covering the set current scale	S2, S3	▶	**3RV19 08-0P**		100	10 units	41E
Fixing accessories								
 3RB19 00-0B	**Push-in lugs** For screwing the motor starter protector onto mounting plates For each motor starter protector, 2 units are required.	S00	A	**3RB19 00-0B**		100	10 units	41F
Terminal blocks for "Self-Protected Combination Motor Controllers (Type E)" according to UL 508								
 3RT19 46-4GA07	Note: UL 508 demands 1-inch clearance and 2-inch creepage distance at line side for "Combination Motor Controller Type E". The following terminal blocks must be used therefore in 3RV10 motor starter protector size S3. The 3RV10 motor starter protector in size S2 conforms with the required clearance and creepage distances without a terminal block. The terminal blocks are not required for use according to CSA. With size S3, these terminal blocks cannot be used in combination with a transverse auxiliary switch. For construction with three-phase busbars see "Busbar Accessories" on page 7/55 onwards.							
	Terminal block type E for extended clearance and creepage distances (1 and 2 inch)	S3	B	**3RT19 46-4GA07**		1	1 unit	41E
Auxiliary terminals, 3-pole								
 3RT19 46-4F	For connection of auxiliary and control cables to the main conductor connections (for one side)	S3	B	**3RT19 46-4F**		1	1 unit	41B

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Accessories
Mounting accessories

Link modules

Actuating voltage of contactor	Size Contactors	Size Motor starter protectors	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Link modules for motor starter protector to contactor[1]								
For mechanical and electrical connection between motor starter protector and contactor with screw terminals								
Single-unit packaging								
AC	S2	S2	▶	**3RA19 31-1AA00**		1	1 unit	41B
	S3	S3	▶	**3RA19 41-1AA00**		1	1 unit	41B
DC	S2	S2	▶	**3RA19 31-1BA00**		1	1 unit	41B
	S3	S3	▶	**3RA19 41-1BA00**		1	1 unit	41B
Multi-unit packaging								
AC	S2	S2	▶	**3RA19 31-1A**		1	5 units	41B
	S3	S3	▶	**3RA19 41-1A**		1	5 units	41B
DC	S2	S2	▶	**3RA19 31-1B**		1	5 units	41B
	S3	S3	▶	**3RA19 41-1B**		1	5 units	41B


3RA19 31-1AA00


3RA19 41-1AA00

Version	Size	Color	For motor starter protectors Size	DT	Spring-type terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Tools for opening spring-type terminals									
Screwdrivers For all SIRIUS devices with spring-type terminals	Length approx. 200 mm, 3.0 mm x 0.5 mm	Titanium gray/ black, partially insulated	S2, S3	A	**3RA29 08-1A**		1	1 unit	41B


3RA29 08-1A

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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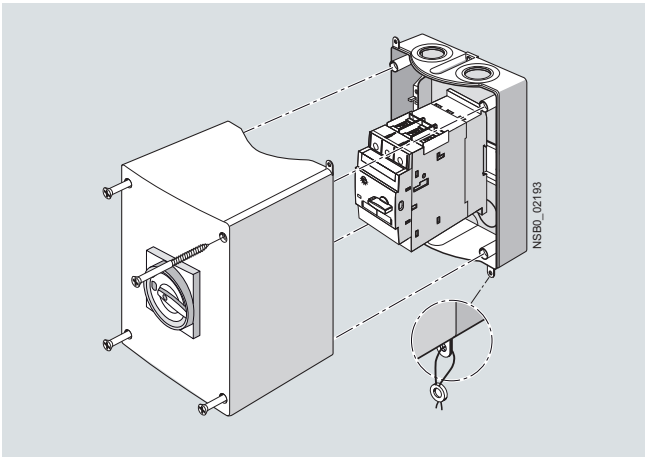
Overview

Enclosure

For stand-alone installation of motor starter protector size S2 ($I_{n\,max}$ = 50 A), molded-plastic enclosures for surface mounting are available.

When installed in a molded-plastic enclosures the motor starter protectors have a rated operational voltage U_e of 500 V.

The molded-plastic enclosures are designed to degree of protection IP55.



Enclosures for surface mounting

All enclosures are equipped with N and PE terminals. There are two knock-out cable entries for cable glands at the top and two at the bottom; also on the rear corresponding cable entries are scored. There is a knockout on the top of the enclosure for indicator lights that are available as accessories.

In the enclosure for motor starter protector size S2 there is also room for the laterally mounted auxiliary release. There is no provision for installing a motor starter protector with a signaling switch.

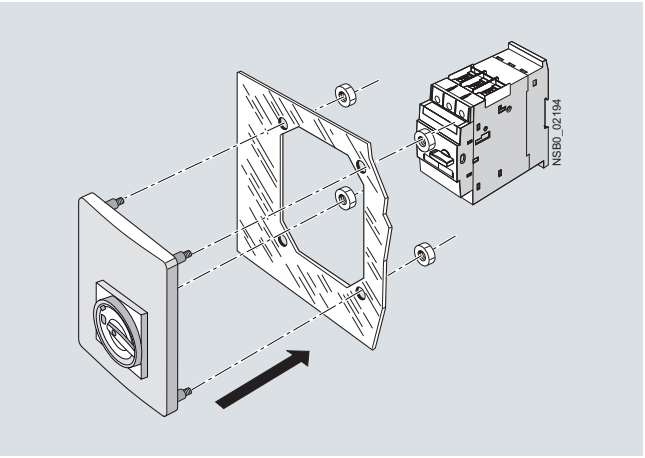
The molded-plastic enclosures of the size S2 motor starter protectors are fitted with a rotary operating mechanism.

The enclosures can be supplied with either a black rotary operating mechanism or with an EMERGENCY-STOP rotary operating mechanism with a red/yellow knob.

The rotary operating mechanisms can be locked in the Open position with up to 3 padlocks.

Front plates

Motor starter protectors are frequently required to be actuated in any enclosure. Front plates equipped with a rotary operating mechanism for motor starter protector sizes S2 and S3 are available for this purpose.



Front plate for size S2

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Selection and ordering data

Molded-plastic enclosures for surface mounting

	Version	Degree of protection	Integrated terminals	Width	For motor starter protectors	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
				mm	Size						
 3RV19 33-1DA00	**With rotary operating mechanism**, lockable in 0 position	IP55	N and PE/ground	82 (for switch + lateral auxiliary switch + auxiliary release)	S2	A	**3RV19 33-1DA00**		1	1 unit	41E
 3RV19 33-1GA00	**With EMERGENCY-STOP rotary operating mechanism,** lockable in 0 position	IP55	N and PE/ground	82 (for switch + lateral auxiliary switch + auxiliary release)	S2	A	**3RV19 33-1GA00**		1	1 unit	41E

Front plates

	Version	Degree of protection	For motor starter protectors	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
			Size						
 3RV19 23-4B	**Molded-plastic front plates with rotary operating mechanism,** lockable in 0 position For actuation of 3RV1 motor starter protectors in any enclosure	IP55 (front side)	S2, S3	▶	**3RV19 23-4B**		1	1 unit	41E
	Molded-plastic front plates with EMERGENCY-STOP rotary operating mechanism, red/yellow, lockable in 0 position EMERGENCY-STOP actuation of 3RV1 motor starter protectors in any enclosure	IP55 (front side)	S2, S3	A	**3RV19 23-4E**		1	1 unit	41E

Indicator lights

	Version	Rated control supply voltage U_s	For motor starter protectors	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		V	Size						
 3RV19 03-5B	**Indicator lights** For all enclosures and front plates With glow lamp and colored lenses red, green, yellow-orange and clear	110 ... 120 220 ... 240 380 ... 415 480 ... 500	S2	C C C C	**3RV19 03-5B** **3RV19 03-5C** **3RV19 03-5E** **3RV19 03-5G**		1 1 1 1	1 unit 1 unit 1 unit 1 unit	41E 41E 41E 41E

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



SIRIUS 3RV10 63-7AL10 molded case motor starter protector

The 3RV10 and 3RV13 molded case motor starter protectors for up to 800 A are compact, current-limiting motor starter protectors which can be used above all in motor feeders for special voltages of 440 V, 480 V, 550 V and 690 V. They are used for switching and protecting induction motors and other loads with rated currents up to 800 A.

Note:

For motor feeders above 100 A and at 400 V and 500 V, the 3VL molded case circuit breakers must be used, see Catalog LV 10.1.

Type of construction

The molded case motor starter protectors are available in 4 widths:

- 3RV13 53 - width 90 mm, max. rated current 32 A, at 550 V AC suitable for induction motors up to 22 kW
- 3RV1. 6. – width 105 mm, max. rated current 250 A, at 690 V AC suitable for induction motors up to 160 kW
- 3RV1. 7. – width 140 mm, max. rated current 630 A, at 690 V AC suitable for induction motors up to 315 kW
- 3RV1. 83 – width 210 mm, max. rated current 800 A, at 690 V AC suitable for induction motors up to 500 kW.

The 3RV1 molded case motor starter protectors for up to 800 A can be mounted in horizontal, vertical or lying arrangement directly on a mounting plate or mounting rail. Their rated data are adversely affected as the result.

The phase barriers for better insulation between the phases are included in the scope of supply.

The motor starter protectors can be supplied through top and bottom terminals without impairing their function, enabling them to be installed in any type of switchgear without any further steps.

Connection methods

SIRIUS 3RV1 motor starter protectors are available with screw terminals.

The 3RV1 molded case motor starter protectors for up to 800 A are suitable solely for screw connection. This is indicated in the corresponding tables by the symbols shown on orange backgrounds.

Order No. scheme

Digit of the Order No.	1st - 3rd	4th	5th	6th	7th	–	8th	9th	10th	11th	12th	–	13th	14th	15th	16th
	□□□	□	□	□	□		□	□	□	□	□		□	□	□	□
Molded case motor starter protectors	**3 R V**															
SIRIUS 1st generation		**1**														
Type of motor starter protector			□													
Size				□												
Breaking capacity					□											
Setting range for overload release							□	□								
Trip class (CLASS)									□							
Connection methods										□						
With or without auxiliary switch											□					
Special versions													□	□	□	□
Example	**3 R V**	**1**	**0**	**6**	**3**	**–**	**7**	**A**	**L**	**1**	**0**					

Note:

The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quoted in the catalog in the Selection and ordering data.

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General data

Benefits

- High short-circuit breaking capacity in the feeder
- Optimum usability in motor feeders for the special voltages 440 V, 480 V, 550 V and 690 V
- Compact design
- The releases are available both in purely magnetic (up to 32 A) and in solid-state versions (100 A to 800 A).
- Available for motor or starter protection (short-circuit protection alone)

Application

Operating conditions

The 3RV1 molded case motor starter protectors for up to 800 A can be operated at ambient temperatures between -25 °C and +70 °C. They can be used according to IEC 60721-2-1 in the most difficult environmental conditions with a hot and damp climate.

Since operational currents, starting currents and current peaks are different even for motors with identical power ratings due to the inrush current, the motor ratings in the selection tables are only guide values. The specific rated and start-up data of the motor to be protected is always paramount to the choice of the most suitable molded case motor starter protectors.

Possible uses

The 3RV1 molded case motor starter protectors for up to 800 A are suitable as switching and protection devices for motors. The following versions are available:

- For motor protection;
  the overload and short-circuit releases are designed for optimized protection and direct-on-line starting of induction squirrel-cage motors. The motor starter protectors have an electronic release which not only provides short-circuit and overload protection but is also sensitive to phase failure and phase unbalance and offers protection in the event of rotor blockage.
- For starter combinations;
  these molded case motor starter protectors are used for short-circuit protection in combinations of circuit breaker, motor contactor and overload relay. They are equipped with a purely magnetic release (up to 32 A) or a solid-state release (100 A to 800 A).

Standards and specifications

The electronic releases for motor protection comply with IEC 60947-4-1. Isolating features are also compliant with IEC 60947-2.

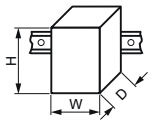
The 3RV1 molded case motor starter protectors comply in addition with IEC 60068-2-6 (shock and vibration strength) and are certified for the specifications of the most important marine classification societies:

- RINA
- Det Norske Veritas
- Bureau Veritas
- Lloyds Register of Shipping
- Germanischer Lloyd
- American Bureau of Shipping

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Technical specifications

General data

Type		3RV10 63	3RV10 73	3RV10 83	3RV13 53	3RV13 63	3RV13 64	3RV13 73	3RV13 74	3RV13 83
Dimensions										
• W	mm	105	140	210	90	105	105	140	140	210
• H	mm	205	205	268	130	205	205	205	205	268
• D	mm	139	139	159	102	139	139	139	139	159
Standard		IEC 60947-2, EN 60947-2								
Motor protection		✓			--					
Starter combinations		--			✓					
Rated current I_n	A	160	400	630	160	250		400, 630		630, 800
Number of poles		3								
Rated operational voltage U_e 50 ... 60 Hz AC	V	690								
Rated impulse withstand voltage U_{imp}	V	8								
Rated insulation voltage U_i	V	1 000			800	1 000				
Test voltage at industrial frequency for 1 min	V	3 500			3 000	3 500				
Rated ultimate short-circuit breaking capacity I_{cu}										
• At 220/230 V AC, 50 ... 60 Hz	kA	200			120	200				
• At 380/415 V AC, 50 ... 60 Hz	kA	120		100	85	120	200	120	200	100
• At 440 V AC, 50 ... 60 Hz	kA	100		80	75	100	180	100	180	80
• At 500 V AC, 50 ... 60 Hz	kA	85		65	50	85	150	85	150	65
• At 550 V AC, 50 ... 60 Hz	kA	--			35	--				
• At 690 V AC, 50 ... 60 Hz	kA	70		30	10	70	80	70	80	30
Rated service short-circuit breaking capacity I_{cs} (% of I_{cu})										
• At 220/230 V AC, 50 ... 60 Hz	%	100		75	100					75
• At 380/415 V AC, 50 ... 60 Hz	%	100		75		100				75
• At 440 V AC, 50 ... 60 Hz	%	100		75		100				75
• At 500 V AC, 50 ... 60 Hz	%	100		75		100		100[1]/ 75[2]	100	75
• At 690 V AC, 50 ... 60 Hz	%	100		75		100		100[1]/ 50[2]	100	75
Rated short-circuit making capacity (415 V)	kA	264		220	187	264	440	264	440	220
Break time (415 V at I_{cu})	ms	5	6	7	3	5		6		7
Category (EN 60947-2)		A	B (400 A), A (630 A)	B	A			B (400 A), A (630 A)		B
Isolating features		✓								
Trip class CLASS		10A, 10, 20, 30			--					
Releases										
• Magnetic type		--			✓	--				
• Electronic (motor protection)		✓			--[3]					
• Electronic (starter combinations)		--				✓				
Permissible ambient temperature										
• Operation	°C	-25 ... +70[4]								
• Storage	°C	-40 ... +70								
Mechanical endurance										
• Operating cycles		20 000			25 000	20 000				
• Operating cycles per hour		240	120		240			120		
Electrical endurance										
• Operating cycles		8 000	7 000	5 000	8 000			7 000		5 000
• Operating cycles per hour (415 V AC)		120	60		120			60		

✓ Has this function

-- Does not have this function

[1] Value applies for 3RV13 73-7GN10 molded case motor starter protectors.

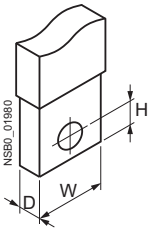
[2] Value applies for 3RV13 73-7JN10 molded case motor starter protectors.

[3] For overload protection of the motors, appropriate overload relays must be used.

[4] From 50 °C, please note derating, see "Reference Manual for Protection Equipment – Motor Starter Protectors · 3RV1 Molded Case Motor Starter Protectors".

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General data

Main circuit terminals						
Type		**3RV13 53**	**3RV1. 6.**	**3RV1. 7.**	**3RV10 83-7JL10, 3RV13 83-7JN10**	**3RV13 83-7KN10**
Terminal dimensions						
Front-accessible standard terminals						
Busbars/cable lug						
Number	Unit(s)	11			2	
Dimensions						
• W	mm	20	25	35	40	50
• D	mm	5	8	10	5	
• H	mm	7.5	9.5	11	12	
• Lock hasp diameter	mm	6.5	8.5	10.5	7	
Front-extended terminals						
Busbars						
Number	Unit(s)	1		2		
Dimensions						
• W	mm	20		30	40	50
• D	mm	4	10	7	5	5
• Lock hasp diameter	mm	8.5	10	11		14
Cable lug						
Number	Unit(s)	1		2		
Dimensions						
• W	mm	20		30	40	50
• Lock hasp diameter	mm	8.5	10	11		14
Front-extended cable terminals for copper cable						
Busbars, flexible						
Number	Unit(s)	1			--	
Dimensions W x D x N						
• W	mm	13	15.5	24	--	
• D	mm	0.5	0.8	1	--	
• N (= number of laminations)	mm	10			--	
Cable lug, flexible						
Number	Unit(s)	1 or 2			--	
Dimensions						
• For 1 unit	mm^2	1 ... 70	2.5 ... 120	16 ... 240	--	
• For 2 units	mm^2	1 ... 50	2.5 ... 95	16 ... 150	--	
Cable lug, rigid						
Number	Unit(s)	1		1 or 2	--	
Dimensions						
• For 1 unit	mm^2	1 ... 95	2.5 ... 185	16 ... 300	--	
• For 2 units (for outside mounting)	mm^2	--		120 ... 240	--	
Rear terminals						
Busbars						
Number	Unit(s)	1		2		
Dimensions						
• W	mm	20		30	40	50
• D	mm	4	10	7	5	
• Lock hasp diameter	mm	8.5		11	14	

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Auxiliary switches

Type		3RV19 91-1.A0
Rated operational current I_e		
• At 250 V AC/DC		
- At AC-14 (utilization category according to IEC 60947-5-1)		
Control supply voltage 125 V	A	6
Control supply voltage 250 V	A	5
- At DC-13 (utilization category according to IEC 60947-5-1)		
Control supply voltage 125 V	A	0.3
Control supply voltage 250 V	A	0.15
• At 24 V DC		
- Control supply voltage 24 V	mA	≥ 0.75
- Control supply voltage 5 V	mA	≥ 1

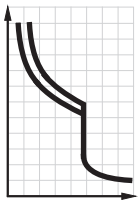
Auxiliary releases

		Power consumption during pick-up			
Molded case motor starter protectors		**3RV13 53**		**3RV1. 6., 3RV1. 7., 3RV1. 83**	
Version		AC	DC	AC	DC
Undervoltage releases		**3RV19 52-1A.0**		**3RV19 82-1A.0**	
• 24 ... 30 V AC/DC		1.5 VA	1.5 W	6 VA	150 W
• 110 ... 127 V AC/110 ... 125 V DC		2 VA	2 W	6 VA	150 W
• 220 ... 240 V AC/220 ... 250 V DC		2.5 VA	2.5 W	6 VA	150 W
Opening times	ms	15	15	≤ 25	≤ 15
Shunt releases		**3RV19 52-1E.0**		**3RV19 82-1E.0**	
• 24 ... 30 V AC/DC		50 VA	50 W	150 VA	150 W
• 110 ... 127 V AC/110 ... 125 V DC		50 VA	50 W	150 VA	150 W
• 220 ... 240 V AC/220 ... 250 V DC		50 VA	50 W	150 VA	150 W
Opening times	ms	15	15	15	15

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Selection and ordering data

CLASS 10A, 10, 20, 30; without auxiliary switch



Rated current	Current setting of the inverse-time delayed overload release "L"	Operating current of the instantaneous short-circuit releases "I"	Short-circuit breaking capacity at 400 V AC	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
I_n	I_R	I_i	I_{cu}		Order No. / Price per PU			
A	A	A	kA					
With electronic releases								
Standard switching capacity, adjustable short-circuit and overload release, TU 4								
100	40 ... 100	600 ... 1 300	120	D	**3RV10 63-7AL10**	1	1 unit	41E
160	64 ... 160	960 ... 2 080	120	D	**3RV10 63-7CL10**	1	1 unit	41E
200	80 ... 200	1 200 ... 2 600	120	D	**3RV10 63-7DL10**	1	1 unit	41E
400	160 ... 400	2 400 ... 5 200	120	D	**3RV10 73-7GL10**	1	1 unit	41E
630	252 ... 630	3 780 ... 8 190	100	D	**3RV10 83-7JL10**	1	1 unit	41E



3RV10 .3-7.L10

TU= trip unit (release)

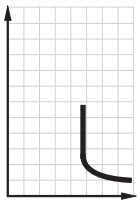
Further accessories can be ordered separately
(see "Mountable Accessories" on page 7/70).

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

Without auxiliary switches



Rated current	Inverse-time delayed overload release "L"	Operating current of the instantaneous short-circuit releases "I"	Short-circuit breaking capacity at 400 V AC	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
I_n	⊏	$I >$	I_{cu}		Order No. / Price per PU			
A	A	A	kA					
With magnetic releases								
			Standard switching capacity, non-adjustable short-circuit release, TU 1					
1	Without	13	85	D	**3RV13 53-6AP10**	1	1 unit	41E
1.6	Without	21	85	D	**3RV13 53-6BP10**	1	1 unit	41E
2	Without	26	85	D	**3RV13 53-6CP10**	1	1 unit	41E
3.2	Without	42	85	D	**3RV13 53-6DP10**	1	1 unit	41E
4	Without	52	85	D	**3RV13 53-6EP10**	1	1 unit	41E
5	Without	65	85	D	**3RV13 53-6FP10**	1	1 unit	41E
6.5	Without	85	85	D	**3RV13 53-6GP10**	1	1 unit	41E
8.5	Without	111	85	D	**3RV13 53-6HP10**	1	1 unit	41E
12.5	Without	163	85	D	**3RV13 53-6JP10**	1	1 unit	41E
			Standard switching capacity, adjustable short-circuit release, TU 2					
20	Without	120 ... 240	85	D	**3RV13 53-6LM10**	1	1 unit	41E
32	Without	192 ... 384	85	D	**3RV13 53-6MM10**	1	1 unit	41E



3RV13 53-6.P10

With electronic releases								
			Standard switching capacity, adjustable short-circuit release, TU 3					
100	Without	100 ... 1 000	120	D	**3RV13 63-7AN10**	1	1 unit	41E
160	Without	160 ... 1 600	120	D	**3RV13 63-7CN10**	1	1 unit	41E
250	Without	250 ... 2 500	120	D	**3RV13 63-7EN10**	1	1 unit	41E
400	Without	400 ... 4 000	120	D	**3RV13 73-7GN10**	1	1 unit	41E
630	Without	630 ... 6 300	120	D	**3RV13 73-7JN10**	1	1 unit	41E
630	Without	630 ... 6 300	100	D	**3RV13 83-7JN10**	1	1 unit	41E
800	Without	800 ... 8 000	100	D	**3RV13 83-7KN10**	1	1 unit	41E
			Increased switching capacity, adjustable short-circuit release, TU 3					
100	Without	100 ... 1 000	200	D	**3RV13 64-7AN10**	1	1 unit	41E
160	Without	160 ... 1 600	200	D	**3RV13 64-7CN10**	1	1 unit	41E
250	Without	250 ... 2 500	200	D	**3RV13 64-7EN10**	1	1 unit	41E
400	Without	400 ... 4 000	200	D	**3RV13 74-7GN10**	1	1 unit	41E



3RV13 ..-7.N10

TU= trip unit (release)

Further accessories can be ordered separately
(see "Mountable Accessories" on page 7/70).

More information

Configuration manual "Configuring SIRIUS"

More information see "Configuration Manual for Configuring SIRIUS – Selection Data for Load Feeders in Fuseless Designs", Order No. 3ZX1012-0RA21-0AB0

or on the Internet at

www.siemens.com/sirius/support ➞

"Manuals/Operating Instructions".

7

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

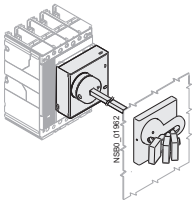
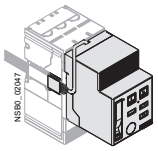
Type	Version	For molded case motor starter protectors	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Auxiliary switches								
 3RV19 91-1AA0								
Auxiliary switches for front mounting	1 signaling switch Off-On + 1 tripped signal (250 V AC/DC)	3RV13 53, 3RV1. 6. ... 3RV1. 83	D	**3RV19 91-1AA0**		1	1 unit	41E
	3 signaling switch Off-On + 1 tripped signal (250 V AC/DC)		D	**3RV19 91-1BA0**		1	1 unit	41E
	3 signaling switches Off-On + 1 tripped signal (24 V DC)		D	**3RV19 91-1CA0**		1	1 unit	41E
Connection cables for auxiliary switches	Length 2 m, 6-pole	3RV13 53, 3RV1. 6. ... 3RV1. 83	D	**3RV19 91-1FA0**		1	1 unit	41E

Type	Rated control supply voltage U_s AC 50/60 Hz V	DC V	For molded case motor starter protectors	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Auxiliary releases									
 3RV19 52-1AA0									
Undervoltage releases for front mounting	24 ... 30	24 ... 30	3RV13 53	D	**3RV19 52-1AA0**		1	1 unit	41E
	110 ... 127	110 ... 125		D	**3RV19 52-1AD0**		1	1 unit	41E
	220 ... 240	220 ... 250		D	**3RV19 52-1AE0**		1	1 unit	41E
	24 ... 30	24 ... 30	3RV1. 6. ... 3RV1. 83	D	**3RV19 82-1AA0**		1	1 unit	41E
	110 ... 127	110 ... 125		D	**3RV19 82-1AD0**		1	1 unit	41E
	220 ... 240	220 ... 250		D	**3RV19 82-1AF0**		1	1 unit	41E
 3RV19 52-1EA0									
Shunt releases for front mounting	24 ... 30	24 ... 30	3RV13 53	D	**3RV19 52-1EA0**		1	1 unit	41E
	110 ... 127	110 ... 125		D	**3RV19 52-1ED0**		1	1 unit	41E
	220 ... 240	220 ... 250		D	**3RV19 52-1EF0**		1	1 unit	41E
	24 ... 30	24 ... 30	3RV1. 6. ... 3RV1. 83	D	**3RV19 82-1EA0**		1	1 unit	41E
	110 ... 127	110 ... 125		D	**3RV19 82-1ED0**		1	1 unit	41E
	220 ... 240	220 ... 250		D	**3RV19 82-1EF0**		1	1 unit	41E
Connection cables for undervoltage and shunt releases	Length 2 m, 6-pole		3RV13 53, 3RV1. 6. ... 3RV1. 83	D	**3RV19 92-1FA0**		1	1 unit	41E

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

	Version		For molded case motor starter protectors	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Rotary operating mechanisms									
 3RV19 .6-0BA0	**Lever-type rotary operating mechanisms**	With adjustable distance, with lock/door interlocking (padlocks are not included in scope of supply)	3RV13 53	D	**3RV19 56-0BA0**		1	1 unit	41E
			3RV1. 6., 3RV1. 7.	D	**3RV19 76-0BA0**		1	1 unit	41E
			3RV1. 83	D	**3RV19 86-0BA0**		1	1 unit	41E
 3RV19 .6-3AP3	**Motorized operating mechanisms**	With stored energy mechanism, 220 ... 250 V AC/DC	3RV1. 6., 3RV1. 7.	D	**3RV19 76-3AP3**		1	1 unit	41E
			3RV1. 83	D	**3RV19 86-3AP3**		1	1 unit	41E
Connections									
 3RV19 75-1CA0	**Connections**	Front-extended (1 set = 6 units)	3RV13 53	D	**3RV19 55-1AA0**		1	1 unit	41E
			3RV1. 6.	D	**3RV19 65-1BA0**		1	1 unit	41E
			3RV1. 7.	D	**3RV19 75-1CA0**		1	1 unit	41E
			3RV1. 83-7J.10	D	**3RV19 85-1DA0**		1	1 unit	41E
			3RV1. 83-7KN10	D	**3RV19 85-1EA0**		1	1 unit	41E
 3RV19 55-3AA0		Rear (1 set = 3 units)	3RV13 53	D	**3RV19 55-3AA0**		1	1 unit	41E
			3RV1. 6.	D	**3RV19 65-3AA0**		1	1 unit	41E
			3RV1. 7.	D	**3RV19 75-3AA0**		1	1 unit	41E
			3RV1. 83	D	**3RV19 85-3AA0**		1	1 unit	41E
 3RV19 75-2AA0	**Cable terminals**	Front-extended (1 set = 6 units)	3RV13 53	D	**3RV19 55-2AA0**		1	1 unit	41E
			3RV1. 6.	D	**3RV19 65-2BA0**		1	1 unit	41E
			3RV1. 7.-7G.10	D	**3RV19 75-2CA0**		1	1 unit	41E
			3RV1. 73-7JN10	D	**3RV19 75-2DA0**		1	1 unit	41E

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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General data

Overview








Features	3RU21	3RU11	3RB30/3RB31	3RB20/3RB21	3RB22/3RB23	3RB24	Benefits
General data							
Sizes	S00, S0	S2, S3	S00, S0	S2 ... S12	S00 ... S12	S00 ... S12	• Are coordinated with the dimensions, connections and technical characteristics of the other devices in the SIRIUS modular system (contactors, etc., ...) • Permit the mounting of slim and compact load feeders in widths of 45 mm (S00), 45 mm (S0), 55 mm (S2), 70 mm (S3), 120 mm (S6) and 145 mm (S10/S12); this does not include the current measuring modules for the 3RB22 to 3RB24 evaluation modules sizes S00 to S3 • Simplify configuration
Seamless current range	0.11 ... 40 A	5.5 ... 100 A	0.1 ... 40 A	6 ... 630 A	0.3 ... 630 A (up to 820 A)[1]	0.3 ... 630 A (up to 820 A)[1]	• Allows easy and consistent configuration with one series of overload relays (for small to large loads)
Protection functions							
Tripping due to overload	✓	✓	✓	✓	✓	✓	• Provides optimum inverse-time delayed protection of loads against excessive temperature rises due to overload
Tripping due to phase unbalance	✓	✓	✓	✓	✓	✓	• Provides optimum inverse-time delayed protection of loads against excessive temperature rises due to phase unbalance
Tripping due to phase failure	✓	✓	✓	✓	✓	✓	• Minimizes heating of induction motors during phase failure
Protection of single-phase loads	✓	✓	--	--	✓	✓	• Enables the protection of single-phase loads
Tripping in the event of overheating by **integrated thermistor motor protection function**	--[2]	--[2]	--[2]	--[2]	✓	✓	• Provides optimum temperature-dependent protection of loads against excessive temperature rises e.g. for stator-critical motors or in the event of insufficient coolant flow, contamination of the motor surface or for long starting or braking operations • Eliminates the need for additional special equipment • Saves space in the control cabinet • Reduces wiring outlay and costs
Tripping in the event of a ground fault by **internal ground-fault detection (activatable)**	--	--	✓ (only 3RB31)	✓ (only 3RB21)	✓	✓	• Provides optimum protection of loads against high-resistance short circuits or ground faults due to moisture, condensed water, damage to the insulation material, etc. • Eliminates the need for additional special equipment • Saves space in the control cabinet • Reduces wiring outlay and costs

✓ Available
-- Not available

[1] Motor currents up to 820 A can be recorded and evaluated by a current measuring module, e.g. 3RB29 06-2BG1 (0.3 to 3 A), in combination with a 3UF18 68-3GA00 (820 A/1 A) series transformer.
3UF18 transformers see Chapter 10, "Monitoring and Control Devices" → "SIMOCODE 3UF Motor Management and Control Devices".

[2] The SIRIUS 3RN thermistor motor protection devices can be used to provide additional temperature-dependent protection.

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Features	3RU21	3RU11	3RB30/3RB31	3RB20/3RB21	3RB22/3RB23	3RB24	Benefits
Features							
RESET function	✓	✓	✓	✓	✓	✓	• Allows manual or automatic resetting of the device
Remote RESET function	✓ (by means of separate module)	✓ (by means of separate module)	✓ (only with 3RB31 and external auxiliary voltage 24 V DC)	✓ (only with 3RB21 and external auxiliary voltage 24 V DC)	✓ (electrically via external button)	✓ (electrically with button or via IO-Link)	• Allows the remote resetting of the device
TEST function for auxiliary contacts	✓	✓	✓	✓	✓	✓	• Allows easy checking of the function and wiring
TEST function for electronics	--	--	✓	✓	✓	✓	• Allows checking of the electronics
Status display	✓	✓	✓	✓	✓	✓	• Displays the current operating state
Large current adjustment button	✓	✓	✓	✓	✓	✓	• Makes it easier to set the relay exactly to the correct current value
Integrated auxiliary contacts (1 NO + 1 NC)	✓	✓	✓	✓	✓ (2 ×)	--	• Allows the load to be switched off if necessary • Can be used to output signals
Integrated auxiliary contacts (1 CO and 1 NO in series)	--	--	--	--	--	✓	• Enables the controlling of contactors directly from the higher-level control system through IO-Link
IO-Link connection	--	--	--	--	--	✓	• Reduction of wiring in the control cabinet • Enables communication
Connection of optional hand-held device	--	--	--	--	--	✓	• Enables local operation
Communication capability through IO-Link							
Full starter functionality through IO-Link	--	--	--	--	--	✓	• Enables in combination with the SIRIUS 3RT contactors the assembly of communication-capable motor starters (direct-on-line, reversing and wye-delta starting)
Reading out of diagnostics functions	--	--	--	--	--	✓	• Enables the reading out of diagnostics information such as overload, open circuit, ground fault, etc.
Reading out of current values	--	--	--	--	--	✓	• Enables the reading out of current values and their direct processing in the higher-level control system
Reading out all set parameters	--	--	--	--	--	✓	• Enables the reading out of all set parameters, e.g. for plant documentation

✓ Available

-- Not available

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General data








Features	3RU21	3RU11	3RB30/3RB31	3RB20/3RB21	3RB22/3RB23	3RB24	Benefits
Design of load feeders							
Short-circuit strength up to 100 kA at 690 V (in conjunction with the corresponding fuses or the corresponding motor starter protector)	✓	✓	✓	✓	✓	✓	• Provides optimum protection of the loads and operating personnel in the event of short circuits due to insulation faults or faulty switching operations
Electrical and mechanical matching to 3RT contactors	✓	✓	✓	✓	✓[1]	✓[1]	• Simplifies configuration • Reduces wiring outlay and costs • Enables stand-alone installation as well as space-saving direct mounting
Straight-through transformers for main circuit[2] (in this case the cables are routed through the feed-through openings of the overload relay and connected directly to the box terminals of the contactor)	--	--	--	✓ (S2 ... S6)	✓ (S00 ... S6)	✓ (S00 ... S6)	• Reduces the contact resistance (only one point of contact) • Saves wiring costs (easy, no need for tools, and fast) • Saves material costs • Reduces installation costs
Spring-type connection system for main circuit[2]	✓	--	✓	--	--	--	• Enables fast connections • Permits vibration-resistant connections • Enables maintenance-free connections
Spring-type connection system for auxiliary circuits[2]	✓	✓	✓	✓	✓	✓	• Enables fast connections • Permits vibration-resistant connections • Enables maintenance-free connections
Ring terminal lug connection method for main and auxiliary circuits[2]	✓	--	--	--	--	--	• Enables fast connections • Permits vibration-resistant connections • Enables maintenance-free connections
Full starter functionality through IO-Link	--	--	--	--	--	✓	• Enables in combination with the SIRIUS 3RT contactors the assembly of communication-capable motor starters (direct-on-line, reversing and wye-delta starting)
Starter function	--	--	--	--	--	✓	• Integration of feeders via IO-Link in the control system up to 630 A or 820 A

✓ Available
-- Not available

[1] Exception: up to size S3, only stand-alone installation is possible.
[2] Alternatively available for screw terminals.

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Features	3RU21	3RU11	3RB30/3RB31	3RB20/3RB21	3RB22/3RB23	3RB24	Benefits
Other features							
Temperature compensation	✓	✓	✓	✓	✓	✓	• Allows the use of the relays at high temperatures without derating • Prevents premature tripping • Allows compact installation of the control cabinet without distance between the devices/load feeders • Simplifies configuration • Enables space to be saved in the control cabinet
Very high long-term stability	✓	✓	✓	✓	✓	✓	• Provides safe protection for the loads even after years of use in severe operating conditions
Wide setting ranges	--	--	✓ (1:4)	✓ (1:4)	✓ (1:10)	✓ (1:10)	• Minimize the configuration outlay and costs • Minimize storage overheads, storage costs, tied-up capital
Fixed trip class	CLASS 10	CLASS 10	3RB30: CLASS 10 or CLASS 20	3RB20: CLASS 10 or CLASS 20	--	--	• Optimum motor protection for standard starts
Trip classes adjustable on the device CLASS 5, 10, 20, 30	--	--	3RB31: ✓	3RB21: ✓	✓	✓	• Enables solutions for very fast starting motors requiring special protection (e.g. Ex motors) • Enables heavy starting solutions • Reduces the number of versions • Minimizes the configuring outlay and costs • Minimizes storage overhead, storage costs, and tied-up capital
Low power loss	--	--	✓	✓	✓	✓	• Reduces energy consumption and energy costs (up 98 % less energy is used than for thermal overload relays). • Minimizes temperature rises of the contactor and control cabinet – in some cases this may eliminate the need for control-gear cabinet cooling. • Direct mounting to contactor saves space, even for high motor currents (i.e. no heat decoupling is required).
Internal power supply	--[1)]	--[1)]	✓	✓	--	--	• Eliminates the need for configuration and connecting an additional control circuit
Supplied from an external voltage through IO-Link	--	--	--	--	--	✓	• Eliminates the need for configuration and connecting an additional control circuit

✓ Available

-- Not available

[1)] SIRIUS 3RU11 and 3RU21 thermal overload relays use a bimetal contactor and therefore do not require a control supply voltage.

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General data








Features	3RU21	3RU11	3RB30/3RB31	3RB20/3RB21	3RB22/3RB23	3RB24	Benefits
Further characteristics (continued)							
Overload warning	--	--	--	--	✓	✓	• Indicates imminent tripping of the relay directly on the device due to overload, phase unbalance or phase failure through flickering of the LEDs or in the case of the 3RB24 as a signal through IO-Link • Allows the imminent tripping of the relay to be signaled • Allows measures to be taken in time in the event of inverse-time delayed overloading of the load for an extended period over the current limit • Eliminates the need for an additional device • Saves space in the control cabinet • Reduces wiring outlay and costs
Analog output	--	--	--	--	✓	✓	• Allows the output of an analog output signal for actuating moving-coil instruments, feeding programmable logic controllers or transfer to bus systems • Eliminates the need for an additional measuring transducer and signal converter • Saves space in the control cabinet • Reduces wiring outlay and costs

✓ Available
-- Not available

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Overview of overload relays – matching contactors

	Overload relays	Current measure-ment	Current range	**Contactors** (type, size, rating in kW)							
				3RT20 1.	**3RT20 2.**	**3RT10 3.**	**3RT10 4.**	**3RT10 5.**	**3RT10 6.**	**3RT10 7**	**3TF68/3TF69**
				S00	S0	S2	S3	S6	S10	S12	Size 14
	Type	Type	A	3/4/5.5/7.5	5.5/7.5/11/15/18.5	15/18.5/22	30/37/45	55/75/90	110/132/160	200/250	375/450
SIRIUS 3RU21 thermal overload relays											
 3RU21	3RU21 1	Integrated	0.11 … 16	✓	--	--	--	--	--	--	--
	3RU21 2	Integrated	1.8 … 40	--	✓	--	--	--	--	--	--
SIRIUS 3RU11 thermal overload relays											
 3RU11	3RU11 3	Integrated	5.5 … 50	--	--	✓	--	--	--	--	--
	3RU11 4	Integrated	18 … 100	--	--	--	✓	--	--	--	--
SIRIUS 3RB30 solid-state overload relays[1]											
 3RB30	3RB30 1	Integrated	0.1 … 16	✓	--	--	--	--	--	--	--
	3RB30 2	Integrated	0.1 … 40	--	✓	--	--	--	--	--	--
SIRIUS 3RB31 solid-state overload relays[1]											
 3RB31	3RB31 1	Integrated	0.1 … 16	✓	--	--	--	--	--	--	--
	3RB31 2	Integrated	0.1 … 40	--	✓	--	--	--	--	--	--
SIRIUS 3RB20 solid-state overload relays[1]											
 3RB20	3RB20 3	Integrated	6 … 50	--	--	✓	--	--	--	--	--
	3RB20 4	Integrated	12.5 … 100	--	--	--	✓	--	--	--	--
	3RB20 5	Integrated	50 … 200	--	--	--	--	✓	--	--	--
	3RB20 6	Integrated	55 … 630	--	--	--	--	--	✓	✓	✓
	3RB20 1 + 3UF18	Integrated	630 … 820	--	--	--	--	--	--	--	✓
SIRIUS 3RB21 solid-state overload relays[1]											
 3RB21	3RB21 3	Integrated	6 … 50	--	--	✓	--	--	--	--	--
	3RB21 4	Integrated	12.5 … 100	--	--	--	✓	--	--	--	--
	3RB21 5	Integrated	50 … 200	--	--	--	--	✓	--	--	--
	3RB21 6	Integrated	55 … 630	--	--	--	--	--	✓	✓	✓
	3RB21 1 + 3UF18	Integrated	630 … 820	--	--	--	--	--	--	--	✓

✓ Can be used

-- Cannot be used

[1] "Technical Specifications" for use of the overload relays with trip class ≥ CLASS 20 can be found in "Short-circuit protection with fuses for motor feeders",
see "System Manual for Industrial Controls – SIRIUS Innovations", order information under "Accessories" on page 7/88;
and in the configuration manuals
- "Configuring SIRIUS – Selection Data for Load Feeders in Fuseless Designs", Order No. 3ZX1012-0RA21-0AB0,
- "Configuring SIRIUS Innovations – Selection Data for Load Feeders in Fuseless and Fused Designs", Order No. 3ZX1012-0RA21-1AB0.

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General data

Overview of overload relays – matching contactors (continued)

Overload relays	Current measure-ment	Current range	**Contactors** (type, size, rating in kW) **3RT20 1**	**3RT20 2**	**3RT10 3**	**3RT10 4**	**3RT10 5**	**3RT10 6**	**3RT10 7**	**3TF68/3TF69**
			S00	S0	S2	S3	S6	S10	S12	Size 14
Type	Type	A	3/4/5.5/7.5	5.5/7.5/11	15/18.5/22	30/37/45	55/75/90	110/132/160	200/250	375/450
SIRIUS 3RB22 to 3RB24 solid-state overload relays[1]										
3RB22 83/ 3RB23 83/ 3RB24 83+	3RB29 0	0.3 … 25	✓	✓	--	--	--	--	--	--
	3RB29 0	10 … 100	--	✓	✓	✓	--	--	--	--
	3RB29 5	20 … 200	--	--	--	--	✓	--	--	--
	3RB29 6	63 … 630	--	--	--	--	--	✓	✓	✓
	3RB29 0 + 3UF18	630 … 820	--	--	--	--	--	--	--	✓



3RB22, 3RB23



3RB24

✓ Can be used

-- Cannot be used

[1] "Technical Specifications" for use of the overload relays with trip class ≥ CLASS 20 can be found in "Short-circuit protection with fuses for motor feeders",
see "System Manual for Industrial Controls – SIRIUS Innovations", order information under "Accessories" on page 7/88;
and in the configuration manuals
- "Configuring SIRIUS – Selection Data for Load Feeders in Fuseless Designs",
Order No. 3ZX1012-0RA21-0AB0,
- "Configuring SIRIUS Innovations – Selection Data for Load Feeders in Fuseless and Fused Designs", Order No. 3ZX1012-0RA21-1AB0.

Connection methods

Depending on the device version of the 3RU2 and 3RB3 overload relays, the terminals for screw terminals, spring-type terminals or ring terminal lug connection are configured for both the main and auxiliary circuit.

The 3RU11 thermal overload relays come with screw terminals.

The electronic overload relays 3RB20 and 3RB21 are available with screw terminals (box terminals) or spring-type terminals on the auxiliary current side; the same applies for the evaluation modules of the 3RB22 to 3RB24 electronic overload relays for High-Feature applications.

Screw terminals

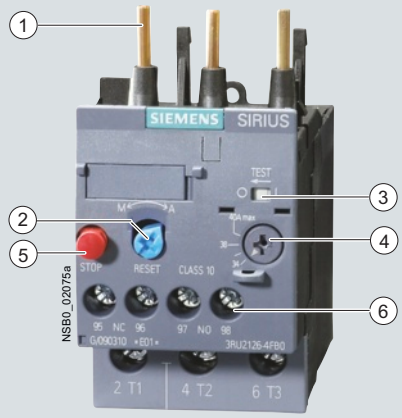
Spring-type terminals

Ring terminal lug connections

The terminals are indicated in the corresponding tables by the symbols shown on orange backgrounds.

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Overview



(1) Connection for mounting onto contactors:
Optimally adapted in electrical, mechanical and design terms to the contactors. The overload relay can be connected directly to the contactor using these pins. Stand-alone installation is possible as an alternative (in conjunction with a terminal bracket for stand-alone installation).

(2) Selector switch for manual/automatic RESET and RESET button:
With this switch you can choose between manual and automatic RESET. A device set to manual RESET can be reset locally by pressing the RESET button. A remote RESET is possible using the RESET modules (accessories), which are independent of size.

(3) Switch position indicator and TEST function of the wiring:
Indicates a trip and enables the wiring test.

(4) Motor current setting:
Setting the device to the rated motor current is easy with the large rotary knob.

(5) STOP button:
If the STOP button is pressed, the NC contact is opened. This switches off the contactor downstream. The NC contact is closed again when the button is released.

(6) Connecting terminals:
Depending on the device version, the connecting terminals for screw, spring-type or ring terminal lug connection are configured for the main and auxiliary circuit.

A sealable transparent cover can be optionally mounted (accessory). It secures the motor current setting against adjustment.

SIRIUS 3RU21 26-4FB00 thermal overload relays

The 3RU21 thermal overload relays up to 40 A have been designed for inverse-time delayed protection of loads with normal starting ("Function" see "System Manual for Industrial Controls – SIRIUS Innovations", ordering information under "Accessories" on page 7/88) against excessive temperature rises due to overload or phase failure.

An overload or phase failure results in an increase of the motor current beyond the set rated motor current. Via heating elements, this current rise heats up the bimetal strips inside the device which then bend and as a result trigger the auxiliary contacts by means of a tripping mechanism. The auxiliary contacts then switch off the load by means of a contactor. The break time depends on the ratio between the tripping current and current setting I_e and is stored in the form of a long-term stable tripping characteristic see www.siemens.com/sirius/support → "Characteristic Curves") .

The "tripped" status is signaled by means of a switch position indicator. Resetting takes place either manually or automatically after a recovery time has elapsed (for "Function" see "System Manual for Industrial Controls – SIRIUS Innovations", ordering information under "Accessories" on page 7/88).

The devices are manufactured in accordance with environmental guidelines and contain environmentally friendly and reusable materials.

They comply with all important worldwide standards and approvals.

For 3RU11 overload relays in sizes S2 and S3 see page 7/89 onwards.

"Increased safety" type of protection EEx e according to ATEX directive 94/9/EC

The 3RU21 thermal overload relays are suitable for the overload protection of explosion-proof motors with "increased safety" type of protection EEx e. The relays meet the requirements of EN 60079-7 (Electrical apparatus for areas subject to explosion hazards - Increased safety "e");
see www.siemens.com/sirius/atex.

EC type test certificate for Category (2) G/D exists. It has the number DMT 98 ATEX G001.

Order No. scheme

Digit of the Order No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th
	□□□	□	□	□	□	–	□	□	□	□
Thermal overload relays	**3 R U**									
SIRIUS 2nd generation		**2**								
Device series			□							
Size, rated operational current and power				□	□					
Setting range of the overload release							□	□		
Connection methods									□	
Installation type										□
Example	**3 R U**	**2**	**1**	**1**	**6**	**–**	**0**	**A**	**B**	**0**

Note:

The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quoted in the catalog in the Selection and ordering data.

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3RU2 up to 40 A for standard applications

Benefits

The most important features and benefits of the 3RU21 thermal overload relays are listed in the overview table (see "General Data", page 7/72 onwards).

Application

Industries

The 3RU21 thermal overload relays are suitable for customers from all industries who want to guarantee optimum inverse-time delayed protection of their electrical loads (e.g. motors) under normal starting conditions (CLASS 10).

Application

The 3RU21 thermal overload relays have been designed for the protection of three-phase and single-phase AC and DC motors.

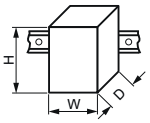
If single-phase AC or DC loads are to be protected by the 3RU21 thermal overload relays, all three bimetal strips must be heated. For this purpose, all main current paths of the relay must be connected in series.

Ambient conditions

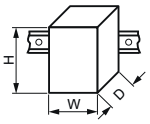
The 3RU21 thermal overload relays have temperature compensation in accordance with IEC 60947-4-1 for the temperature range of –40 to +60 °C. For temperatures from +60 to +80 °C the upper set value of the setting range must be reduced by a derating factor.

Ambient temperature	Derating factor for the upper set value Current ranges	
°C	0.11 ... 20 A	17 ... 40 A
+60	1.0	1.0
+65	0.94	0.97
+70	0.87	0.94
+75	0.81	0.90
+80	0.73	0.86

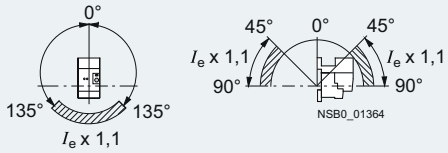
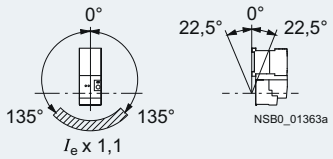
Technical specifications

Type			**3RU21 16**	**3RU21 26**
Size			S00	S0
Dimensions (W x H x D) (overload relay with stand-alone installation support)				
• Screw terminals		mm	45 x 89 x 79	45 x 97 x 95
• Spring-type terminals		mm	45 x 102 x 80	45 x 114 x 97
General data				
Trips in the event of			Overload and phase failure	
Trip class acc. to IEC 60947-4-1		CLASS	10	
Phase failure sensitivity			Yes	
Overload warning			No	
Reset and recovery				
• Reset options after tripping			Manual, Automatic and Remote RESET (Remote RESET in combination with the corresponding accessories)	
• Recovery time				
- For automatic RESET		min	Depends on the strength of the tripping current and characteristic	
- For manual RESET		min	Depends on the strength of the tripping current and characteristic	
- For remote RESET		min	Depends on the strength of the tripping current and characteristic	
Features				
• Display of operating state on device			Yes, by means of TEST function/switch position indicator slide	
• TEST function			Yes	
• RESET button			Yes	
• STOP button			Yes	
Safe operation of motors with "increased safety" type of protection EC type test certificate number according to directive 94/9/EC (ATEX)			DMT 98 ATEX G 001 Ⓔx II (2) GD, DMT 98 ATEX G 001 N1	
Ambient temperature				
• Storage/transport		°C	-55 ... +80	
• Operation		°C	-40 ... +70	
• Temperature compensation		°C	up to 60	
• Permissible rated current at				
- Temperature inside control cabinet 60 °C		%	100 (over +60 °C current reduction is not required)	
- Temperature inside control cabinet 70 °C		%	87	
Repeat terminals				
• Coil repeat terminals			Yes	Not required
• Auxiliary contact repeat terminal			Yes	Not required
Degree of protection acc. to IEC 60529			IP20	
Touch protection acc. to IEC 61140			Screw terminals and spring-type terminals: Finger-safe Ring terminal lug connection: Finger-safe only with optional terminal covers	
Shock resistance with sine acc. to IEC 60068-2-27		*g*/ms	15/11 (auxiliary contacts 95/96 and 97/98: 8 *g*/11 ms)	

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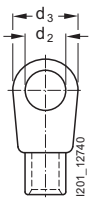
Type		**3RU21 16**	**3RU21 26**
Size		S00	S0
Dimensions (W x H x D) (overload relay with stand-alone installation support)			
• Screw terminals	mm	45 x 89 x 79	45 x 97 x 95
• Spring-type terminals	mm	45 x 102 x 80	45 x 114 x 97

General data (continued)

Electromagnetic compatibility (EMC) – Interference immunity		
• Conductor-related interference		
- Burst acc. to IEC 61000-4-4 (corresponds to degree of severity 3)	kV	EMC interference immunity is not relevant for thermal overload relays
- Surge acc. to IEC 61000-4-5 (corresponds to degree of severity 3)	kV	EMC interference immunity is not relevant for thermal overload relays
• Electrostatic discharge according to IEC 61000-4-2 (corresponds to degree of severity 3)	kV	EMC interference immunity is not relevant for thermal overload relays
• Field-related interference according to IEC 61000-4-3 (corresponds to degree of severity 3)	V/m	EMC interference immunity is not relevant for thermal overload relays
Electromagnetic compatibility (EMC) – emitted interference		EMC interference immunity is not relevant for thermal overload relays
Resistance to extreme climates – air humidity	%	90
Dimensions		"Dimensional drawings" see "System Manual for Industrial Controls – SIRIUS Innovations" , ordering information under "Accessories" on page 7/88.
Installation altitude above sea level	m	Up to 2 000; above this on request
Mounting position		The diagrams show the permissible mounting positions for mounting onto contactors and stand-alone installation. For mounting position in the hatched area, a setting correction of 10 % must be implemented. Stand-alone installation:  Contactor + overload relay: 
Type of mounting		Mounting onto contactor/stand-alone installation with terminal bracket (For screw and snap-on mounting on TH 35 standard mounting rail. Technical specifications of the terminal brackets see "System Manual for Industrial Controls – SIRIUS Innovations", ordering information under "Accessories" on page 7/88.)

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Type		3RU21 16	3RU21 26
Size		S00	S0
Main circuit			
Rated insulation voltage U_i (pollution degree 3)	V	690	
Rated impulse withstand voltage U_{imp}	kV	6	
Rated operational voltage U_e	V	690	
Type of current			
• Direct current		Yes	
• Alternating current		Yes, frequency range up to 400 Hz	
Current setting	A A	0.11 ... 0.16 up to 11 ... 16	1.8 ... 2.5 up to 34 ... 40
Power loss per unit (max.)	W	3.9 ... 6.6	3.9 ... 6
Short-circuit protection			
• With fuse without contactor		See "Selection and Ordering Data" on pages 7/85 and 7/86	
• With fuse and contactor		"Short-Circuit Protection with Fuses/Motor Starter Protectors for Motor Feeders" see "Configuration Manual for Configuring SIRIUS Innovations – Selection Data for Load Feeders in Fuseless and Fused Designs".	
Protective separation between main and auxiliary conducting path Acc. to IEC 60947-1			
• Screw terminals or ring terminal lug connections	V	440	690: Setting ranges ≤ 25 A
• Spring-type terminals	V	440	440: Setting ranges > 25 A
Conductor cross-sections of main circuit			
Connection type		**Screw terminals**	
Terminal screw		M3, Pozidriv size 2	M4, Pozidriv size 2
Operating devices	mm	⌀ 5 ... 6	⌀ 5 ... 6
Prescribed tightening torque	Nm	0.8 ... 1.2	2 ... 2.5
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected			
• Solid	mm^2	2 x (0.5 ... 1.5)[1)] 2 x (0.75 ... 2.5)[1)], 2 x (0.5 ... 4)[1)]	2 x (1 ... 2.5)[1)] 2 x (2.5 ... 10)[1)]
• Finely stranded with end sleeves (DIN 46228 T1)	mm^2	2 x (0.5 ... 1.5)[1)] 2 x (0.75 ... 2.5)[1)]	2 x (1 ... 2.5)[1)]; 2 x (2.5 ... 6)[1)]; max. 1 x 10
• AWG cables, solid or stranded	AWG	2 x (20 ... 16)[1)], 2 x (18 ... 14)[1)], 2 x 12	2 x (16 ... 12)[1)], 2 x (14 ... 8)[1)]
Connection type		**Spring-type terminals**	
Operating devices	mm	3.0 x 0.5 and 3.5 x 0.5	
Conductor cross-sections (min./max.)			
• Solid	mm^2	1 x (0.5 ... 4)	1 x (1 ... 10)
• Finely stranded without end sleeve	mm^2	1 x (0.5 ... 2.5)	1 x (1 ... 6)
• Finely stranded with end sleeves (DIN 46228 T1)	mm^2	1 x (0.5 ... 2.5)	1 x (1 ... 6)
• AWG cables, solid or stranded	AWG	1 x (20 ... 12)	1 x (18 ... 8)
Connection type		**Ring terminal lug connections**	
Terminal screw		M3, Pozidriv size 2	M4, Pozidriv size 2
Operating devices	mm	⌀ 5 ... 6	⌀ 5 ... 6
Prescribed tightening torque	Nm	0.8 ... 1.2	2 ... 2.5
Usable ring terminal lugs	mm	d_2 = min. 3.2, d_3 = max. 7.5	d_2 = min. 4.3, d_3 = max. 12.2
• DIN 46234 without insulation sleeve			
• DIN 46225 without insulation sleeve			
• DIN 46237 with insulation sleeve			
• JIS C2805 Type R without insulation sleeve			
• JIS C2805 Type RAV with insulation sleeve			
• JIS C2805 Type RAP with insulation sleeve			



1) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in the range specified.

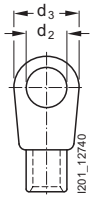
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Type		3RU21 16	3RU21 26
Size		S00	S0
Auxiliary circuit			
Number of NO contacts		1	
Number of NC contacts		1	
Auxiliary contacts – assignment		1 NO for the signal "tripped"; 1 NC for disconnecting the contactor	
Rated insulation voltage U_i (pollution degree 3)	V	690	
Rated impulse withstand voltage U_{imp}	kV	6	
Contact rating of the auxiliary contacts			
• NC contact with alternating current AC-14/AC-15, rated operational current I_e at U_e:			
- 24 V	A	4	
- 120 V	A	4	
- 125 V	A	4	
- 230 V	A	3	
- 400 V	A	2	
- 600 V	A	0.75	
- 690 V	A	0.75	
• NO contact with alternating current AC-14/AC-15, rated operational current I_e at U_e:			
- 24 V	A	3	
- 120 V	A	3	
- 125 V	A	3	
- 230 V	A	2	
- 400 V	A	1	
- 600 V	A	0.75	
- 690 V	A	0.75	
• NC contact, NO contact with direct current DC-13, rated operational current I_e at U_e:			
- 24 V	A	1	
- 60 V	A	On request	
- 110 V	A	0.22	
- 125 V	A	0.22	
- 220 V	A	0.11	
• Conventional thermal current I_{th}	A	6	
• Contact reliability (suitability for PLC control; 17 V, 5 mA)		Yes	
Short-circuit protection			
• With fuse			
- operational class gG	A	6	
- Quick	A	10	
• With miniature circuit breaker (C characteristic)	A	6[1)]	
Protective separation between auxiliary conducting paths acc. to IEC 60947-1	V	440	
CSA, UL, UR rated data			
Auxiliary circuit – switching capacity		B600. R300	

1) Up to $I_k \leq 0.5$ kA; $U \leq 260$ V.

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Type		3RU21 16	3RU21 26
Size		S00	S0
Conductor cross-sections for auxiliary circuit			
Connection type		**Screw terminals**	
Terminal screw		M3, Pozidriv size 2	
Operating devices	mm	⌀ 5 ... 6	
Prescribed tightening torque	Nm	0.8 ... 1.2	
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected			
• Solid	mm^2	2 x (0.5 ... 1.5)[1], 2 x (0.75 ... 2.5)[1]	
• Finely stranded with end sleeves (DIN 46228 T1)	mm^2	2 x (0.5 ... 1.5)[1], 2 x (0.75 ... 2.5)[1]	
• AWG cables, solid or stranded	AWG	2 x (20 ... 16)[1], 2 x (18 ... 14)[1]	
Connection type		**Spring-type terminals**	
Operating devices	mm	3.0 x 0.5 and 3.5 x 0.5	
Conductor cross-sections (min./max.)			
• Solid	mm^2	2 x (0.5 ... 2.5)	
• Finely stranded without end sleeve	mm^2	2 x (0.5 ... 1.5)	
• Finely stranded with end sleeves (DIN 46228 T1)	mm^2	2 x (0.5 ... 1.5)	
• AWG cables, solid or stranded	AWG	2 x (20 ... 14)	
Connection type		**Ring terminal lug connections**	
Terminal screw		M3, Pozidriv size 2	
Operating devices	mm	⌀ 5 ... 6	
Prescribed tightening torque	Nm	0.8 ... 1.2	
Usable ring terminal lugs	mm	d_2 = min. 3.2, d_3 = max. 7.5	
• DIN 46234 without insulation sleeve			
• DIN 46225 without insulation sleeve			
• DIN 46237 with insulation sleeve			
• JIS C2805 Type R without insulation sleeve			
• JIS C2805 Type RAV with insulation sleeve			
• JIS C2805 Type RAP with insulation sleeve			



[1] If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in the range specified.

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Selection and ordering data

3RU21 thermal overload relays for mounting onto contactor[1], CLASS 10

Features and technical specifications:

- Screw terminals, spring-type terminals or ring terminal lug connections[2]
- Overload and phase failure protection
- Auxiliary contacts 1 NO + 1 NC
- Manual and automatic RESET
- Switch position indicator
- TEST function
- STOP button
- Sealable covers (optional accessory)
- Terminal covers for devices with ring terminal lug connection (optional accessory)

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41F


3RU21 16-4AB0


3RU21 16-4AC0


3RU21 26-4FB0


3RU21 26-4AC0

Size contactor[3]	Rating for induction motor[4]	Current setting of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", operational class gG[5]	DT	Screw terminals Order No.	Price per PU	DT	Spring-type terminals Order No.	Price per PU
	kW	A	A						
Size S00									
S00	0.04	0.11 ... 0.16	0.5	▶	**3RU21 16-0AB0**		B	**3RU21 16-0AC0**	
	0.06	0.14 ... 0.2	1	▶	**3RU21 16-0BB0**		B	**3RU21 16-0BC0**	
	0.06	0.18 ... 0.25	1	▶	**3RU21 16-0CB0**		B	**3RU21 16-0CC0**	
	0.09	0.22 ... 0.32	1.6	▶	**3RU21 16-0DB0**		B	**3RU21 16-0DC0**	
	0.09	0.28 ... 0.4	2	▶	**3RU21 16-0EB0**		B	**3RU21 16-0EC0**	
	0.12	0.35 ... 0.5	2	▶	**3RU21 16-0FB0**		B	**3RU21 16-0FC0**	
	0.18	0.45 ... 0.63	2	▶	**3RU21 16-0GB0**		B	**3RU21 16-0GC0**	
	0.18	0.55 ... 0.8	4	▶	**3RU21 16-0HB0**		B	**3RU21 16-0HC0**	
	0.25	0.7 ... 1	4	▶	**3RU21 16-0JB0**		B	**3RU21 16-0JC0**	
	0.37	0.9 ... 1.25	4	▶	**3RU21 16-0KB0**		B	**3RU21 16-0KC0**	
	0.55	1.1 ... 1.6	6	▶	**3RU21 16-1AB0**		B	**3RU21 16-1AC0**	
	0.75	1.4 ... 2	6	▶	**3RU21 16-1BB0**		B	**3RU21 16-1BC0**	
	0.75	1.8 ... 2.5	10	▶	**3RU21 16-1CB0**		B	**3RU21 16-1CC0**	
	1.1	2.2 ... 3.2	10	▶	**3RU21 16-1DB0**		B	**3RU21 16-1DC0**	
	1.5	2.8 ... 4	16	▶	**3RU21 16-1EB0**		B	**3RU21 16-1EC0**	
	1.5	3.5 ... 5	20	▶	**3RU21 16-1FB0**		B	**3RU21 16-1FC0**	
	2.2	4.5 ... 6.3	20	▶	**3RU21 16-1GB0**		B	**3RU21 16-1GC0**	
	3	5.5 ... 8	25	▶	**3RU21 16-1HB0**		B	**3RU21 16-1HC0**	
	4	7 ... 10	35	▶	**3RU21 16-1JB0**		B	**3RU21 16-1JC0**	
	5.5	9 ... 12.5	35	▶	**3RU21 16-1KB0**		B	**3RU21 16-1KC0**	
	7.5	11 ... 16	40	▶	**3RU21 16-4AB0**		B	**3RU21 16-4AC0**	
Size S0									
S0	0.75	1.8 ... 2.5	10	▶	**3RU21 26-1CB0**		B	**3RU21 26-1CC0**	
	1.1	2.2 ... 3.2	10	▶	**3RU21 26-1DB0**		B	**3RU21 26-1DC0**	
	1.5	2.8 ... 4	16	▶	**3RU21 26-1EB0**		B	**3RU21 26-1EC0**	
	1.5	3.5 ... 5	20	▶	**3RU21 26-1FB0**		B	**3RU21 26-1FC0**	
	2.2	4.5 ... 6.3	20	▶	**3RU21 26-1GB0**		B	**3RU21 26-1GC0**	
	3	5.5 ... 8	25	▶	**3RU21 26-1HB0**		B	**3RU21 26-1HC0**	
	4	7 ... 10	35	▶	**3RU21 26-1JB0**		B	**3RU21 26-1JC0**	
	5.5	9 ... 12.5	35	▶	**3RU21 26-1KB0**		B	**3RU21 26-1KC0**	
	7.5	11 ... 16	40	▶	**3RU21 26-4AB0**		▶	**3RU21 26-4AC0**	
	7.5	14 ... 20	50	▶	**3RU21 26-4BB0**		▶	**3RU21 26-4BC0**	
	11	17 ... 22	63	▶	**3RU21 26-4CB0**		▶	**3RU21 26-4CC0**	
	11	20 ... 25	63	▶	**3RU21 26-4DB0**		▶	**3RU21 26-4DC0**	
	15	23 ... 28	63	▶	**3RU21 26-4NB0**		▶	**3RU21 26-4NC0**	
	15	27 ... 32	80	▶	**3RU21 26-4EB0**		▶	**3RU21 26-4EC0**	
	18.5	30 ... 36	80	▶	**3RU21 26-4PB0**		▶	**3RU21 26-4PC0**	
	18.5	34 ... 40	80	▶	**3RU21 26-4FB0**		▶	**3RU21 26-4FC0**	

1) For matching terminal brackets, see "Accessories" on page 7/87.

2) The 3RU21 overload relays are also available with ring terminal lug connection. The Order No. must be changed in the 10th position to **"J"**: e.g. 3RU21 16-0A**J**0.

3) Observe maximum rated operational current of the devices.

4) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

5) Maximum protection by fuse for overload relay, type of coordination "2". "Fuse Values in Connection with Contactors" see "Configuration Manual for Configuring SIRIUS Innovations – Selection Data for Load Feeders in Fuseless and Fused Designs".

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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3RU2 up to 40 A for standard applications

3RU21 thermal overload relays for stand-alone installation[1], CLASS 10

Features and technical specifications:

- Screw or spring-type terminals
- Auxiliary contacts 1 NO + 1 NC
- Manual and automatic RESET
- Switch position indicator
- TEST function
- STOP button
- Sealable covers (optional accessory)

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41F


3RU21 16-4AB1


3RU21 16-4AC1


3RU21 26-4FB1


3RU21 26-4FC1

Size contactor[2]	Rating for induction motor[3]	Current setting of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", operational class gG[4]	DT	**Screw terminals**	DT	**Spring-type terminals**
					Order No.		Order No.
	kW	A	A				
Size S00							
S00	0.04	0.11 ... 0.16	0.5	B	**3RU21 16-0AB1**	B	**3RU21 16-0AC1**
	0.06	0.14 ... 0.2	1	B	**3RU21 16-0BB1**	B	**3RU21 16-0BC1**
	0.06	0.18 ... 0.25	1	B	**3RU21 16-0CB1**	B	**3RU21 16-0CC1**
	0.09	0.22 ... 0.32	1.6	B	**3RU21 16-0DB1**	B	**3RU21 16-0DC1**
	0.09	0.28 ... 0.4	2	B	**3RU21 16-0EB1**	B	**3RU21 16-0EC1**
	0.12	0.35 ... 0.5	2	B	**3RU21 16-0FB1**	B	**3RU21 16-0FC1**
	0.18	0.45 ... 0.63	2	B	**3RU21 16-0GB1**	B	**3RU21 16-0GC1**
	0.18	0.55 ... 0.8	4	B	**3RU21 16-0HB1**	B	**3RU21 16-0HC1**
	0.25	0.7 ... 1	4	B	**3RU21 16-0JB1**	B	**3RU21 16-0JC1**
	0.37	0.9 ... 1.25	4	B	**3RU21 16-0KB1**	B	**3RU21 16-0KC1**
	0.55	1.1 ... 1.6	6	B	**3RU21 16-1AB1**	B	**3RU21 16-1AC1**
	0.75	1.4 ... 2	6	B	**3RU21 16-1BB1**	B	**3RU21 16-1BC1**
	0.75	1.8 ... 2.5	10	B	**3RU21 16-1CB1**	B	**3RU21 16-1CC1**
	1.1	2.2 ... 3.2	10	B	**3RU21 16-1DB1**	B	**3RU21 16-1DC1**
	1.5	2.8 ... 4	16	B	**3RU21 16-1EB1**	B	**3RU21 16-1EC1**
	1.5	3.5 ... 5	20	B	**3RU21 16-1FB1**	B	**3RU21 16-1FC1**
	2.2	4.5 ... 6.3	20	B	**3RU21 16-1GB1**	B	**3RU21 16-1GC1**
	3	5.5 ... 8	25	B	**3RU21 16-1HB1**	B	**3RU21 16-1HC1**
	4	7 ... 10	35	B	**3RU21 16-1JB1**	B	**3RU21 16-1JC1**
	5.5	9 ... 12.5	35	B	**3RU21 16-1KB1**	B	**3RU21 16-1KC1**
	7.5	11 ... 16	40	B	**3RU21 16-4AB1**	B	**3RU21 16-4AC1**
Size S0							
S0	7.5	14 ... 20	50	B	**3RU21 26-4BB1**	B	**3RU21 26-4BC1**
	11	17 ... 22	63	B	**3RU21 26-4CB1**	B	**3RU21 26-4CC1**
	11	20 ... 25	63	B	**3RU21 26-4DB1**	B	**3RU21 26-4DC1**
	15	23 ... 28	63	B	**3RU21 26-4NB1**	B	**3RU21 26-4NC1**
	15	27 ... 32	80	B	**3RU21 26-4EB1**	B	**3RU21 26-4EC1**
	18.5	30 ... 36	80	B	**3RU21 26-4PB1**	B	**3RU21 26-4PC1**
	18.5	34 ... 40	80	B	**3RU21 26-4FB1**	B	**3RU21 26-4FC1**

1) Screw and snap-on mounting onto TH 35 standard mounting rail.

2) Observe maximum rated operational current of the devices.

3) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

4) Maximum protection by fuse for overload relay, type of coordination "2". For fuse values in connection with contactors see "Configuration Manual for Configuring SIRIUS Innovations – Selection Data for Load Feeders in Fuseless and Fused Designs".

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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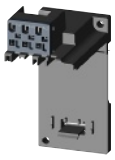
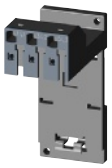
Overview

Overload relays for standard applications

The following optional accessories are available for the 3RU21 thermal overload relays:

- Terminal bracket for stand-alone installation with screw or spring-type terminals for every size
- Mechanical RESET (for all sizes)
- Cable release for resetting devices which are difficult to access (for all sizes)
- Electrical remote RESET module in three voltage versions (for all sizes)
- Sealable cover (for all sizes)
- Terminal covers for devices with ring terminal lug connection

Selection and ordering data

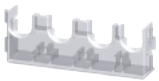
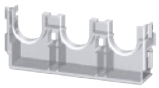
Version	Size	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Terminal brackets for stand-alone installation							
 3RU29 16-3AA01  3RU29 26-3AA01	**Terminal brackets for overload relays with screw terminals**		**Screw terminals**				
	For separate mounting of the overload relays; screw and snap-on mounting onto TH 35 standard mounting rail	S00 ▶	**3RU29 16-3AA01**		1	1 unit	41F
		S0 ▶	**3RU29 26-3AA01**		1	1 unit	41F
 3RU29 16-3AC01  3RU29 26-3AC01	**Terminal brackets for overload relays with spring-type terminal**		**Spring-type terminals**				
	For separate mounting of the overload relays; screw and snap-on mounting onto TH 35 standard mounting rail	S00 B	**3RU29 16-3AC01**		1	1 unit	41F
		S0 B	**3RU29 26-3AC01**		1	1 unit	41F
Mechanical RESET							
 3RU29 00-1A with pushbutton and extension plunger	**Resetting plungers, holders and formers**	S00, S0 ▶	**3RU29 00-1A**		1	1 unit	41F
	Pushbuttons with extended stroke (12 mm), IP65, ⌀ 22 mm	S00, S0 B	**3SB30 00-0EA11**		1	1 unit	41J
	Extension plungers For compensation of the distance between the pushbutton and the unlatching button of the relay	S00, S0 A	**3SX1 335**		1	1 unit	41J
Cable releases with holder for RESET							
 3RU29 00-1.	For ⌀ 6.5 mm holes in the control panel; max. control panel thickness 8 mm						
	• Length 400 mm	S00, S0 ▶	**3RU29 00-1B**		1	1 unit	41F
	• Length 600 mm	S00, S0 ▶	**3RU29 00-1C**		1	1 unit	41F

7

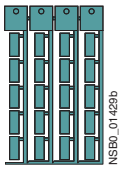
* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Accessories

	Version	Size	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Modules for remote RESET, electrical								
 3RU19 00-2A.71	Operating range 0.85 ... 1.1 × U_s, power consumption AC 80 VA, DC 70 W, ON period 0.2 ... 4 s, switching frequency 60/h							
	• 24 ... 30 V AC/DC	S00, S0	▶	**3RU19 00-2AB71**		1	1 unit	41F
	• 110 ... 127 V AC/DC	S00, S0	▶	**3RU19 00-2AF71**		1	1 unit	41F
	• 220 ... 250 V AC/DC	S00, S0	▶	**3RU19 00-2AM71**		1	1 unit	41F
Sealable covers								
 3RV29 08-0P	For covering the setting knobs	S00, S0	▶	**3RV29 08-0P**		100	10 units	41E
Terminal covers								
 3RU29 16-3BJ21	**Covers for devices with ring terminal lug connection** (ensure finger-safety)			**Ring terminal lug connection**				
	• Main current level							
 3RU29 26-3BJ21	- Cover between contactor and overload relay for direct mounting of the overload relay	S00 S0	C C	**3RU29 16-3BJ21** **3RU29 26-3BJ21**		1 1	10 units 10 units	41F 41F
	- Cover for overload relay on load side	S00 S0	C B	**3RU29 16-3BJ20** **3RV29 28-4AA00**		1 1	10 units 1 unit	41F 41E
 3RU29 16-3BJ20	• Auxiliary current level	S00, S0	B	**3RT29 16-4EA13**		1	10 units	41B
 3RV29 28-4AA00								
 3RT29 16-4EA13								

General accessories

	Version	Size	Color	For overload relays	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Tools for opening spring-type terminals										
						Spring-type terminals				
 3RA29 08-1A	**Screwdrivers** For all SIRIUS devices with spring-type terminals	Length approx. 200 mm, 3.0 mm x 0.5 mm	Titanium gray/black, partially insulated	Main and aux. circuit connection: 3RU2	A	**3RA29 08-1A**		1	1 unit	41B
Blank labels										
 3RT19 00-1SB20	**Unit labeling plates**[1] for SIRIUS devices	20 mm x 7 mm	Titanium gray	3RU2	D	**3RT29 00-1SB20**		100	340 units	41B
		20 mm x 7 mm	Pastel turquoise	3RU2	D	**3RT19 00-1SB20**		100	340 units	41B
System manuals										
	System manuals: Industrial Controls – SIRIUS Innovations									
	• German			S00, S0	C	**3ZX1012-0RA01-1AB1**		1	1 unit	401
	• English			S00, S0	C	**3ZX1012-0RA01-1AC1**		1	1 unit	401
	• French			S00, S0	C	**3ZX1012-0RA01-1AD1**		1	1 unit	401
	• Spanish			S00, S0	C	**3ZX1012-0RA01-1AE1**		1	1 unit	401

[1] PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH (see Chapter 16, "Appendix" → "External Partners").

* You can order this quantity or a multiple thereof.
Illustrations are approximate

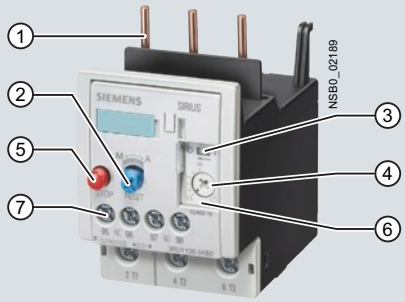
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Overview

Note:

The 3RU11 devices (sizes S00/S0 to S3) can be found

- in the Catalog Add-On IC 10 AO · 2012 in the CD/DVD box
- in the Catalog Add-On IC 10 AO · 2012 at the Information and Download Center
- in the interactive catalog CA 01
- in the Industry Mall



(1) Connection for mounting onto contactors:
Optimally adapted in electrical, mechanical and design terms to the contactors. These connecting pins can be used for direct mounting of the overload relay to the contactor. Stand-alone installation is possible as an alternative (partly in conjunction with a terminal bracket for stand-alone installation).

(2) Selector switch for manual/automatic RESET and RESET button:
With this switch you can choose between manual and automatic RESET. A device set to manual RESET can be reset locally by pressing the RESET button. A remote RESET is possible using the RESET modules (accessories), which are independent of size.

(3) Switch position indicator and TEST function of the wiring:
Indicates a trip and enables the wiring test.

(4) Motor current setting:
Setting the device to the rated motor current is easy with the large rotary knob.

(5) STOP button:
If the STOP button is pressed, the NC contact is opened. This switches off the contactor downstream. The NC contact is closed again when the button is released.

(6) Transparent, sealable cover:
Secures the motor current setting and the TEST function against adjustment.

(7) Connecting terminals:
The generously sized terminals permit connection of two conductors with different cross-sections for main and auxiliary circuits. The auxiliary circuit can be connected with screw terminals and alternatively with spring-type terminals.

SIRIUS 3RU11 36-1HB0 thermal overload relay

The 3RU11 thermal overload relays up to 100 A have been designed for inverse-time delayed protection of loads with normal starting ("Function" see Reference Manual for Protection Equipment – 3RU1, 3RB2 Overload Relays) against excessive temperature rises due to overload or phase failure.

An overload or phase failure results in an increase of the motor current beyond the set rated motor current. Via heating elements, this current rise heats up the bimetal strips inside the device which then bend and as a result trigger the auxiliary contacts by means of a tripping mechanism. The auxiliary contacts then switch off the load by means of a contactor. The break time depends on the ratio between the tripping current and current setting I_e and is stored in the form of a long-term stable tripping characteristic see www.siemens.com/sirius/support → "Characteristic Curves").

The "tripped" status is signaled by means of a switch position indicator. Resetting takes place either manually or automatically after a recovery time has elapsed ("Function" see "Reference Manual for Protection Equipment – 3RU1, 3RB2 Overload Relays").

The devices are manufactured in accordance with environmental guidelines and contain environmentally friendly and reusable materials.

They comply with all important worldwide standards and approvals.

3RU21 overload relays in sizes S00 and S0 see page 7/79 onwards.

"Increased safety" type of protection EEx e according to ATEX directive 94/9/EC

The 3RU11 thermal overload relays are suitable for the overload protection of explosion-proof motors with "increased safety" type of protection EEx e. The relays meet the requirements of EN 60079-7 (Electrical apparatus for areas subject to explosion hazards - Increased safety "e");
see www.siemens.com/sirius/atex.

EC type test certificate for Category (2) G/D exists. It has the number DMT 98 ATEX G 001.

Order No. scheme

Digit of the Order No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th
	□□□	□	□	□	□	–	□	□	□	□
Thermal overload relays	**3 R U**									
SIRIUS 1st generation		**1**								
Device series			□							
Size, rated operational current and power				□	□					
Setting range of the overload release							□	□		
Connection methods									□	
Installation type										□
Example	**3 R U**	**1**	**1**	**3**	**6**	**–**	**1**	**H**	**B**	**0**

Note:

The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quoted in the catalog in the Selection and ordering data.

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3RU11 up to 100 A for standard applications

Benefits

The most important features and benefits of the 3RU11 thermal overload relays are listed in the overview table (see "General Data", page 7/72 onwards).

Application

Industries

The 3RU11 thermal overload relays are suitable for customers from all industries who want to guarantee optimum inverse-time delayed protection of their electrical loads (e.g. motors) under normal starting conditions (CLASS 10).

Application

The 3RU11 thermal overload relays have been designed for the protection of three-phase and single-phase AC and DC motors.

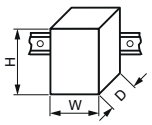
If single-phase AC or DC loads are to be protected by the 3RU11 thermal overload relays, all three bimetal strips must be heated. For this purpose, all main current paths of the relay must be connected in series.

Ambient conditions

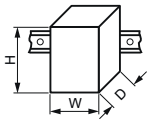
The 3RU11 thermal overload relays have temperature compensation in accordance with IEC 60947-4-1 for the temperature range of –20 to +60 °C. For temperatures from +60 to +80 °C the upper set value of the setting range must be reduced by the factor listed in the table below.

Ambient temperature in °C	Derating factor for the upper set value
+60	1.0
+65	0.94
+70	0.87
+75	0.81
+80	0.73

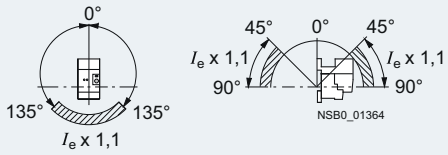
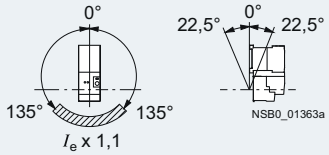
Technical specifications

Type			3RU11 36	3RU11 46
Size			S2	S3
Dimensions (W x H x D) (overload relay with stand-alone installation support)		mm	55 x 105 x 118	70 x 120 x 140
General data				
Trips in the event of			Overload and phase failure	
Trip class acc. to IEC 60947-4-1		CLASS	10	
Phase failure sensitivity			Yes	
Overload warning			No	
Reset and recovery				
• Reset options after tripping			Manual, Automatic and Remote RESET (Remote RESET in combination with the corresponding accessories)	
• Recovery time				
- For automatic RESET		min	Depends on the strength of the tripping current and characteristic	
- For manual RESET		min	Depends on the strength of the tripping current and characteristic	
- For remote RESET		min	Depends on the strength of the tripping current and characteristic	
Features				
• Display of operating state on device			Yes, by means of TEST function/switch position indicator slide	
• TEST function			Yes	
• RESET button			Yes	
• STOP button			Yes	
Safe operation of motors with "increased safety" type of protection				
EC type test certificate number according to directive 94/9/EC (ATEX)			DMT 98 ATEX G 001 Ex II (2) GD, DMT 98 ATEX G 001 N1	
Ambient temperature				
• Storage/transport		°C	-55 ... +80	
• Operation		°C	-20 ... +70	
• Temperature compensation		°C	up to 60	
• Permissible rated current at				
- Temperature inside control cabinet 60 °C		%	100 (over +60 °C current reduction is not required)	
- Temperature inside control cabinet 70 °C		%	87	
Repeat terminals				
• Coil repeat terminals			Not required	
• Auxiliary contact repeat terminal			Not required	
Degree of protection acc. to IEC 60529			IP20 (terminal compartment: IP00 degree of protection)	
Touch protection acc. to IEC 61140			Finger-safe	
Shock resistance with sine acc. to IEC 60068-2-27		*g*/ms	8/10	

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Type		**3RU11 36**	**3RU11 46**
Size		S2	S3
Dimensions (W x H x D) (overload relay with stand-alone installation support)	 mm	55 x 105 x 118	70 x 120 x 140

General data (continued)

Electromagnetic compatibility (EMC) – Interference immunity		
• Conductor-related interference		
- Burst acc. to IEC 61000-4-4 (corresponds to degree of severity 3)	kV	EMC interference immunity is not relevant for thermal overload relays
- Surge acc. to IEC 61000-4-5 (corresponds to degree of severity 3)	kV	EMC interference immunity is not relevant for thermal overload relays
• Electrostatic discharge according to IEC 61000-4-2 (corresponds to degree of severity 3)	kV	EMC interference immunity is not relevant for thermal overload relays
• Field-related interference according to IEC 61000-4-3 (corresponds to degree of severity 3)	V/m	EMC interference immunity is not relevant for thermal overload relays
Electromagnetic compatibility (EMC) – emitted interference		EMC interference immunity is not relevant for thermal overload relays
Resistance to extreme climates – air humidity	%	100
Dimensions		"Dimensional drawings" see "Reference Manual for Protection Equipment – 3RU1, 3RB2 Overload Relays".
Installation altitude above sea level	m	Up to 2 000; above this on request
Mounting position		The diagrams show the permissible mounting positions for mounting onto contactors and stand-alone installation. For mounting position in the hatched area, a setting correction of 10 % must be implemented. Stand-alone installation:  Contactor + overload relay: 
Type of mounting		Direct mounting/stand-alone installation with terminal bracket (For screw and snap-on mounting on TH 35 standard mounting rail; size S3 also for TH 75 standard mounting rail. For technical specifications of the terminal brackets see "Reference Manual for Protection Equipment – 3RU1, 3RB2 Overload Relays".)

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3RU11 up to 100 A for standard applications

Type		3RU11 36	3RU11 46
Size		S2	S3
Main circuit			
Rated insulation voltage U_i (pollution degree 3)	V	690	1 000
Rated impulse withstand voltage U_{imp}	kV	6	8
Rated operational voltage U_e	V	690	1 000
Type of current			
• Direct current		Yes	
• Alternating current		Yes, frequency range up to 400 Hz	
Current setting	A	5.5 ... 8 up to 40 ... 50	18 ... 25 up to 80 ... 100
Power loss per unit (max.)	W	6 ... 9	10 ... 16.5
Short-circuit protection			
• With fuse without contactor		See "Selection and Ordering Data" on pages 7/94 to 7/96	
• With fuse and contactor		See "Technical Specifications" → "Short-circuit protection with fuses/motor starter protectors for motor feeders" in "Reference Manual for Protection Equipment – 3RU1, 3RB2 Overload Relays".	
Protective separation between main and auxiliary conducting path Acc. to IEC 60947-1	V	500	690
Conductor cross-section of the main circuit			
Connection type		**Screw terminals with box terminal**	
Terminal screw		M6, Pozidriv size 2	M8, 4 mm Allen screw
Operating devices	mm	⌀ 5 ... 6	4 mm Allen screw
Prescribed tightening torque	Nm	3 ... 4.5	4 ... 6
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected			
• Solid	mm^2	2 x (0.75 ... 16)	2 x (2.5 ... 16)
• Finely stranded with end sleeve	mm^2	2 x (0.75 ... 16), 1 x (0.75 ... 25)	2 x (2.5 ... 35), 1 x (2.5 ... 50)
• Stranded	mm^2	2 x (0.75 ... 25) , 1 x (0.75 ... 35)	2 x (10 ... 50), 1 x (10 ... 70)
• AWG cables, solid or stranded	AWG	2 x (18 ... 3), 1 x (18 ... 1)	2 x (10 ... 1/0), 1 x (10 ... 2/0)
• Ribbon cable conductors (Number x Width x Thickness)	mm	2 x (6 x 9 x 0.8)	2 x (6 x 9 x 0.8)
Connection type		**Busbar connection**[1]	
Terminal screw		--	M6 x 20
Prescribed tightening torque	Nm	--	4 ... 6
Conductor cross-sections (min./max.)			
• Finely stranded with cable lug	mm^2	--	2 x 70
• Stranded with cable lug	mm^2	--	3 x 70
• AWG cables, solid or stranded, with cable lug	AWG	--	2/0
• With connecting bar (max. width)	mm	--	12

[1] The box terminal is removable. Rail and cable lug connections are possible if the box terminal is removed.

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Type		3RU11 36	3RU11 46
Size		S2	S3
Auxiliary circuit			
Number of NO contacts		1	
Number of NC contacts		1	
Auxiliary contacts – assignment		1 NO for the signal "tripped"; 1 NC for disconnecting the contactor	
Rated insulation voltage U_i (pollution degree 3)	V	690	
Rated impulse withstand voltage U_{imp}	kV	6	
contact rating of the auxiliary contacts			
• NC contact with alternating current AC-14/AC-15, rated operational current I_e at U_e:			
- 24 V	A	4	
- 120 V	A	4	
- 125 V	A	4	
- 230 V	A	3	
- 400 V	A	2	
- 600 V	A	0.6	
- 690 V	A	0.5	
• NO contact with alternating current AC-14/AC-15, rated operational current I_e at U_e:			
- 24 V	A	3	
- 120 V	A	3	
- 125 V	A	3	
- 230 V	A	2	
- 400 V	A	1	
- 600 V	A	0.6	
- 690 V	A	0.5	
• NC contact, NO contact with direct current DC-13, rated operational current I_e at U_e:			
- 24 V	A	1	
- 60 V	A	On request	
- 110 V	A	0.22	
- 125 V	A	0.22	
- 220 V	A	0.11	
• Conventional thermal current I_{th}	A	6 (up to $I_k \leq 0.5$ kA; ≤ 260 V)	
• Contact reliability (suitability for PLC control; 17 V, 5 mA)		Yes	
Short-circuit protection			
• With fuse			
- operational class gG	A	6	
- Quick	A	10	
• With miniature circuit breaker (C characteristic)	A	6	
Protective separation between auxiliary conducting paths acc. to IEC 60947-1	V	440	
CSA, UL, UR rated data			
Auxiliary circuit – switching capacity		B600, R300	
Conductor cross-sections of the auxiliary circuit			
Connection type		**Screw terminals**	
Terminal screw		M3, Pozidriv size 2	
Operating devices	mm	⌀ 5 ... 6	
Prescribed tightening torque	Nm	0.8 ... 1.2	
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected			
• Solid	mm^2	2 x (0.5 ... 1.5)[1], 2 x (0.75 ... 2.5)[1]	
• Finely stranded without end sleeve	mm^2	--	
• Finely stranded with end sleeve	mm^2	2 x (0.5 ... 1.5)[1], 2 x (0.75 ... 2.5)[1]	
• Stranded	mm^2	2 x (0.5 ... 1.5)[1], 2 x (0.75 ... 2.5)[1]	
• AWG cables, solid or stranded	AWG	2 x (18 ... 14)	

[1] If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in the range specified.

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Selection and ordering data

3RU11 thermal overload relays with screw terminals on the auxiliary current side for mounting onto contactor[1], CLASS 10

Features and technical specifications:

- Overload and phase failure protection
- Auxiliary contacts 1 NO + 1 NC
- Manual and automatic RESET
- Switch position indicator
- TEST function
- STOP button
- Integrated, sealable cover

	Size contactor[2]	Rating for induction motor[3]	Current setting of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", operational class gG[4]	DT	**Screw terminals** (on auxiliary current side) Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		kW	A	A						
Size S2										
 3RU11 36-..B0	S2	3	5.5 ... 8	25	▶	**3RU11 36-1HB0**		1	1 unit	41F
		4	7 ... 10	35	▶	**3RU11 36-1JB0**		1	1 unit	41F
		5.5	9 ... 12.5	35	▶	**3RU11 36-1KB0**		1	1 unit	41F
		7.5	11 ... 16	40	▶	**3RU11 36-4AB0**		1	1 unit	41F
		7.5	14 ... 20	50	▶	**3RU11 36-4BB0**		1	1 unit	41F
		11	18 ... 25	63	▶	**3RU11 36-4DB0**		1	1 unit	41F
		15	22 ... 32	80	▶	**3RU11 36-4EB0**		1	1 unit	41F
		18.5	28 ... 40	80	▶	**3RU11 36-4FB0**		1	1 unit	41F
		22	36 ... 45	100	▶	**3RU11 36-4GB0**		1	1 unit	41F
		22	40 ... 50	100	▶	**3RU11 36-4HB0**		1	1 unit	41F
Size S3										
 3RU11 46-..B0	S3	11	18 ... 25	63	▶	**3RU11 46-4DB0**		1	1 unit	41F
		15	22 ... 32	80	▶	**3RU11 46-4EB0**		1	1 unit	41F
		18.5	28 ... 40	80	▶	**3RU11 46-4FB0**		1	1 unit	41F
		22	36 ... 50	125	▶	**3RU11 46-4HB0**		1	1 unit	41F
		30	45 ... 63	125	▶	**3RU11 46-4JB0**		1	1 unit	41F
		37	57 ... 75	160	▶	**3RU11 46-4KB0**		1	1 unit	41F
		45	70 ... 90	160	▶	**3RU11 46-4LB0**		1	1 unit	41F
		45	80 ... 100[5]	200	▶	**3RU11 46-4MB0**		1	1 unit	41F

1) With the suitable terminal brackets (see "Accessories" on page 7/97), the 3RU11 overload relays for mounting onto contactor can also be installed as stand-alone units.

2) Observe maximum rated operational current of the devices.

3) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

4) Maximum protection by fuse for overload relay, type of coordination "2". Fuse values in connection with contactors see "Technical Specifications" → "Short-circuit protection with fuses/motor starter protectors for motor feeders" in "Reference Manual for Protection Equipment – 3RU1, 3RB2 Overload Relays".

5) For overload relays > 100 A see 3RB2 solid-state overload relays on page 7/115 onwards.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3RU11 thermal overload relays with screw terminals on the auxiliary current side for stand-alone installation[1], CLASS 10

Features and technical specifications:

- Overload and phase failure protection
- Auxiliary contacts 1 NO + 1 NC
- Manual and automatic RESET
- Switch position indicator
- TEST function
- STOP button
- Integrated, sealable cover

	Size contactor[2]	Rating for induction motor[3]	Current setting of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", operational class gG[4]	DT	**Screw terminals** (on auxiliary current side)	PU (UNIT, SET, M)	PS*	PG
						Order No. / Price per PU			
		kW	A	A					
Size S2									
 3RU11 36-4EB1	S2	15	22 ... 32	80	▶	**3RU11 36-4EB1**	1	1 unit	41F
		18.5	28 ... 40	80	▶	**3RU11 36-4FB1**	1	1 unit	41F
		22	36 ... 45	100	▶	**3RU11 36-4GB1**	1	1 unit	41F
		22	40 ... 50	100	▶	**3RU11 36-4HB1**	1	1 unit	41F
Size S3									
 3RU11 46-4JB1	S3	30	45 ... 63	125	▶	**3RU11 46-4JB1**	1	1 unit	41F
		37	57 ... 75	160	▶	**3RU11 46-4KB1**	1	1 unit	41F
		45	70 ... 90	160	▶	**3RU11 46-4LB1**	1	1 unit	41F
		45	80 ... 100[5]	200	▶	**3RU11 46-4MB1**	1	1 unit	41F

[1] Sizes S2 and S3 for screw and snap-on mounting onto TH 35 standard mounting rails, size S3 also for TH 75 standard mounting rails.

[2] Observe maximum rated operational current of the devices.

[3] Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

[4] Maximum protection by fuse for overload relay, type of coordination "2". Fuse values in connection with contactors see "Technical Specifications" → "Short-circuit protection with fuses/motor starter protectors for motor feeders" in "Reference Manual for Protection Equipment – 3RU1, 3RB2 Overload Relays".

[5] For overload relays > 100 A see 3RB2 solid-state overload relays on page 7/115 onwards.

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3RU11 up to 100 A for standard applications

3RU11 thermal overload relays with spring-type terminals for mounting onto contactor[1], CLASS 10

Features and technical specifications:

- Overload and phase failure protection
- Auxiliary contacts 1 NO + 1 NC
- Manual and automatic RESET
- Switch position indicator
- TEST function
- STOP button
- Integrated, sealable cover

	Size contactor[2]	Rating for induction motor[3]	Current setting of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", operational class gG[4]	DT	**Spring-type terminals** (on auxiliary current side) Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		kW	A	A						
Size S2[1][5]										
 3RU11 36-..D0	S2	3	5.5 ... 8	25	B	**3RU11 36-1HD0**		1	1 unit	41F
		4	7 ... 10	35	B	**3RU11 36-1JD0**		1	1 unit	41F
		5.5	9 ... 12.5	35	B	**3RU11 36-1KD0**		1	1 unit	41F
		7.5	11 ... 16	40	B	**3RU11 36-4AD0**		1	1 unit	41F
		7.5	14 ... 20	50	B	**3RU11 36-4BD0**		1	1 unit	41F
		11	18 ... 25	63	B	**3RU11 36-4DD0**		1	1 unit	41F
		15	22 ... 32	80	▶	**3RU11 36-4ED0**		1	1 unit	41F
		18.5	28 ... 40	80	▶	**3RU11 36-4FD0**		1	1 unit	41F
		22	36 ... 45	100	▶	**3RU11 36-4GD0**		1	1 unit	41F
		22	40 ... 50	100	▶	**3RU11 36-4HD0**		1	1 unit	41F
Size S3[1][5]										
 3RU11 46-..D0	S3	11	18 ... 25	63	B	**3RU11 46-4DD0**		1	1 unit	41F
		15	22 ... 32	80	B	**3RU11 46-4ED0**		1	1 unit	41F
		18.5	28 ... 40	80	B	**3RU11 46-4FD0**		1	1 unit	41F
		22	36 ... 50	125	B	**3RU11 46-4HD0**		1	1 unit	41F
		30	45 ... 63	125	▶	**3RU11 46-4JD0**		1	1 unit	41F
		37	57 ... 75	160	▶	**3RU11 46-4KD0**		1	1 unit	41F
		45	70 ... 90	160	▶	**3RU11 46-4LD0**		1	1 unit	41F
		45	80 ... 100	200	▶	**3RU11 46-4MD0**		1	1 unit	41F

1) With the suitable terminal brackets (see "Accessories" on page 7/97), the 3RU11 overload relays for mounting onto contactor can also be installed as stand-alone units.

2) Observe maximum rated operational current of the devices.

3) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

4) Maximum protection by fuse for overload relay, type of coordination "2". Fuse values in connection with contactors see "Technical Specifications" → "Short-circuit protection with fuses/motor starter protectors for motor feeders" in "Reference Manual for Protection Equipment – 3RU1, 3RB2 Overload Relays".

5) Auxiliary conductor connections with spring-type terminals and main conductor connections with screw terminals.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Overload relays for standard applications

The following optional accessories are available for the 3RU11 thermal overload relays:

- Terminal bracket for stand-alone installation of overload relay sizes S2 and S3
- Mechanical RESET (for all sizes)
- Cable release for resetting devices which are difficult to access (for all sizes)
- Electrical remote RESET module in three voltage version (for all sizes)
- Terminal covers

Technical specifications

Terminal brackets for stand-alone installation

Type		**3RU19 36-3AA01**	**3RU19 46-3AA01**
For overload relays		**3RU11 36**	**3RU11 46**
Mounting type		For screw and snap-on mounting onto TH 35 standard mounting rails, size S2 also for TH 75 standard mounting rails	
Connection for main circuit			
Connection type		**Screw terminals with box terminal**	
Terminal screw		M6, Pozidriv size 2	4 mm Allen screw
Operating devices	mm	⌀ 5 ... 6	4 mm Allen screw
Prescribed tightening torque	Nm	3 ... 4.5	4 ... 6
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected			
• Solid	mm^2	2 x (0.75 ... 16)	2 x (2.5 ... 16)
• Finely stranded without end sleeve	mm^2	--	--
• Finely stranded with end sleeve	mm^2	2 x (0.75 ... 16), 1 x (0.75 ... 25)	2 x (2.5 ... 35), 1 x (2.5 ... 50)
• Stranded	mm^2	2 x (0.75 ... 25), 1 x (0.75 ... 35)	2 x (10 ... 50), 1 x (10 ... 70)
• AWG cables, solid or stranded	AWG	2 x (18 ... 3), 1 x (18 ... 1)	2 x (10 ... 1/0), 1 x (10 ... 2/0)
• Ribbon cable conductors (Number x Width x Thickness)	mm	2 x (6 x 9 x 0.8)	2 x (6 x 9 x 0.8)

Selection and ordering data

Version	Size	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Terminal brackets for stand-alone installation							
 3RU19 .6-3AA01							
For separate mounting of overload relays; screw and snap-on mounting onto TH 35 standard mounting rail; size S3 also for TH 75 standard mounting rail	S2	▶	**3RU19 36-3AA01**		1	1 unit	41F
	S3	▶	**3RU19 46-3AA01**		1	1 unit	41F
Mechanical RESET							
 3RU19 00-1A with pushbutton and extension plunger							
Resetting plungers, holders and formers	S2, S3	▶	**3RU19 00-1A**		1	1 unit	41F
Pushbuttons with extended stroke (12 mm), IP65, ⌀ 22 mm	S2, S3	B	**3SB30 00-0EA11**		1	1 unit	41J
Extension plungers For compensation of the distance between the pushbutton and the unlatching button of the relay	S2, S3	A	**3SX1 335**		1	1 unit	41J

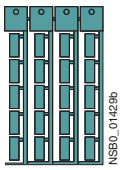
*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Accessories

	Version	Size	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Cable releases with holder for RESET								
 3RU19 00-1.	For ⌀ 6.5 mm holes in the control panel; max. control panel thickness 8 mm	S2, S3						
	• Length 400 mm		▶	**3RU19 00-1B**		1	1 unit	41F
	• Length 600 mm		▶	**3RU19 00-1C**		1	1 unit	41F
Modules for remote RESET, electrical								
 3RU19 00-2A.71	Operating range 0.85 ... 1.1 × U_s, power consumption AC 80 VA, DC 70 W, ON period 0.2 ... 4 s, switching frequency 60/h							
	• 24 ... 30 V AC/DC	S2, S3	▶	**3RU19 00-2AB71**		1	1 unit	41F
	• 110 ... 127 V AC/DC	S2, S3	▶	**3RU19 00-2AF71**		1	1 unit	41F
	• 220 ... 250 V AC/DC	S2, S3	▶	**3RU19 00-2AM71**		1	1 unit	41F
Terminal covers								
	Covers for cable lugs and busbar connections							
	• Length 55 mm	S3	▶	**3RT19 46-4EA1**		1	1 unit	41B
	Covers for box terminals							
	• Length 20.6 mm	S2	▶	**3RT19 36-4EA2**		1	1 unit	41B
	• Length 20.8 mm	S3	▶	**3RT19 46-4EA2**		1	1 unit	41B

General accessories

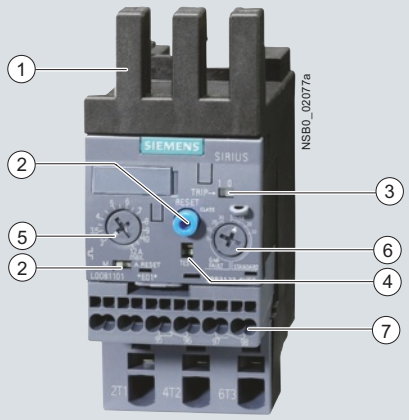
	Version	Size	Color	For overload relays	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Tools for opening spring-type terminals										
 8WA2 803						**Spring-type terminals**				
	Screwdrivers For all SIRIUS devices with spring-type terminals	Length approx. 200 mm, 3.0 mm x 0.5 mm	Titanium gray/ black, partially insulated	Main and auxiliary circuit connection: 3RU1	A	**3RA29 08-1A**		1	1 unit	41B
Blank labels										
 3RT19 00-1SB20	**Unit labeling plates**[1] for SIRIUS devices	20 mm x 7 mm	Pastel turquoise	3RU1	D	**3RT19 00-1SB20**		100	340 units	41B
	Inscription labels for sticking[1] for SIRIUS devices	19 mm x 6 mm	Pastel turquoise	3RU1	C	**3RT19 00-1SB60**		100	3 060 units	41B
		19 mm x 6 mm	Zinc yellow		C	**3RT19 00-1SD60**		100	3 060 units	41B

[1] PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH (see Chapter 16, "Appendix" → "External Partners").

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



1. Connection for mounting onto contactors:
Optimally adapted in electrical, mechanical and design terms to the contactors 3RT2. The overload relay can be connected directly using these connection pins. Stand-alone installation is possible as an alternative (in conjunction with a terminal bracket for stand-alone installation).
2. Selector switch for manual/automatic RESET and RESET button:
With the slide switch you can choose between manual and automatic RESET. A device set to manual RESET can be reset locally by pressing the RESET button. On 3RB31 an electrical remote RESET is integrated.
3. Switch position indicator and TEST function of the wiring:
Indicates a trip and enables the wiring test.
4. Solid-state test (device test):
Enables a test of all important device components and functions.
5. Motor current setting:
Setting the device to the rated motor current is easy with the large rotary knob.
6. Trip class setting/internal ground-fault detection (only 3RB31):
Using the rotary switch you can set the required trip class and activate the internal ground-fault detection dependent on the start-up conditions.
7. Connecting terminals (removable joint block for auxiliary circuits):
Depending on the device version, the terminals for screw and spring-type connection are configured for the main and auxiliary circuit.

A sealable transparent cover can be optionally mounted (accessory). It secures the motor current setting against adjustment.

SIRIUS 3RB31 23-4VE00 solid-state overload relay

The 3RB30 and 3RB31 solid-state overload relays up to 40 A with internal power supply have been designed for inverse-time delayed protection of loads with normal and heavy starting ("Function" see " System Manual for Industrial Controls– SIRIUS Innovations", ordering information under "Accessories" on page 7/108) against excessive temperature rises due to overload, phase unbalance or phase failure. An overload, phase unbalance or phase failure result in an increase of the motor current beyond the set rated motor current. This current rise is detected by the current transformers integrated into the devices and evaluated by corresponding solid-state circuits which then output a pulse to the auxiliary contacts. The auxiliary contacts then switch off the load by means of a contactor. The break time depends on the ratio between the tripping current and current setting I_e and is stored in the form of a long-term stable tripping characteristic (see www.siemens.com/sirius/support ➞ "Characteristic Curves").

In addition to inverse-time delayed protection of loads against excessive temperature rises due to overload, phase unbalance and phase failure, the 3RB31 solid-state overload relays also allow internal ground-fault detection (not possible in conjunction with contactor assemblies for wye-delta starting). This provides protection of loads against high-resistance short circuits due to damage to the insulation material, moisture, condensed water etc.

The "tripped" status is signaled by means of a switch position indicator. Resetting takes place either manually or automatically after the recovery time has elapsed ("Function" see "System Manual for Industrial Controls – SIRIUS Innovations", ordering information under "Accessories" on page 7/108).

The devices are manufactured in accordance with environmental guidelines and contain environmentally friendly and reusable materials. They comply with all important worldwide standards and approvals.

3RB20 and 3RB21 overload relays in sizes S2 to S10/S12 see page 7/109 onwards.

"Increased safety" type of protection EEx e according to ATEX directive 94/9/EC

The 3RB30/3RB31 solid-state overload relays are suitable for the overload protection of explosion-proof motors with "increased safety" type of protection EEx e. The relays meet the requirements of EN 60079-7 (Electrical apparatus for areas subject to explosion hazards - Increased safety "e");
see www.siemens.com/sirius/atex.

EC type test certificate for Group II, Category (2) G/D exists. It has the number PTB 09 ATEX 3001.

Order No. scheme

Digit of the Order No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th
	□□□	□	□	□	□	–	□	□	□	□
Solid-state overload relays	**3 R B**									
SIRIUS 3rd generation		**3**								
Device series			□							
Size, rated operational current and power				□						
Version of the automatic RESET, electrical remote RESET					□					
Trip class (CLASS)							□			
Setting range of the overload release								□		
Connection methods									□	
Installation type										□
Example	**3 R B**	**3**	**0**	**1**	**6**	**–**	**1**	**R**	**B**	**0**

Note:

The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quoted in the catalog in the Selection and ordering data.

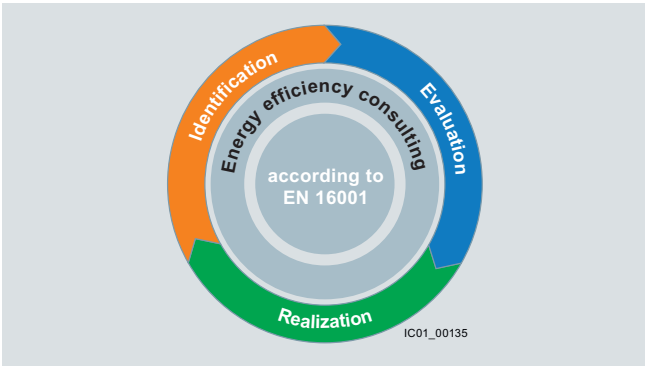
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3RB30, 3RB31 up to 40 A for standard applications

Benefits

The most important features and benefits of the 3RB30/3RB31 solid-state overload relays are listed in the overview table (see "General Data", page 7/72 onwards).

Advantages through energy efficiency



Overview of the energy management process

We offer you a unique portfolio for industrial energy management, using an energy management system that helps to optimally define your energy needs. We split up our industrial energy management into three phases – Identification, Evaluation and Realization – and we support you with the appropriate hardware and software solutions in every process phase.

The innovative products of the SIRIUS industrial controls portfolio can also make a substantial contribution to a plant's energy efficiency (see www.siemens.com/sirius/energysaving).

3RB30/3RB31 solid-state overload relays contribute to energy efficiency throughout the plant as follows:

- Reduced inherent power loss
- Less heating of the control cabinet
- Smaller control cabinet air conditioners can be used

Application

Industries

The 3RB30/3RB31 solid-state overload relays are suitable for customers from all industries who want to guarantee optimum inverse-time delayed protection of their electrical loads (e.g. motors) under normal and heavy starting conditions (CLASS 5 to 30), minimize project completion times, inventories and energy consumption, and optimize plant availability and maintenance management.

Application

The 3RB30/3RB31 solid-state overload relays have been designed for the protection of induction motors in sinusoidal 50/60 Hz voltage networks. The relays are not suitable for the protection of single-phase AC or DC loads.

The 3RU21 thermal overload relay or the 3RB22/3RB23 solid-state overload relay can be used for single-phase AC loads. For DC loads we recommend the 3RU21 thermal overload relay.

Ambient conditions

The devices are insensitive to external influences such as shocks, corrosive ambient conditions, ageing and temperature fluctuations.

For the temperature range from –25 °C to +60 °C, the 3RB30/3RB31 solid-state overload relays compensate the temperature in accordance with IEC 60947-4-1.

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Technical specifications

Type		**3RB30 1., 3RB31 1.**	**3RB30 2., 3RB31 2.**
Size		S00	S0
Dimensions (W x H x D) (overload relay with stand-alone installation support)			
• Screw terminals	mm	45 x 89 x 80	45 x 97 x 94
• Spring-type terminals	mm	45 x 102 x 80	45 x 116 x 95
General data			
Trips in the event of		Overload, phase failure, and phase unbalance + ground fault (for 3RB31 only)	
Trip class acc. to IEC 60947-4-1	CLASS	3RB30: 10, 20; 3RB31: 5, 10, 20 and 30 adjustable	
Phase failure sensitivity		Yes	
Overload warning		No	
Reset and recovery			
• Reset options after tripping		Manual, automatic and remote RESET (depending on the version)	
• Recovery time			
- For automatic RESET		Approx. 3 min	
- For manual RESET		Immediately	
- For remote RESET		Immediately	
Features			
• Display of operating state on device		Yes, by means of switch position indicator slide	
• TEST function		Yes, test of electronics by pressing the TEST button / test of auxiliary contacts and wiring of control circuit by actuating the switch position indicator slide/ self-monitoring	
• RESET button		Yes	
• STOP button		No	
Explosion protection – Safe operation of motors with "increased safety" type of protection			
EC type test certificate number according to directive 94/9/EC (ATEX)		PTB 09 ATEX 3001 Ex II (2) GD	
Ambient temperatures			
• Storage/transport	°C	-40 ... +80	
• Operation	°C	-25 ... +60	
• Temperature compensation	°C	+60	
• Permissible rated current at			
- Temperature inside control cabinet 60 °C	%	100	100[1)]
- Temperature inside control cabinet 70 °C	%	On request	
Repeat terminals			
• Coil repeat terminals		Yes	Not required
• Auxiliary contact repeat terminal		Yes	Not required
Degree of protection acc. to IEC 60529		IP20	
Touch protection acc. to IEC 61140		Finger-safe	
Shock resistance with sine acc. to IEC 60068-2-27	*g*/ms	15/12 (signaling contact 97/98 in position "tripped": 4/11*g*/ms)	
Electromagnetic compatibility (EMC) – Interference immunity			
• Conductor-related interference			
- Burst acc. to IEC 61000-4-4 (corresponds to degree of severity 3)	kV	2 (power ports), 1 (signal ports)	
- Surge acc. to IEC 61000-4-5 (corresponds to degree of severity 3)	kV	2 (line to earth), 1 (line to line)	
• Electrostatic discharge according to IEC 61000-4-2 (corresponds to degree of severity 3)	kV	8 (air discharge), 6 (contact discharge)	
• Field-related interference acc. to IEC 61000-4-3 (corresponds to degree of severity 3)	V/m	10	
Electromagnetic compatibility (EMC) – emitted interference		Degree of severity B according to EN 55011 (CISPR 11) and EN 55022 (CISPR 22)	
Resistance to extreme climates – air humidity	%	95	
Dimensions		"Dimensional drawings" see "System Manual for Industrial Controls – SIRIUS Innovations", ordering information under "Accessories" on page 7/108.	
Installation altitude above sea level	m	Up to 2 000	
Mounting position		Any	
Type of mounting		Direct mounting/stand-alone installation with terminal bracket	

1) Permissible rated current in case of heavy starting
Size S0 at 10 A up to 40 A:
- CLASS 20, $I_{e\ max}$ = 32 A,
- CLASS 30, $I_{e\ max}$ = 25 A.

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3RB30, 3RB31 up to 40 A for standard applications

Type		3RB30 1., 3RB31 1.	3RB30 2., 3RB31 2.
Size		S00	S0
Main circuit			
Rated insulation voltage U_i (pollution degree 3)	V	690	
Rated impulse withstand voltage U_{imp}	kV	6	
Rated operational voltage U_e	V	690	
Type of current			
• Direct current		No	
• Alternating current		Yes, 50/60 Hz ±5 %	
Current setting	A A	0.1 ... 0.4 up to 4 ... 16	0.1 ... 0.4 up to 10 ... 40
Power loss per unit (max.)	W	0.05 ... 0.2	
Short-circuit protection			
• With fuse without contactor		See "Selection and Ordering Data" on pages 7/104 to 7/106	
• With fuse and contactor		"Short-Circuit Protection with Fuses/Motor Starter Protectors for Motor Feeders" see "Configuration Manual for Configuring SIRIUS Innovations – Selection Data for Load Feeders in Fuseless and Fused Designs".	
Protective separation between main and auxiliary conducting path acc. to IEC 60947-1 (pollution degree 2)	V	690 for grounded networks, otherwise 600 V	
Conductor cross-sections of main circuit			
Connection type		**Screw terminals**	
Terminal screw		M3, Pozidriv size 2	M4, Pozidriv size 2
Operating devices	mm	⌀ 5 ... 6	⌀ 5 ... 6
Prescribed tightening torque	Nm	0.8 ... 1.2	2 ... 2.5
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected			
• Solid	mm^2	2 x (0.5 ... 1.5)[1)] 2 x (0.75 ... 2.5)[1)], 2 x (0.5 ... 4)[1)]	2 x (1 ... 2.5)[1)] 2 x (2.5 ... 10)[1)]
• Finely stranded with end sleeves (DIN 46228 T1)	mm^2	2 x (0.5 ... 1.5)[1)] 2 x (0.75 ... 2.5)[1)]	2 x (1 ... 2.5)[1)], 2 x (2.5 ... 6)[1)], max. 1 x 10
• AWG cables, solid or stranded	AWG	2 x (20 ... 16)[1)], 2 x (18 ... 14)[1)], 2 x 12	2 x (16 ... 12)[1)], 2 x (14 ... 8)[1)]
Connection type		**Spring-type terminals**	
Operating devices	mm	3.0 x 0.5 and 3.5 x 0.5	
Conductor cross-sections (min./max.)			
• Solid	mm^2	1 x (0.5 ... 4)	1 x (1 ... 10)
• Finely stranded without end sleeve	mm^2	1 x (0.5 ... 2.5)	1 x (1 ... 6)
• Finely stranded with end sleeves (DIN 46228 T1)	mm^2	1 x (0.5 ... 2.5)	1 x (1 ... 6)
• AWG cables, solid or stranded	AWG	1 x (20 ... 12)	1 x (18 ... 8)

1) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in the range specified.

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Type		3RB30 1., 3RB31 1.	3RB30 2., 3RB31 2.
Size		S00	S0
Auxiliary circuit			
Number of NO contacts		1	
Number of NC contacts		1	
Auxiliary contacts – assignment		1 NO for the signal "tripped"; 1 NC for disconnecting the contactor	
Rated insulation voltage U_i (pollution degree 3)	V	300	
Rated impulse withstand voltage U_{imp}	kV	4	
Auxiliary contacts – contact rating			
• NC contact with alternating current AC-14/AC-15, rated operational current I_e at U_e:			
- 24 V	A	4	
- 120 V	A	4	
- 125 V	A	4	
- 250 V	A	3	
• NO contact with alternating current AC-14/AC-15, rated operational current I_e at U_e:			
- 24 V	A	4	
- 120 V	A	4	
- 125 V	A	4	
- 250 V	A	3	
• NC, NO contact with direct current DC-13, rated operational current I_e at U_e:			
- 24 V	A	2	
- 60 V	A	0.55	
- 110 V	A	0.3	
- 125 V	A	0.3	
- 250 V	A	0.11	
• Conventional thermal current I_{th}	A	5	
• Contact reliability (suitability for PLC control; 17 V, 5 mA)		Yes	
Short-circuit protection			
• With fuse, operational class gG	A	6	
Ground-fault protection (only 3RB31)		The information refers to sinusoidal residual currents at 50/60 Hz.	
• Tripping value I_Δ		> 0.75 × I_{motor}	
• Operating range I		Lower current setting value < I_{motor} < 3.5 × upper current setting value	
• Response time t_{trip} (in steady-state condition)	s	< 1	
Integrated electrical remote RESET (only 3RB31)			
Connecting terminals A3, A4		24 V DC, max. 200 mA for approx. 20 ms, then < 10 mA	
Protective separation between auxiliary conducting paths acc. to IEC 60947-1	V	300	
CSA, UL, UR rated data			
Auxiliary circuit – switching capacity		3RB30: B600, R300; 3RB31: B300, R300	
Conductor cross-sections for auxiliary circuit			
Connection type		**Screw terminals**	
Terminal screw		M3, Pozidriv size 2	
Operating devices	mm	⌀ 5 ... 6	
Prescribed tightening torque	Nm	0.8 ... 1.2	
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected			
• Solid	mm^2	1 × (0.5 ... 4), 2 × (0.5 ... 2.5)	
• Finely stranded with end sleeve	mm^2	1 × (0.5 ... 2.5), 2 × (0.5 ... 1.5)	
• AWG cables, solid or stranded	AWG	2 × (20 ... 14)	
Connection type		**Spring-type terminals**	
Operating devices	mm	3.0 x 0.5	
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected			
• Solid	mm^2	2 × (0.25 ... 1.5)	
• Finely stranded without end sleeve	mm^2	2 × (0.25 ... 1.5)	
• Finely stranded with end sleeve	mm^2	2 × (0.25 ... 1.5)	
• AWG cables, solid or stranded	AWG	2 × (24 ... 16)	

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Selection and ordering data

3RB30 solid-state overload relays for mounting onto contactor[1], CLASS 10

Features and technical specifications:

- Screw terminals and spring-type terminals
- Overload protection, phase failure protection and unbalance protection
- Internal power supply
- Auxiliary contacts 1 NO + 1 NC
- Manual and automatic RESET
- Switch position indicator
- TEST function and self-monitoring
- Sealable covers (optional accessory)

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41G


3RB30 16-1TB0


3RB30 16-1TE0


3RB30 26-1VB0


3RB30 26-1VE0

Size contactor[2]	Rating for induction motor[3]	Current setting of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", operational class gG[4]	DT	Screw terminals Order No.	Price per PU	DT	Spring-type terminals Order No.	Price per PU
	kW	A	A						
Size S00[1]									
S00	0.04 … 0.09	0.1 … 0.4	4	►	**3RB30 16-1RB0**		A	**3RB30 16-1RE0**	
	0.12 … 0.37	0.32 … 1.25	6	►	**3RB30 16-1NB0**		A	**3RB30 16-1NE0**	
	0.55 … 1.5	1 … 4	20	►	**3RB30 16-1PB0**		A	**3RB30 16-1PE0**	
	1.1 … 5.5	3 … 12	25	►	**3RB30 16-1SB0**		A	**3RB30 16-1SE0**	
	2.2 … 7.5	4 ... 16	25	►	**3RB30 16-1TB0**		A	**3RB30 16-1TE0**	
Size S0[1]									
S0	0.04 … 0.09	0.1 … 0.4	4	►	**3RB30 26-1RB0**		A	**3RB30 26-1RE0**	
	0.12 … 0.37	0.32 … 1.25	6	►	**3RB30 26-1NB0**		A	**3RB30 26-1NE0**	
	0.55 … 1.5	1 … 4	20	►	**3RB30 26-1PB0**		A	**3RB30 26-1PE0**	
	1.1 … 5.5	3 … 12	25	►	**3RB30 26-1SB0**		A	**3RB30 26-1SE0**	
	3 … 11	6 … 25	50	►	**3RB30 26-1QB0**		A	**3RB30 26-1QE0**	
	5.5 … 18.5	10 ... 40	50	►	**3RB30 26-1VB0**		A	**3RB30 26-1VE0**	

1) With the suitable terminal brackets (see "Accessories", page 7/107), these overload relays can also be installed as stand-alone units.

2) Observe maximum rated operational current of the devices.

3) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

4) Maximum protection by fuse for overload relay, type of coordination "2". "Fuse Values in Connection with Contactors" see "Configuration Manual for SIRIUS Innovations – Selection Data for Load Feeders in Fuseless and Fused Designs".

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3RB30 solid-state overload relays for mounting onto contactor[1], CLASS 20

Features and technical specifications:

- Screw terminals and spring-type terminals
- Overload protection, phase failure protection and unbalance protection
- Internal power supply
- Auxiliary contacts 1 NO + 1 NC
- Manual and automatic RESET
- Switch position indicator
- TEST function and self-monitoring
- Sealable covers (optional accessory)

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41G


3RB30 16-2TB0


3RB30 16-2TE0


3RB30 26-2VB0


3RB30 26-2VE0

Size contactor[2]	Rating for induction motor[3]	Current setting of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", operational class gG[4]	DT	**Screw terminals**	DT	**Spring-type terminals**
					Order No. / Price per PU		Order No. / Price per PU
	kW	A	A				
Size S00[1]							
S00	0.04 … 0.09	0.1 … 0.4	4	►	**3RB30 16-2RB0**	A	**3RB30 16-2RE0**
	0.12 … 0.37	0.32 … 1.25	6	►	**3RB30 16-2NB0**	A	**3RB30 16-2NE0**
	0.55 … 1.5	1 … 4	20	►	**3RB30 16-2PB0**	A	**3RB30 16-2PE0**
	1.1 … 5.5	3 … 12	25	►	**3RB30 16-2SB0**	A	**3RB30 16-2SE0**
	2.2 … 7.5	4 ... 16	25	►	**3RB30 16-2TB0**	A	**3RB30 16-2TE0**
Size S0[1]							
S0	0.04 … 0.09	0.1 … 0.4	4	►	**3RB30 26-2RB0**	A	**3RB30 26-2RE0**
	0.12 … 0.37	0.32 … 1.25	6	►	**3RB30 26-2NB0**	A	**3RB30 26-2NE0**
	0.55 … 1.5	1 … 4	20	►	**3RB30 26-2PB0**	A	**3RB30 26-2PE0**
	1.1 … 5.5	3 … 12	25	►	**3RB30 26-2SB0**	A	**3RB30 26-2SE0**
	3 … 11	6 … 25	50	►	**3RB30 26-2QB0**	A	**3RB30 26-2QE0**
	5.5 … 18.5	10 ... 40	50	►	**3RB30 26-2VB0**	A	**3RB30 26-2VE0**

1) With the suitable terminal brackets (see "Accessories", page 7/107), these overload relays can also be installed as stand-alone units.

2) Observe maximum rated operational current of the devices.

3) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

4) Maximum protection by fuse for overload relay, type of coordination "2". "Fuse Values in Connection with Contactors" see "Configuration Manual for SIRIUS Innovations – Selection Data for Load Feeders in Fuseless and Fused Designs".

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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3RB30, 3RB31 up to 40 A for standard applications

3RB31 solid-state overload relays for mounting onto contactor[1], CLASS 5, 10, 20 and 30 adjustable

Features and technical specifications:

- Screw terminals and spring-type terminals
- Overload protection, phase failure protection and unbalance protection
- Internal ground-fault detection (activatable)
- Internal power supply
- Auxiliary contacts 1 NO + 1 NC
- Manual and automatic RESET
- Electrical remote RESET integrated
- Switch position indicator
- TEST function and self-monitoring
- Sealable covers (optional accessory)

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41G


3RB31 13-4TB0


3RB31 13-4TE0


3RB31 23-4VB0


3RB31 23-4VE0

Size contactor[2]	Rating for induction motor[3]	Current setting of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", operational class gG[4]	DT	**Screw terminals**	DT	**Spring-type terminals**
					Order No. / Price per PU		Order No. / Price per PU
	kW	A	A				
Size S00[1]							
S00	0.04 … 0.09	0.1 … 0.4	4	►	**3RB31 13-4RB0**	A	**3RB31 13-4RE0**
	0.12 … 0.37	0.32 … 1.25	6	►	**3RB31 13-4NB0**	A	**3RB31 13-4NE0**
	0.55 … 1.5	1 … 4	20	►	**3RB31 13-4PB0**	A	**3RB31 13-4PE0**
	1.1 … 5.5	3 … 12	25	►	**3RB31 13-4SB0**	A	**3RB31 13-4SE0**
	2.2 … 7.5	4 ... 16	25	►	**3RB31 13-4TB0**	A	**3RB31 13-4TE0**
Size S0[1]							
S0	0.04 … 0.09	0.1 … 0.4	4	►	**3RB31 23-4RB0**	A	**3RB31 23-4RE0**
	0.12 … 0.37	0.32 … 1.25	6	►	**3RB31 23-4NB0**	A	**3RB31 23-4NE0**
	0.55 … 1.5	1 … 4	20	►	**3RB31 23-4PB0**	A	**3RB31 23-4PE0**
	1.1 … 5.5	3 … 12	25	►	**3RB31 23-4SB0**	A	**3RB31 23-4SE0**
	3 … 11	6 … 25	50	►	**3RB31 23-4QB0**	A	**3RB31 23-4QE0**
	5.5 … 18.5	10 ... 40	50	►	**3RB31 23-4VB0**	A	**3RB31 23-4VE0**

1) With the suitable terminal brackets (see "Accessories", page 7/107), these overload relays can also be installed as stand-alone units.

2) Observe maximum rated operational current of the devices.

3) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

4) Maximum protection by fuse for overload relay, type of coordination "2". "Fuse Values in Connection with Contactors" see "Configuration Manual for SIRIUS Innovations – Selection Data for Load Feeders in Fuseless and Fused Designs".

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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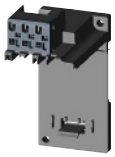
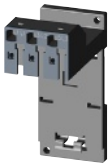
Overview

Overload relays for standard applications

The following optional accessories are available for the 3RB30/3RB31 solid-state overload relays:

- Terminal bracket for stand-alone installation with screw or spring-type terminals for every size
- Mechanical RESET (for all sizes)
- Cable release for resetting devices which are difficult to access (for all sizes)
- Sealable cover (for all sizes)

Selection and ordering data

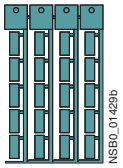
	Version	Size	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Terminal brackets for stand-alone installation								
 3RU29 16-3AA01  3RU29 26-3AA01	**Terminal brackets for overload relays with screw terminals**			**Screw terminals**				
	For separate mounting of the overload relays; screw and snap-on mounting onto TH 35 standard mounting rail	S00	▶	**3RU29 16-3AA01**		1	1 unit	41F
		S0	▶	**3RU29 26-3AA01**		1	1 unit	41F
 3RU29 16-3AC01  3RU29 26-3AC01	**Terminal brackets for overload relays with spring-type terminal**			**Spring-type terminals**				
	For separate mounting of the overload relays; screw and snap-on mounting onto TH 35 standard mounting rail	S00	B	**3RU29 16-3AC01**		1	1 unit	41F
		S0	B	**3RU29 26-3AC01**		1	1 unit	41F
Mechanical RESET								
 3RB39 80-0A with pushbutton and extension plunger	**Resetting plungers, holders and formers**	S00, S0	▶	**3RB39 80-0A**		1	1 unit	41F
	Pushbuttons with extended stroke (12 mm), IP65, ⌀ 22 mm	S00, S0	B	**3SB30 00-0EA11**		1	1 unit	41J
	Extension plungers For compensation of the distance between a pushbutton and the unlatching button of the relay	S00, S0	A	**3SX1 335**		1	1 unit	41J
Cable releases with holder for RESET								
 3RB39 80-0.	For ⌀ 6.5 mm holes in the control panel; max. control panel thickness 8 mm							
	• Length 400 mm	S00, S0	▶	**3RB39 80-0B**		1	1 unit	41F
	• Length 600 mm	S00, S0	▶	**3RB39 80-0C**		1	1 unit	41F
Sealable covers								
 3RB39 84-0	For covering the setting knobs	S00, S0	▶	**3RB39 84-0**		1	1 unit	41F

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Accessories

General accessories

	Version	Size	Color	For overload relays	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Tools for opening spring-type terminals										
						Spring-type terminals				
 3RA29 08-1A	**Screwdrivers** For all SIRIUS devices with spring-type terminals	Length approx. 200 mm, 3.0 mm x 0.5 mm	Titanium gray/ black, partially insulated	Main and auxiliary circuit connection: 3RB3	A	**3RA29 08-1A**		1	1 unit	41B
Blank labels										
 3RT19 00-1SB20	**Unit labeling plates**[1] for SIRIUS devices	20 mm x 7 mm	Titanium gray	3RB3	D	**3RT29 00-1SB20**		100	340 units	41B
		20 mm x 7 mm	Pastel turquoise	3RB3	D	**3RT19 00-1SB20**		100	340 units	41B
System manuals										
	System manuals Industrial Controls – SIRIUS Innovations									
	• German			S00, S0	C	**3ZX1012-0RA01-1AB1**		1	1 unit	401
	• English			S00, S0	C	**3ZX1012-0RA01-1AC1**		1	1 unit	401
	• French			S00, S0	C	**3ZX1012-0RA01-1AD1**		1	1 unit	401
	• Spanish			S00, S0	C	**3ZX1012-0RA01-1AE1**		1	1 unit	401

[1] PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH (see Chapter 16, "Appendix" → "External Partners").

* You can order this quantity or a multiple thereof.
Illustrations are approximate

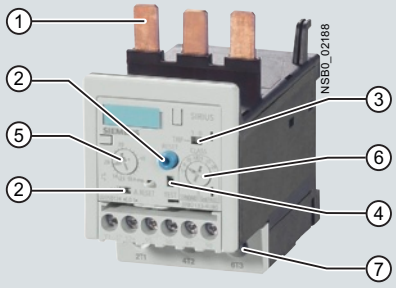
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Overview

Note:

The 3RB20 and 3RB21 devices (sizes S00/S0 to S12) can be found

- in the Catalog Add-On IC 10 AO · 2012 in the CD/DVD box
- in the Catalog Add-On IC 10 AO · 2012 at the Information and Download Center
- in the interactive catalog CA 01
- in the Industry Mall



① Connection for mounting onto contactors:
Optimally adapted in electrical, mechanical and design terms to the contactors 3RT1. These connecting pins can be used for direct mounting of the overload relay to the contactor. Stand-alone installation is possible as an alternative (partly in conjunction with a terminal bracket for stand-alone installation).

② Selector switch for manual/automatic RESET and RESET button:
With the slide switch you can choose between manual and automatic RESET. A device set to manual RESET can be reset locally by pressing the RESET button. On the 3RB21 a solid-state remote RESET is integrated.

③ Switch position indicator and TEST function of the wiring:
Indicates a trip and enables the wiring test.

④ Solid-state test (device test):
Enables a test of all important device components and functions.

⑤ Motor current setting:
Setting the device to the rated motor current is easy with the large rotary knob.

⑥ Trip class setting/internal ground-fault detection (only 3RB21):
Using the rotary switch you can set the required trip class and activate the internal ground-fault detection dependent on the start-up conditions.

⑦ Connecting terminals (removable terminal block for auxiliary circuits):
The generously sized terminals permit connection of two conductors with different cross-sections for the main and auxiliary circuits. The auxiliary circuit can be connected with screw terminals and alternatively with spring-type terminals.

SIRIUS 3RB21 33-4UB0 solid-state overload relay

The 3RB20 and 3RB21 solid-state overload relays up to 630 A with internal power supply have been designed for inverse-time delayed protection of loads with normal and heavy starting ("Function" see "Reference Manual for Protection Equipment – 3RU1, 3RB2 Overload Relays") against excessive temperature rises due to overload, phase unbalance or phase failure.

An overload, phase unbalance or phase failure result in an increase of the motor current beyond the set rated motor current. This current rise is detected by the current transformers integrated into the devices and evaluated by corresponding solid-state circuits which then output a pulse to the auxiliary contacts. The auxiliary contacts then switch off the load by means of a contactor. The break time depends on the ratio between the tripping current and current setting I_e and is stored in the form of a long-term stable tripping characteristic see www.siemens.com/sirius/support → "Characteristic Curves").

In addition to inverse-time delayed protection of loads against excessive temperature rises due to overload, phase unbalance and phase failure, the 3RB21 solid-state overload relays also allow internal ground-fault detection (not possible in conjunction with contactor assemblies for wye-delta starting). This provides protection of loads against high-resistance short circuits due to damage to the insulation material, moisture, condensed water etc.

The "tripped" status is signaled by means of a switch position indicator. Resetting takes place either manually or automatically after the recovery time has elapsed ("Function" see "Reference Manual for Protection Equipment – 3RU1, 3RB2 Overload Relays").

The devices are manufactured in accordance with environmental guidelines and contain environmentally friendly and reusable materials. They comply with all important worldwide standards and approvals.

For 3RB30 and 3RB31 overload relay sizes S00 and S0 see page 7/99 onwards.

"Increased safety" type of protection EEx e according to ATEX directive 94/9/EC

The 3RB20/3RB21 solid-state overload relays are suitable for the overload protection of explosion-proof motors with "increased safety" type of protection EExe. The relays meet the requirements of EN 60079-7 (Electrical apparatus for areas subject to explosion hazards - Increased safety "e"); see www.siemens.com/sirius/atex.

EC type test certificate for Group II, Category (2) G/D exists. It has the number PTB 06 ATEX 3001.

Order No. scheme

Digit of the Order No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th
	□□□	□	□	□	□	–	□	□	□	□
Solid-state overload relays	**3 R B**									
SIRIUS 2nd generation		**2**								
Device series			□							
Size, rated operational current and power				□						
Version of the automatic RESET, electrical remote RESET					□					
Trip class (CLASS)							□			
Setting range of the overload release								□		
Connection methods									□	
Installation type										□
Example	**3 R B**	**2**	**0**	**3**	**6**	**–**	**1**	**Q**	**B**	**0**

Note:

The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quoted in the catalog in the Selection and ordering data.

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3RB20, 3RB21 up to 630 A for standard applications

Benefits

The most important features and benefits of the 3RB20/3RB21 solid-state overload relays are listed in the overview table (see "General Data", page 7/72 onwards).

Application

Industries

The 3RB20 and 3RB21 solid-state overload relays are suitable for customers from all industries who want to guarantee optimum inverse-time delayed protection of their electrical loads (e.g. motors) under normal and heavy starting conditions (CLASS 5 to 30), minimize project completion times, inventories and energy consumption, and optimize plant availability and maintenance management.

Application

The 3RB20 and 3RB21 solid-state overload relays have been designed for the protection of induction motors in sinusoidal 50/60 Hz voltage networks. The relays are not suitable for the protection of single-phase AC or DC loads.

The 3RU11 thermal overload relays or the 3RB22 to 3RB24 solid-state overload relays can be used for single-phase AC loads. For DC loads we recommend the 3RU11 thermal overload relay.

Ambient conditions

The devices are insensitive to external influences such as shocks, corrosive ambient conditions, ageing and temperature fluctuations.

For the temperature range from –25 C to +60 °C, the 3RB20 and 3RB21 solid-state overload relays compensate the temperature in accordance with IEC 60947-4-1.

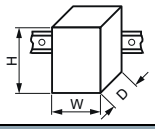
For the 3RB20 and 3RB21 solid-state overload relays with the sizes S6, S10 and S12, the upper set value of the setting range must be reduced for ambient temperatures > 50 °C by a certain factor.

Type	Setting range	Derating factor for the upper set value for **stand-alone installation** at ambient temperature	
		+50 °C	+60 °C
3RB20 56, 3RB21 56	50 ... 200 A	100 %	100 %
3RB20 66, 3RB21 66	55 ... 250 A	100 %	100 %
3RB20 66, 3RB21 66	160 ... 630 A	100 %	90 %

Type	Setting range	Derating factor for the upper set value for **mounting onto contactor** at ambient temperature	
		+50 °C	+60 °C
3RB20 56, 3RB21 56	50 ... 200 A	100 %	70 %
3RB20 66, 3RB21 66	55 ... 250 A	100 %	70 %
3RB20 66, 3RB21 66	160 ... 630 A	100 %	70 %

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Technical specifications

Type			**3RB20 36, 3RB21 33**	**3RB20 46, 3RB21 43**	**3RB20 56, 3RB21 53**	**3RB20 66, 3RB21 63**
Size			S2	S3	S6	S10/S12
Dimensions (W x H x D) (overload relay with stand-alone installation support)		mm	55 x 74 x 109	70 x 86 x 124	120 x 119 x 155	145 x 147 x 156
General data						
Trips in the event of			Overload, phase failure, and phase unbalance + ground fault (for 3RB21 only)			
Trip class acc. to IEC 60947-4-1		CLASS	3RB20: 10 or 20; 3RB21: 5, 10, 20 and 30 adjustable			
Phase failure sensitivity			Yes			
Overload warning			No			
Reset and recovery						
• Reset options after tripping			3RB20: Manual and automatic RESET; 3RB21: Manual, automatic and remote RESET			
• Recovery time						
- For automatic RESET			Approx. 3 min			
- For manual RESET			Immediately			
- For remote RESET			Immediately			
Features						
• Display of operating state on device			Yes, by means of switch position indicator slide			
• TEST function			Yes, test of electronics by pressing the TEST button / test of auxiliary contacts and wiring of control circuit by actuating the switch position indicator slide/self-monitoring			
• RESET button			Yes			
• STOP button			No			
Explosion protection – Safe operation of motors with "increased safety" type of protection						
EC type test certificate number according to directive 94/9/EC (ATEX)			PTB 06 ATEX 3001 Ex II (2) GD			
Ambient temperatures						
• Storage/transport		°C	-40 ... +80			
• Operation		°C	-25 ... +60			
• Temperature compensation		°C	+60			
• Permissible rated current at						
- Temperature inside control cabinet 60 °C, stand-alone installation		%	100	100	100	100 or 90[1]
- Temperature inside control cabinet 60 °C, mounted on contactor		%	100	100	70	70
- Temperature inside control cabinet 70 °C		%	On request			
Repeat terminals						
• Coil repeat terminals			Yes	Not required		
• Auxiliary contact repeat terminal			Yes	Not required		
Degree of protection acc. to IEC 60529			IP20		IP20 (terminal compartment: IP00 degree of protection)	
Touch protection acc. to IEC 61140			Finger-safe		Finger-safe; for busbar connection with cover	Finger-safe with cover
Shock resistance with sine acc. to IEC 60068-2-27		*g*/ms	15/11 (signaling contact 97/98 in position "tripped": 4/11*g*/ms)			
Electromagnetic compatibility (EMC) – Interference immunity						
• Conductor-related interference						
- Burst acc. to IEC 61000-4-4 (corresponds to degree of severity 3)		kV	2 (power ports), 1 (signal ports)			
- Surge acc. to IEC 61000-4-5 (corresponds to degree of severity 3)		kV	2 (line to earth), 1 (line to line)			
• Electrostatic discharge according to IEC 61000-4-2 (corresponds to degree of severity 3)		kV	8 (air discharge), 6 (contact discharge)			
• Field-related interference acc. to IEC 61000-4-3 (corresponds to degree of severity 3)		V/m	10			
Electromagnetic compatibility (EMC) – emitted interference			Degree of severity B according to EN 55011 (CISPR 11) and EN 55022 (CISPR 22)			
Resistance to extreme climates – air humidity		%	100			
Dimensions			"Dimensional drawings" see "Reference Manual for Protection Equipment – 3RU1, 3RB2 Overload Relays".			
Installation altitude above sea level		m	Up to 2000			
Mounting position			Any			
Type of mounting			Direct mounting/stand-alone installation with terminal bracket		Direct mounting/stand-alone installation	

[1] 90 % for relay with current setting range 160 A to 630 A.

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3RB20, 3RB21 up to 630 A for standard applications

Type		3RB20 36, 3RB21 33	3RB20 46, 3RB21 43
Size		S2	S3
Main circuit			
Rated insulation voltage U_i (pollution degree 3)	V	690/1 000[1)]	1 000
Rated impulse withstand voltage U_{imp}	kV	6/8[2)]	8
Rated operational voltage U_e	V	690/1 000[1)]	1 000
Type of current			
• Direct current		No	
• Alternating current		Yes, 50/60 Hz ±5 %	
Current setting	A	6 ... 25, 12.5 ... 50	12.5 ... 50, 25 ... 100
Power loss per unit (max.)	W	0.05	
Short-circuit protection			
• With fuse without contactor		See "Selection and Ordering Data" on pages 7/115 to 7/117	
• With fuse and contactor		See "Technical Specifications" → "Short-Circuit Protection with Fuses for Motor Feeders" in "Reference Manual for Protection Equipment – 3RU1, 3RB2 Overload Relays".	
Protective separation between main and auxiliary conducting paths acc. to IEC 60947-1 (pollution degree 2)	V	690 for grounded networks, otherwise 600 V	
Conductor cross-sections of the main circuit			
Connection type		**Screw terminals with box terminal**	
Terminal screw		M6, Pozidriv size 2	M8, 4 mm Allen screw
Operating devices	mm	⌀ 5 ... 6	4 mm Allen screw
Prescribed tightening torque	Nm	3 ... 4.5	4 ... 6
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected			
• Solid	mm^2	2 × (1 ... 16)	2 × (2.5 ... 16)
• Finely stranded without end sleeve	mm^2	--	--
• Finely stranded with end sleeve	mm^2	2 × (1 ... 16), 1 × (1 ... 25)	2 × (2.5 ... 35), 1 × (2.5 ... 50)
• Stranded	mm^2	2 × (max. 25), 1 × (1 ... 35)	2 × (10 ... 50), 1 × (10 ... 70)
• AWG cables, solid or stranded	AWG	2 × (max. 4), 1 × (18 ... 2)	2 × (10 ... 1/0), 1 × (10 ... 2/0)
• Ribbon cables (Number x Width x Thickness)	mm	2 × (6 × 9 × 0.8)	2 × (6 × 9 × 0.8)
Connection type		**Busbar connections**	
Terminal screw		--	M6 × 20
Prescribed tightening torque	Nm	--	4 ... 6
Conductor cross-sections (min./max.)			
• Finely stranded with cable lug	mm^2	--	2 × 70
• Stranded with cable lug	mm^2	--	3 × 70
• AWG cable, solid or stranded, with cable lug	AWG	--	2/0
• With connecting bar (max. width)	mm	--	12
Connection type		**Straight-through transformers**	
Diameter of opening	mm	15	18

1) For version with straight-through transformer up to 1 000 V AC.

2) For version with straight-through transformer up to 8 kV.

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Type		**3RB20 56, 3RB21 53**	**3RB20 66, 3RB21 63**
Size		S6	S10/S12
Main circuit			
Rated insulation voltage U_i (pollution degree 3)	V	1 000	
Rated impulse withstand voltage U_{imp}	kV	8	
Rated operational voltage U_e	V	1 000	
Type of current			
• Direct current		No	
• Alternating current		Yes, 50/60 Hz ±5 %	
Current setting	A	50 ... 200	55 ... 250, 160 ... 630
Power loss per unit (max.)	W	0.05	
Short-circuit protection			
• With fuse without contactor		See "Selection and Ordering Data" on pages 7/115 to 7/117	
• With fuse and contactor		See "Technical Specifications" → "Short-Circuit Protection with Fuses for Motor Feeders" in "Reference Manual for Protection Equipment – 3RU1, 3RB2 Overload Relays".	
Protective separation between main and auxiliary conducting path acc. to IEC 60947-1 (pollution degree 2)	V	690 for grounded networks, otherwise 600 V	
Conductor cross-sections of the main circuit			
Connection type		**Screw terminals with box terminal**	
Terminal screw	mm	4 mm Allen screw	5 mm Allen screw
Operating devices	mm	4 mm Allen screw	5 mm Allen screw
Prescribed tightening torque	Nm	1 ... 12	20 ... 22
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected			
• Solid	mm^2	--	--
• Finely stranded without end sleeve	mm^2	With 3RT19 55-4G box terminal: 2 × (1 × max. 50, 1 × max. 70), 1 × (10 ... 70)	2 × (50 ... 185), rear clamping point only: 1 × (70 ... 240)
		With 3RT19 56-4G box terminal: 2 × (1 × max. 95, 1 × max. 120), 1 × (10 ... 120)	Rear clamping point only: 1 × (120 ... 185)
• Finely stranded with end sleeve	mm^2	With 3RT19 55-4G box terminal: 2 × (1 × max. 50, 1 × max. 70), 1 × (10 ... 70)	2 × (50 ... 185), rear clamping point only: 1 × (70 ... 240)
		With 3RT19 56-4G box terminal: 2 × (1 × max. 95, 1 × max. 120), 1 × (10 ... 120)	Rear clamping point only: 1 × (120 ... 185)
• Stranded	mm^2	With 3RT19 55-4G box terminal: 2 × (max. 70), 1 × (16 ... 70)	2 × (70 ... 240), rear clamping point only: 1 × (95 ... 300)
		With 3RT19 56-4G box terminal: 2 × (max. 120), 1 × (16 ... 120)	Rear clamping point only: 1 × (120 ... 240)
• AWG cables, solid or stranded	AWG	With 3RT19 55-4G box terminal: 2 × (max. 1/0), 1 × (6 ... 2/0)	2 × (2/0 ... 500 kcmil), rear clamping point only: 1 × (3/0 ... 600 kcmil)
		With 3RT19 56-4G box terminal: 2 × (max. 3/0), 1 × (6 ... 250 kcmil)	Rear clamping point only: 1 × (250 kcmil ... 500 kcmil)
• Ribbon cables (number x width x thickness)	mm	With 3RT19 55-4G box terminal: 2 × (6 × 15.5 × 0.8), 1 × (3 × 9 × 0.8 ... 6 × 15.5 × 0.8)	2 × (20 × 24 × 0.5), 1 × (6 × 9 × 0.8 ... 20 × 24 × 0.5)
		With 3RT19 56-4G box terminal: 2 × (10 × 15.5 × 0.8), 1 × (3 × 9 × 0.8 ... 10 × 15.5 × 0.8)	
Connection type		**Busbar connections**	
Terminal screw		M8 × 25	M10 × 30
Prescribed tightening torque	Nm	10 ... 14	14 ... 24
Conductor cross-section (min./max.)			
• Finely stranded with cable lug	mm^2	16 ... 95[1)]	50 ... 240[2)]
• Stranded with cable lug	mm^2	25 ... 120[1)]	70 ... 240[2)]
• AWG cable, solid or stranded, with cable lug	AWG	4 ... 250 kcmil	2/0 ... 500 kcmil
• With connecting bar (max. width)	mm	15	25
Connection type		**Straight-through transformers**	
Diameter of opening	mm	24.5	--

1) When connecting cable lugs according to DIN 46235 with conductor cross-sections of 95 mm^2 and more, the 3RT19 56-4EA1 terminal cover must be used to ensure phase spacing.

2) When connecting cable lugs according to DIN 46234 with conductor cross-sections of 240 mm^2 and more as well as to DIN 46235 with conductor cross-sections of 185 mm^2 and more, the 3RT19 56-4EA1 terminal cover must be used for to keep the phase clearance.

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3RB20, 3RB21 up to 630 A for standard applications

Type		3RB20 36, 3RB21 33	3RB20 46, 3RB21 43	3RB20 56, 3RB21 53	3RB20 66, 3RB21 63
Size		S2	S3	S6	S10/S12
Auxiliary circuit					
Number of NO contacts		1			
Number of NC contacts		1			
Auxiliary contacts – assignment		1 NO for the signal "tripped"; 1 NC for disconnecting the contactor			
Rated insulation voltage U_i (pollution degree 3)	V	300			
Rated impulse withstand voltage U_{imp}	kV	4			
Auxiliary contacts – contact rating					
• NC contact with alternating current AC-14/AC-15, rated operational current I_e at U_e:					
- 24 V	A	4			
- 120 V	A	4			
- 125 V	A	4			
- 250 V	A	3			
• NO contact with alternating current AC-14/AC-15, rated operational current I_e at U_e:					
- 24 V	A	4			
- 120 V	A	4			
- 125 V	A	4			
- 250 V	A	3			
• NC contact, NO contact with direct current DC-13, rated operational current I_e at U_e:					
- 24 V	A	2			
- 60 V	A	0.55			
- 110 V	A	0.3			
- 125 V	A	0.3			
- 250 V	A	0.11			
• Conventional thermal current I_{th}	A	5			
• Contact reliability (suitability for PLC control; 17 V, 5 mA)		Yes			
Short-circuit protection					
• With fuse, operational class gG	A	6			
Ground-fault protection (only 3RB21)		The information refers to sinusoidal residual currents at 50/60 Hz.			
• Tripping value I_Δ		> 0.75 × I_{motor}			
• Operating range I		Lower current setting value < I_{motor} < 3.5 × upper current setting value			
• Response time t_{trip} (in steady-state condition)	s	< 1			
Integrated electrical remote RESET (only 3RB21)					
Connecting terminals A3, A4		24 V DC, 100 mA, 2.4 W short-term			
Protective separation between auxiliary conducting paths acc. to IEC 60947-1	V	300			
CSA, UL, UR rated data					
Auxiliary circuit – switching capacity		B300, R300			
Conductor cross-sections of the auxiliary circuit					
Connection type		**Screw terminals**			
Terminal screw		M3, Pozidriv size 2			
Operating devices	mm	⌀ 5 ... 6			
Prescribed tightening torque	Nm	0.8 ... 1.2			
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected					
• Solid	mm^2	1 × (0.5 ... 4), 2 × (0.5 ... 2.5)			
• Finely stranded without end sleeve	mm^2	--			
• Finely stranded with end sleeve	mm^2	1 × (0.5 ... 2.5), 2 × (0.5 ... 1.5)			
• Stranded	mm^2	--			
• AWG cables, solid or stranded	AWG	2 × (20 ... 14)			
Connection type		**Spring-type terminals**			
Operating devices	mm	3.0 x 0.5			
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected					
• Solid	mm^2	2 × (0.25 ... 1.5)			
• Finely stranded without end sleeve	mm^2	--			
• Finely stranded with end sleeve	mm^2	2 × (0.25 ... 1.5)			
• Stranded	mm^2	2 × (0.25 ... 1.5)			
• AWG cables, solid or stranded	AWG	2 × (24 ... 16)			

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Selection and ordering data

3RB20 solid-state overload relays for mounting onto contactor[1)2)] and stand-alone installation[2)3)], CLASS 10

Features and technical specifications:

- Overload protection, phase failure protection and unbalance protection
- Internal power supply
- Auxiliary contacts 1 NO + 1 NC
- Manual and automatic RESET
- Switch position indicator
- TEST function and self-monitoring

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41G


3RB20 36-1UB0


3RB20 46-1ED0


3RB20 56-1FW2


3RB20 66-1MF2

Size contactor[4)]	Rating for induction motor[5)]	Current setting of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", operational class gG[6)]	DT	**Screw terminals** (on auxiliary current side) Order No.	Price per PU	DT	**Spring-type terminals** (on auxiliary current side) Order No.	Price per PU
	kW	A	A						
Size S2[1)3)7)]									
S2	3 … 11	6 … 25	63	►	**3RB20 36-1QB0**		►	**3RB20 36-1QD0**	
				►	**3RB20 36-1QW1**		►	**3RB20 36-1QX1**	
	7.5 … 22	12.5 … 50	80	►	**3RB20 36-1UB0**		A	**3RB20 36-1UD0**	
				►	**3RB20 36-1UW1**		►	**3RB20 36-1UX1**	
Size S3[1)3)7)]									
S3	7.5 … 22	12.5 … 50	160	►	**3RB20 46-1UB0**		A	**3RB20 46-1UD0**	
	11 … 45	25 … 100	315	►	**3RB20 46-1EB0**		A	**3RB20 46-1ED0**	
				►	**3RB20 46-1EW1**		►	**3RB20 46-1EX1**	
Size S6[2)7)]									
S6 with busbar connection	22 … 90	50 … 200	315	►	**3RB20 56-1FC2**		A	**3RB20 56-1FF2**	
For mounting to S6 contactors with box terminals				►	**3RB20 56-1FW2**		►	**3RB20 56-1FX2**	
Size S10/S12[2)]									
S10/S12 and size 14 (3TF68/ 3TF69)	22 … 110	55 … 250	400	►	**3RB20 66-1GC2**		►	**3RB20 66-1GF2**	
	90 … 450	160 … 630	800	►	**3RB20 66-1MC2**		►	**3RB20 66-1MF2**	

1) The relays with an Order No. ending with **"0"** are designed for mounting onto contactor.

2) The relays with an Order No. ending with **"2"** are designed for mounting onto contactor and stand-alone installation. For 3TF68/3TF69 contactors, direct mounting is not possible.

3) The relays with an Order No. ending with **"1"** are designed for stand-alone installation.

4) Observe maximum rated operational current of the devices.

5) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

6) Maximum protection by fuse for overload relay, type of coordination "2". Fuse values in connection with contactors see "Technical Specifications" → "Short-Circuit Protection with Fuses for Motor Feeders" in "Reference Manual for Protection Equipment – 3RU1, 3RB2 Overload Relays".

7) The relays with an Order No. with **"W"** or **"X"** in penultimate position are equipped with a straight-through transformer.

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3RB20, 3RB21 up to 630 A for standard applications

3RB20 solid-state overload relays for mounting onto contactor[1)2)] and stand-alone installation[2)3)], CLASS 20

Features and technical specifications:

- Overload protection, phase failure protection and unbalance protection
- Internal power supply
- Auxiliary contacts 1 NO + 1 NC
- Manual and automatic RESET
- Switch position indicator
- TEST function and self-monitoring

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41G


3RB20 36-2UB0


3RB20 46-2ED0


3RB20 56-2FW2


3RB20 66-2MF2

Size contactor[4)]	Rating for induction motor[5)]	Current setting of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", operational class gG[6)]	DT	**Screw terminals** (on auxiliary current side) Order No.	Price per PU	DT	**Spring-type terminals** (on auxiliary current side) Order No.	Price per PU
	kW	A	A						
Size S2[1)3)7)]									
S2	3 … 11	6 … 25	63	▶	**3RB20 36-2QB0**		▶	**3RB20 36-2QD0**	
				▶	**3RB20 36-2QW1**		▶	**3RB20 36-2QX1**	
	7.5 … 22	12.5 … 50	80	▶	**3RB20 36-2UB0**		A	**3RB20 36-2UD0**	
				▶	**3RB20 36-2UW1**		▶	**3RB20 36-2UX1**	
Size S3[1)3)7)]									
S3	7.5 … 22	12.5 … 50	160	▶	**3RB20 46-2UB0**		A	**3RB20 46-2UD0**	
	11 … 45	25 … 100	315	▶	**3RB20 46-2EB0**		A	**3RB20 46-2ED0**	
				▶	**3RB20 46-2EW1**		▶	**3RB20 46-2EX1**	
Size S6[2)7)]									
S6 with busbar connections	22 … 90	50 … 200	315	▶	**3RB20 56-2FC2**		A	**3RB20 56-2FF2**	
For mounting to S6 contactors with box terminals				▶	**3RB20 56-2FW2**		▶	**3RB20 56-2FX2**	
Size S10/S12[2)]									
S10/S12 and size 14 (3TF68/3TF69)	22 … 110	55 … 250	400	▶	**3RB20 66-2GC2**		▶	**3RB20 66-2GF2**	
	90 … 450	160 … 630	800	▶	**3RB20 66-2MC2**		▶	**3RB20 66-2MF2**	

8) The relays with an Order No. ending with **"0"** are designed for mounting onto contactor.

1) The relays with an Order No. ending with **"2"** are designed for mounting onto contactor and stand-alone installation. For 3TF68/3TF69 contactors, direct mounting is not possible.

2) The relays with an Order No. ending with **"1"** are designed for stand-alone installation.

3) Observe maximum rated operational current of the devices.

4) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

5) Maximum protection by fuse for overload relay, type of coordination "2". Fuse values in connection with contactors see "Technical Specifications" → "Short-Circuit Protection with Fuses for Motor Feeders" in "Reference Manual for Protection Equipment – 3RU1, 3RB2 Overload Relays".

6) The relays with an Order No. with **"W"** or **"X"** in penultimate position are equipped with a straight-through transformer.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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3RB21 solid-state overload relays for mounting onto contactor[1)2)] and stand-alone installation[2)3)], CLASS 5, 10, 20 and 30 adjustable

Features and technical specifications:

- Overload protection, phase failure protection and unbalance protection
- Internal ground-fault detection (activatable)
- Internal power supply
- Auxiliary contacts 1 NO + 1 NC
- Manual and automatic RESET
- Electrical remote RESET integrated
- Switch position indicator
- TEST function and self-monitoring

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41G


3RB21 33-4UB0


3RB21 43-4ED0


3RB21 53-4FX2


3RB21 63-4MC2

Size contactor[4)]	Rating for induction motor[5)]	Current setting of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", operational class gG[6)]	DT	**Screw terminals** (on auxiliary current side) Order No.	Price per PU	DT	**Spring-type terminals** (on auxiliary current side) Order No.	Price per PU
	kW	A	A						
Size S2[1)3)7)]									
S2	3 … 11	6 … 25	63	▶	**3RB21 33-4QB0**		▶	**3RB21 33-4QD0**	
				▶	**3RB21 33-4QW1**		▶	**3RB21 33-4QX1**	
	7.5 … 22	12.5 … 50	80	▶	**3RB21 33-4UB0**		▶	**3RB21 33-4UD0**	
				▶	**3RB21 33-4UW1**		▶	**3RB21 33-4UX1**	
Size S3[1)3)7)]									
S3	7.5 … 22	12.5 … 50	160	▶	**3RB21 43-4UB0**		▶	**3RB21 43-4UD0**	
	11 … 45	25 … 100	315	▶	**3RB21 43-4EB0**		▶	**3RB21 43-4ED0**	
				▶	**3RB21 43-4EW1**		▶	**3RB21 43-4EX1**	
Size S6[2)7)]									
S6 with busbar connection	22 … 90	50 … 200	315	▶	**3RB21 53-4FC2**		▶	**3RB21 53-4FF2**	
For mounting to S6 contactors with box terminals				▶	**3RB21 53-4FW2**		▶	**3RB21 53-4FX2**	
Size S10/S12[2)]									
S10/S12 and size 14 (3TF68/ 3TF69)	22 … 110	55 … 250	400	▶	**3RB21 63-4GC2**		▶	**3RB21 63-4GF2**	
	90 … 450	160 … 630	800	▶	**3RB21 63-4MC2**		▶	**3RB21 63-4MF2**	

1) The relays with an Order No. ending with **"0"** are designed for mounting onto contactor.

2) The relays with an Order No. ending with **"2"** are designed for mounting onto contactor and stand-alone installation. For 3TF68/3TF69 contactors, direct mounting is not possible.

3) The relays with an Order No. ending with **"1"** are designed for stand-alone installation.

4) Observe maximum rated operational current of the devices.

5) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

6) Maximum protection by fuse for overload relay, type of coordination "2". Fuse values in connection with contactors see "Technical Specifications" → "Short-Circuit Protection with Fuses for Motor Feeders" in "Reference Manual for Protection Equipment – 3RU1, 3RB2 Overload Relays".

7) The relays with an Order No. with **"W"** or **"X"** in penultimate position are equipped with a straight-through transformer.

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Accessories for 3RB20, 3RB21

Overview

Overload relays for standard applications

The following optional accessories are available for the 3RB20 and 3RB21 solid-state overload relays:

- Mechanical RESET (for all sizes)
- Cable release for resetting devices which are difficult to access (for all sizes)
- Sealable cover (for all sizes)
- Terminal covers for sizes S2 to S10/S12
- Box terminal blocks for sizes S6 and S10/S12

Selection and ordering data

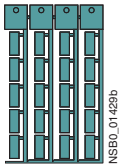
	Version	Size	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Mechanical RESET								
 3RU19 00-1A with pushbutton and extension plunger	**Resetting plungers, holders and formers**	S2 ... S10/S12	▶	**3RU19 00-1A**		1	1 unit	41F
	Pushbuttons with extended stroke (12 mm), IP65, ⌀ 22 mm	S2 ... S10/S12	B	**3SB30 00-0EA11**		1	1 unit	41J
	Extension plungers For compensation of the distance between a pushbutton and the unlatching button of the relay	S2 ... S10/S12	A	**3SX1 335**		1	1 unit	41J
Cable releases with holder for RESET								
 3RU19 00-1.	For ⌀ 6.5 mm holes in the control panel; max. control panel thickness 8 mm	S2 ... S10/S12						
	• Length 400 mm		▶	**3RU19 00-1B**		1	1 unit	41F
	• Length 600 mm		▶	**3RU19 00-1C**		1	1 unit	41F
Sealable covers								
 3RB29 84-0	For covering the setting knobs	S2 ... S10/S12	▶	**3RB29 84-0**		1	10 units	41F
Terminal covers								
 3RT19 46-4EA1	**Covers for cable lugs and busbar connections**							
	• Length 55 mm	S3	▶	**3RT19 46-4EA1**		1	1 unit	41B
	• Length 100 mm	S6	▶	**3RT19 56-4EA1**		1	1 unit	41B
	• Length 120 mm	S10/S12	▶	**3RT19 66-4EA1**		1	1 unit	41B
 3RT19 36-4EA2 The figures show mounting on the contactor.	**Covers for box terminals**							
	• Length 20.6 mm	S2	▶	**3RT19 36-4EA2**		1	1 unit	41B
	• Length 20.8 mm	S3	▶	**3RT19 46-4EA2**		1	1 unit	41B
	• Length 25 mm	S6	▶	**3RT19 56-4EA2**		1	1 unit	41B
	• Length 30 mm	S10/S12	▶	**3RT19 66-4EA2**		1	1 unit	41B
	Covers for screw terminals between contactor and overload relay, without box terminals (1 unit required per combination)	S6	▶	**3RT19 56-4EA3**		1	1 unit	41B
		S10/S12	▶	**3RT19 66-4EA3**		1	1 unit	41B
Box terminal blocks								
 3RT19 5.-4G	For round and ribbon cables							
	• Up to 70 mm^2	S6[1)]	▶	**3RT19 55-4G**		1	1 unit	41B
	• Up to 120 mm^2	S6	▶	**3RT19 56-4G**		1	1 unit	41B
	• Up to 240 mm^2	S10/S12	▶	**3RT19 66-4G**		1	1 unit	41B
	Technical specifications for conductor cross-sections see "Reference Manual for Protection Equipment–3RU1, 3RB2 Overload Relays".							

[1)] In the scope of supply for 3RT10 54-1 contactors (55 kW).

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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General accessories

	Version	Size	Color	For overload relays	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Tools for opening spring-type terminals										
 3RA29 08-1A	**Screwdrivers** For all SIRIUS devices with spring-type terminals	Length approx. 200 mm, 3.0 mm x 0.5 mm	Titanium gray/ black, partially insulated	Main and auxiliary circuit connection: 3RB2	A	**Spring-type terminals** **3RA29 08-1A**		1	1 unit	41B
Blank labels										
 3RT19 00-1SB20	**Unit labeling plates**[1] For SIRIUS devices	20 mm x 7 mm	Pastel turquoise	3RB2	D	**3RT19 00-1SB20**		100	340 units	41B
	Inscription labels for sticking[1] For SIRIUS devices	19 mm x 6 mm	Pastel turquoise	3RB2	C	**3RT19 00-1SB60**		100	3 060 units	41B
		19 mm x 6 mm	Zinc yellow		C	**3RT19 00-1SD60**		100	3 060 units	41B

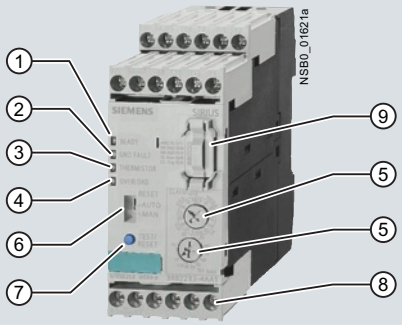
[1] PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH (see Chapter 16, "Appendix" → "External Partners").

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3RB22, 3RB23 up to 630 A for High-Feature applications

Overview



1. Green LED "READY":
   A continuous green light signals that the device is working correctly.
2. Red LED "GND FAULT":
   A continuous red light signals a ground-fault tripping.
3. Red LED "THERMISTOR":
   A continuous red light signals an active thermistor trip.
4. Red LED "OVERLOAD":
   A continuous red light signals an active overload trip; a flickering red light signals an imminent trip (overload warning).
5. Motor current and trip class setting:
   Setting the device to the motor current and to the required trip class dependent on the start-up conditions is easy with the two rotary switches.
6. Selector switch for manual/automatic RESET:
   With this switch you can choose between manual and automatic RESET.
7. Test/RESET button:
   Enables testing of all important device components and functions, plus resetting of the device after a trip when manual RESET is selected.
8. Connecting terminals (removable joint block):
   The generously sized terminals permit connection of two conductors with different cross-sections for the auxiliary, control and sensor circuits. Connection is possible with screw connection and alternatively with spring-type connection.
9. 3RB29 85 function expansion module:
   Enables more functions to be added, e. g. internal ground-fault detection and/or an analog output with corresponding signals.

SIRIUS 3RB22 and 3RB23 evaluation modules

The 3RB22 and 3RB23 solid-state overload relays up to 630 A (up to 820 A possible in combination with a series transformer) are from a modular system and comprise an evaluation unit, a current measuring module and a connecting cable. The 3RB22 overload relays (with monostable auxiliary contacts) and the 3RB23 overload relays (with bistable auxiliary contacts) are supplied from an external voltage.

They have been designed for inverse-time delayed protection of loads with normal and heavy starting ("Function" see "Reference Manual for Protection Equipment – 3RU1, 3RB2 Overload Relays") against excessive temperature rises due to overload, phase unbalance or phase failure. An overload, phase unbalance or phase failure result in an increase of the motor current beyond the set rated motor current.

This current rise is detected by means of a current measuring module (see page 7/134) and electronically evaluated by the evaluation module which is connected to it. The evaluation electronics sends a signal to the auxiliary contacts. The auxiliary contacts then switch off the load by means of a contactor. The break time depends on the ratio between the tripping current and current setting I_e and is stored in the form of a long-term stable tripping characteristic (see www.siemens.com/sirius/support ➞ "Characteristic Curves"). The "tripped" status is signaled by means of a continuous red "OVERLOAD" LED.

The LED indicates imminent tripping of the relay due to overload, phase unbalance or phase failure by flickering when the limit current has been violated. In the case of the 3RB22 and 3RB23 overload relays this warning can also be issued through auxiliary contacts.

In addition to the described inverse-time delayed protection of loads against excessive temperature rises, the 3RB22 and 3RB23 solid-state overload relays also allow direct temperature monitoring of the motor windings (full motor protection) by connection with broken-wire interlock of a PTC sensor circuit. With this temperature-dependent protection, the loads can be protected against overheating caused indirectly by reduced coolant flow, for example, which cannot be detected by means of the current alone. In the event of overheating, the devices switch off the contactor, and thus the load, by means of the auxiliary contacts. The "tripped" status is signaled by means of a continuously illuminated "THERMISTOR" LED.

To protect the loads against high-resistance short circuits due to damage to the insulation, humidity, condensed water, etc., the 3RB22 and 3RB23 solid-state overload relays offer the possibility of internal ground fault monitoring in conjunction with a function expansion module (for details see "Selection and Ordering Data", not possible in conjunction with contactor assembly for Wye-Delta starting). In the event of a ground fault the 3RB22 and 3RB23 relays trip instantaneously.

The "tripped" status is signaled by means of a continuous red "Ground Fault" LED. Signaling through auxiliary contacts is also possible.

After tripping due to overload, phase unbalance, phase failure, thermistor or ground-fault tripping, the relay is reset manually or automatically after the recovery time has elapsed ("Function" see "Reference Manual for Protection Equipment – 3RU1, 3RB2 Overload Relays"). In conjunction with a function expansion module the motor current measured by the microprocessor can be output in the form of an analog signal DC 4 mA to 20 mA for operating rotary coil instruments or for feeding into analog inputs of programmable logic controllers.

With an additional AS-Interface analog module the current values can also be transferred over the AS-i bus system.

The devices are manufactured in accordance with environmental guidelines and contain environmentally friendly and reusable materials.

They comply with all important worldwide standards and approvals.

Type of protection "increased safety EEx e and explosion-proof enclosure EEx d" in accordance with ATEX Directive 94/9/EC

The 3RB22 solid-state overload relays (monostable) provide quick and reliable protection for motors with types of protection EEx e and EEx d in hazardous areas.

They comply with the requirements of EN 60079-7 (Electrical apparatus for areas subject to explosion hazards - Increased safety "e" as well as for flameproof enclosure "d"); see www.siemens.com/sirius/atex.

EC type test certificate for Group II, Category (2) G/D exists. It has the number PTB 05 ATEX 3022.

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Order No. scheme

Digit of the Order No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th
	□□□	□	□	□	□	–	□	□	□	□
Solid-state overload relays	**3 R B**									
SIRIUS 2nd generation		**2**								
Device series			□							
Size, rated operational current and power				□						
Version of the automatic RESET, electrical remote RESET					□					
Trip class (CLASS)							□			
Setting range of the overload release								□		
Connection methods									□	
Installation type										□
Example	**3 R B**	**2**	**2**	**8**	**3**	**–**	**4**	**A**	**A**	**1**

Note:

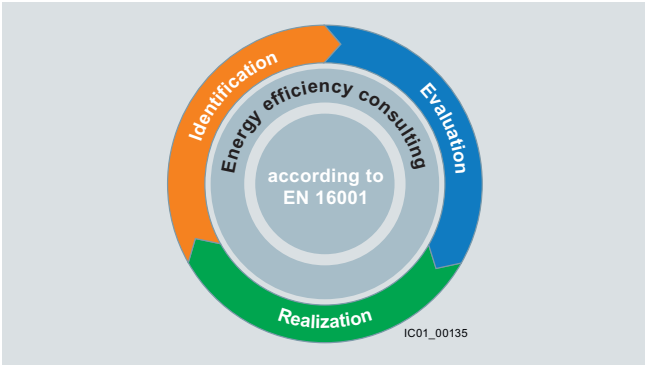
The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quoted in the catalog in the Selection and ordering data.

Benefits

The most important features and benefits of the 3RB22 and 3RB23 solid-state overload relays are listed in the overview table (see "General Data", page 7/72 onwards).

Advantages through energy efficiency



Overview of the energy management process

We offer you a unique portfolio for industrial energy management, using an energy management system that helps to optimally define your energy needs. We split up our industrial energy management into three phases – Identification, Evaluation and Realization – and we support you with the appropriate hardware and software solutions in every process phase.

The innovative products of the SIRIUS industrial controls portfolio can also make a substantial contribution to a plant's energy efficiency (see www.siemens.com/sirius/energysaving).

3RB22 and 3RB23 solid-state overload relays contribute to energy efficiency throughout the plant as follows:

- Reduced inherent power loss
- Less heating of the control cabinet
- Smaller control cabinet air conditioners can be used

Application

Industries

The 3RB22 and 3RB23 solid-state overload relays are suitable for customers from all industries who want to guarantee optimum inverse-time delayed and temperature-dependent protection of their electrical loads (e.g. motors) under normal and heavy starting conditions (CLASS 5 to 30), minimize project completion times, inventories and energy consumption, and optimize plant availability and maintenance management.

Application

The 3RB22 and 3RB23 devices have been designed for the protection of three-phase asynchronous and single-phase AC motors.

If single-phase AC motors are to be protected by the 3RB22 and 3RB23 solid-state overload relays, the main current paths of the current measuring modules must be series-connected ("Schematics" see "Reference Manual for Protection Equipment – 3RU1, 3RB2 Overload Relays").

Ambient conditions

The devices are insensitive to external influences such as shocks, corrosive ambient conditions, ageing and temperature fluctuations.

For the temperature range from –25 C to +60 °C, the 3RB22 and 3RB23 solid-state overload relays compensate the temperature in accordance with IEC 60947-4-1.

Configuration notes for use of the devices below –25 °C or above +60 °C on request.

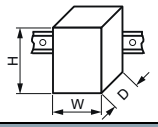
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Technical specifications

Type – Overload relay of evaluation modules		**3RB22 83-4A.1, 3RB23 83-4A.1**
Size of contactor		S00 ... S10/S12
General data		
Trips in the event of		Overload, phase failure and phase unbalance (> 40 % according to NEMA), + ground fault (with corresponding function expansion module) and activation of the thermistor motor protection (with closed PTC sensor circuit)
Trip class acc. to IEC 60947-4-1	CLASS	5, 10, 20 and 30 adjustable
Phase failure sensitivity		Yes
Overload warning		Yes, from 1.125 x I_e for symmetrical loads and from 0.85 x I_e for unsymmetrical loads
Reset and recovery		
• Reset options after tripping		Manual, automatic and remote RESET
• Recovery time		
- For automatic RESET	min	- for tripping due to overcurrent: 3 (stored permanently) - for tripping by thermistor: time until the motor temperature has fallen 5 K below the response temperature - for tripping due to a ground fault: no automatic RESET
- For manual RESET	min	- for tripping due to overcurrent: 3 (stored permanently) - for tripping by thermistor: time until the motor temperature has fallen 5 K below the response temperature - for tripping due to a ground fault: Immediately
- For remote RESET	min	- for tripping due to overcurrent: 3 (stored permanently) - for tripping by thermistor: time until the motor temperature has fallen 5 K below the response temperature - for tripping due to a ground fault: Immediately
Features		
• Display of operating state on device		Yes, with 4 LEDs - Green LED: "Ready" - Red "Ground Fault" LED - Red "Thermistor" LED - Red "Overload" LED
• TEST function		Yes, test of LEDs, electronics, auxiliary contacts and wiring of control circuit by pressing the button TEST/RESET / self-monitoring
• RESET button		Yes, with the TEST/RESET button
• STOP button		No
Explosion protection – Safe operation of motors with "increased safety" type of protection		
EC type test certificate number according to directive 94/9/EC (ATEX)		3RB22: PTB 05 ATEX 3022 ⟨Ex⟩ II (2) GD 3RB23: --
Ambient temperatures		
• Storage/transport	°C	-40 ... +80
• Operation	°C	-25 ... +60
• Temperature compensation	°C	+60
• Permissible rated current		
- Temperature inside control cabinet 60 °C	%	100
- Temperature inside control cabinet 70 °C	%	On request
Repeat terminals		
• Coil repeat terminals		Not required
• Auxiliary contact repeat terminal		Not required
Degree of protection acc. to IEC 60529		IP20: Current measuring modules in sizes S6 and S10/S12 with busbar connection in conjunction with cover.
Touch protection acc. to IEC 61140		Finger-safe: Current measuring modules in sizes S6 and S10/S12 with busbar connection in conjunction with cover.
Shock resistance with sine acc. to IEC 60068-2-27	g/ms	15/11
Electromagnetic compatibility (EMC) – Interference immunity		
• Conductor-related interference		
- Burst acc. to IEC 61000-4-4 (corresponds to degree of severity 3)	kV	2 (power ports), 1 (signal ports)
- Surge acc. to IEC 61000-4-5 (corresponds to degree of severity 3)	kV	2 (line to earth), 1 (line to line)
• Electrostatic discharge according to IEC 61000-4-2 (corresponds to degree of severity 3)	kV	8 (air discharge), 6 (contact discharge)
• Field-related interference according to IEC 61000-4-3 (corresponds to degree of severity 3)	V/m	10
Electromagnetic compatibility (EMC) – emitted interference		Degree of severity A according to EN 55011 (CISPR 11) and EN 55022 (CISPR 22)
Resistance to extreme climates – air humidity	%	100
Dimensions		"Dimensional drawings" see "Reference Manual for Protection Equipment – 3RU1, 3RB2 Overload Relays".
Installation altitude above sea level	m	Up to 2000
Mounting position		Any
Type of mounting		
• Evaluation modules		Stand-alone installation
• Current measuring module	Size	S00 to S3: Stand-alone installation, S6 and S10/S12: stand-alone installation or mounting onto contactors

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Type – Overload relay of evaluation modules		**3RB22 83-4A.1, 3RB23 83-4A.1**
Size of contactor		S00 ... S10/S12
Dimensions of evaluation modules (W x H x D)	mm	45 x 111 x 95



Auxiliary circuits		
Number of NO contacts		2
Number of NC contacts		2
Number of CO contacts		--
Auxiliary contacts – assignment		• Alternative 1 - 1 NO for the signal "tripped by overload and/or thermistor" - 1 NC for disconnecting the contactor - 1 NO for the signal "tripped by ground fault" - 1 NC for disconnecting the contactor or[1)] • Alternative 2 - 1 NO for the signal "tripped by overload and/or thermistor and/or ground fault" - 1 NC for disconnecting the contactor - 1 NO for overload warning - 1 NC for disconnecting the contactor
Rated insulation voltage U_i (pollution degree 3)	V	300
Rated impulse withstand voltage U_{imp}	kV	4
Auxiliary contacts – contact rating		
• NC contact with alternating current AC-14/AC-15, rated operational current I_e at U_e		
- 24 V	A	6
- 120 V	A	6
- 125 V	A	6
- 250 V	A	3
• NO contact with alternating current AC-14/AC-15, rated operational current I_e at U_e		
- 24 V	A	6
- 120 V	A	6
- 125 V	A	6
- 250 V	A	3
• NC contact, NO contact with direct current DC-13, rated operational current I_e at U_e		
- 24 V	A	2
- 60 V	A	0.55
- 110 V	A	0.3
- 125 V	A	0.3
- 250 V	A	0.2
• Conventional thermal current I_{th}	A	5
• Contact reliability (suitability for PLC control; 17 V, 5 mA)		Yes
Short-circuit protection		
• With fuse, operational class gG	A	6
• With miniature circuit breaker, C characteristic	A	1.6
Protective separation between auxiliary conducting paths acc. to IEC 60947-1	V	300
CSA, UL, UR rated data		
Auxiliary circuit – switching capacity		B300, R300
Conductor cross-sections of the auxiliary circuit		
Connection type		**Screw terminals**
Terminal screw		M3, Pozidriv size 2
Operating devices	mm	3.0 x 0.5
Prescribed tightening torque	Nm	0.8 ... 1.2
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected		
• Solid	mm^2	1 × (0.5 ... 4), 2 × (0.5 ... 2.5)
• Finely stranded without end sleeve	mm^2	--
• Finely stranded with end sleeve	mm^2	1 × (0.5 ... 2.5), 2 × (0.5 ... 1.5)
• Stranded	mm^2	--
• AWG cables, solid or stranded	AWG	2 × (20 ... 14)
Connection type		**Spring-type terminals**
Operating devices	mm	3.0 x 0.5
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected		
• Solid	mm^2	2 × (0.25 ... 1.5)
• Finely stranded without end sleeve	mm^2	–
• Finely stranded with end sleeve	mm^2	2 × (0.25 ... 1.5)
• Stranded	mm^2	2 × (0.25 ... 1.5)
• AWG cables, solid or stranded	AWG	2 × (24 ... 16)

[1)] The assignment of auxiliary contacts may be influenced by function expansion modules.

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3RB22, 3RB23 up to 630 A for High-Feature applications

Type – Overload relay of evaluation modules		**3RB22 83-4A.1, 3RB23 83-4A.1**
Size of contactor		S00 ... S10/S12
Control and sensor circuit as well as the analog output		
Rated insulation voltage U_i (pollution degree 3)[1]	V	300
Rated impulse withstand voltage U_{imp}[1]	kV	4
Rated control supply voltage U_s[1]		
• 50/60 Hz AC	V	24 ... 240
• DC	V	24 ... 240
Operating range[1]		
• 50/60 Hz AC		$0.85 \times U_{s\,min} \le U_s \le 1.1 \times U_{s\,max}$
• DC		$0.85 \times U_{s\,min} \le U_s \le 1.1 \times U_{s\,max}$
Rated power[1]		
• 50/60 Hz AC	W	0.5
• DC	W	0.5
Mains buffering time[1]	ms	200
Thermistor motor protection (PTC thermistor detector)[2]		
• Summation cold resistance	kΩ	≤ 1.5
• Response value	kΩ	3.4 ... 3.8
• Return value	kΩ	1.5 ... 1.65
Ground-fault detection		The information refers to sinusoidal residual currents at 50/60 Hz.
• Tripping value I_Δ[3]		
- For $0.3 \times I_e < I_{motor} < 2.0 \times I_e$		$> 0.3 \times I_e$
- For $2.0 \times I_e < I_{motor} < 8.0 \times I_e$		$> 0.15 \times I_{motor}$
• Response time t_{trip}	ms	500 ... 1 000
Analog output[3][4]		
• Output signal	mA	4 ... 20
• Measuring range		0 ... $1.25 \times I_e$ 4 mA corresponds to $0 \times I_e$ 16.8 mA corresponds to $1.0 \times I_e$ 20 mA corresponds to $1.25 \times I_e$
• Load, max.	Ω	100
Conductor cross-sections for the control and sensor circuit as well as the analog output		
Connection type		**Screw terminals**
Terminal screw		M3, Pozidriv size 2
Operating devices	mm	3.0 x 0.5
Prescribed tightening torque	Nm	0.8 ... 1.2
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected		
• Solid	mm^2	1 × (0.5 ... 4), 2 × (0.5 ... 2.5)
• Finely stranded without end sleeve	mm^2	--
• Finely stranded with end sleeve	mm^2	1 × (0.5 ... 2.5), 2 × (0.5 ... 1.5)
• Stranded	mm^2	--
• AWG cables, solid or stranded	AWG	2 × (20 ... 14)
Connection type		**Spring-type terminals**
Operating devices	mm	3.0 x 0.5
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected		
• Solid	mm^2	2 × (0.25 ... 1.5)
• Finely stranded without end sleeve	mm^2	--
• Finely stranded with end sleeve	mm^2	2 × (0.25 ... 1.5)
• Stranded	mm^2	2 × (0.25 ... 1.5)
• AWG cables, solid or stranded	AWG	2 × (24 ... 16)

1) Control circuit.

2) Sensor circuit.

3) For the 3RB22 and 3RB23 overload relays in combination with a corresponding function expansion module.

4) Analog input modules, e.g. SM 331, must be configured for 4-wire measuring transducers. In this case the analog input module must not supply current to the analog output of the 3RB22 and 3RB23 relay.

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Selection and ordering data

3RB22 and 3RB23 solid-state overload relays (evaluation modules) for full motor protection, stand-alone installation, CLASS 5, 10, 20 and 30, adjustable

Type	3RB22 83-4A.1, 3RB23 83-4A.1
Features and technical specifications	
Overload protection, phase failure protection and unbalance protection	✓
Supplied from an external voltage	✓ 24 ... 240 V AC/DC
Auxiliary contacts	✓ 2 NO + 2 NC
Electrical remote RESET integrated	✓
4 LEDs for operating and status displays	✓
TEST function and self-monitoring	✓
Internal ground-fault detection	✓ (with function expansion module)
Screw or spring-type terminals for auxiliary, control and sensor circuits	✓
Input for PTC sensor circuit	✓
Analog output	✓ (with function expansion module)

✓ Available

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41G



3RB22 83-4AA1,
3RB23 83-4AA1



3RB22 83-4AC1,
3RB23 83-4AC1

Size of contactor	Version	DT	Screw terminals Order No.	Price per PU	DT	Spring-type terminals Order No.	Price per PU
Evaluation modules							
S00 ... S12	Monostable	►	**3RB22 83-4AA1**		►	**3RB22 83-4AC1**	
	Bistable	►	**3RB23 83-4AA1**		►	**3RB23 83-4AC1**	

Note:

Overview of overload relays – matching contactors see page 7/78.

Current measuring modules and related connecting cables see page 7/134, general accessories see page 7/138.

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Functions of the 3RB22 and 3RB23 evaluation modules in combination with the 3RB29 85 function expansion modules

Evaluation modules	With function expansion module	Basic functions	Inputs		
			A1/A2	T1/T2	Y1/Y2
3RB22 83-4AA1 3RB22 83-4AC1 3RB23 83-4AA1 3RB23 83-4AC1	--	Inverse-time delayed protection, temperature-dependent protection, electrical remote RESET, overload warning	Power supply 24 ... 240 V AC/DC	Connection for PTC sensor	Electrical remote RESET
	3RB29 85-2CA1	Inverse-time delayed protection, temperature-dependent protection, internal ground-fault detection, electrical remote RESET, overload warning	Power supply 24 ... 240 V AC/DC	Connection for PTC sensor	Electrical remote RESET
	3RB29 85-2CB1	Inverse-time delayed protection, temperature-dependent protection, internal ground-fault detection, electrical remote RESET, ground-fault signal	Power supply 24 ... 240 V AC/DC	Connection for PTC sensor	Electrical remote RESET
	3RB29 85-2AA0	Inverse-time delayed protection, temperature-dependent protection, electrical remote RESET, overload warning, analog output	Power supply 24 ... 240 V AC/DC	Connection for PTC sensor	Electrical remote RESET
	3RB29 85-2AA1	Inverse-time delayed protection, temperature-dependent protection, internal ground-fault detection, electrical remote RESET, overload warning, analog output	Power supply 24 ... 240 V AC/DC	Connection for PTC sensor	Electrical remote RESET
	3RB29 85-2AB1	Inverse-time delayed protection, temperature-dependent protection, internal ground-fault detection, electrical remote RESET, ground-fault signal, analog output	Power supply 24 ... 240 V AC/DC	Connection for PTC sensor	Electrical remote RESET

Evaluation modules	With function expansion module	Outputs				
		I (–) / I (+)	95/96 NC	97/98 NO	05/06 NC	07/08 NO
3RB22 83-4AA1 3RB22 83-4AC1 3RB23 83-4AA1 3RB23 83-4AC1	--	No	Disconnection of the contactor (inverse-time delayed/temperature-dependent protection)	Signal "tripped"	Overload warning	Overload warning
	3RB29 85-2CA1	No	Disconnection of the contactor (inverse-time delayed/temperature-dependent protection + ground fault)	Signal "tripped"	Overload warning	Overload warning
	3RB29 85-2CB1	No	Disconnection of the contactor (inverse-time delayed/temperature-dependent protection)	Signal "tripped"	Disconnection of the contactor (ground fault)	Signal "ground-fault tripping"
	3RB29 85-2AA0	Analog signal	Disconnection of the contactor (inverse-time delayed/temperature-dependent protection)	Signal "tripped"	Overload warning	Overload warning
	3RB29 85-2AA1	Analog signal	Disconnection of the contactor (inverse-time delayed/temperature-dependent protection + ground fault)	Signal "tripped"	Overload warning	Overload warning
	3RB29 85-2AB1	Analog signal	Disconnection of the contactor (inverse-time delayed/temperature-dependent protection)	Signal "tripped"	Disconnection of the contactor (ground fault)	Signal "ground-fault tripping"

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Function expansion modules for 3RB22 and 3RB23 overload relays (evaluation modules)

Size of contactor	Version	For overload relays	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Sizes S00 to S12								
	For plugging into evaluation module (1 unit)							
S00 ... S12	**Analog Basic 1 modules**[1] Analog output DC 4 ... 20 mA, with overload warning	3RB22, 3RB23	▶	**3RB29 85-2AA0**		1	1 unit	41F
	Analog Basic 1 GF modules[1)2)] Analog output DC 4 ... 20 mA, with internal ground-fault detection and overload warning	3RB22, 3RB23	▶	**3RB29 85-2AA1**		1	1 unit	41F
	Analog Basic 2 GF modules[1)2)] Analog output DC 4 ... 20 mA, with internal ground-fault detection and overload ground-fault signal	3RB22, 3RB23	▶	**3RB29 85-2AB1**		1	1 unit	41F
	Basic 1 GF modules[2)] with internal ground-fault detection and overload warning	3RB22, 3RB23	▶	**3RB29 85-2CA1**		1	1 unit	41F
	Basic 2 GF modules[2)] with internal ground-fault detection and ground-fault signaling	3RB22, 3RB23	▶	**3RB29 85-2CB1**		1	1 unit	41F


3RB29 85-2..1

Note:

Analog input modules, e.g. SM 331, must be configured for 4-wire measuring transducers. In this case the analog input module must not supply current to the analog output of the 3RB22/3RB23 relay.

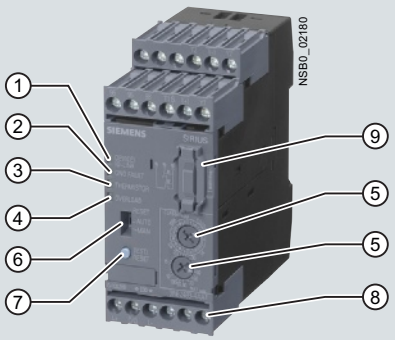
1) The analog signal DC 4 mA up to 20 mA can be used for operating rotary coil instruments or for feeding into analog inputs of programmable logic controllers.

2) The following information on ground-fault protection refers to sinusoidal residual currents at 50/60 Hz:
- With a motor current of between 0.3 and 2 times the current setting I_e the unit will trip at a ground-fault current equal to 30 % of the current setting.
- With a motor current of between 2 and 8 times the current setting I_e the unit will trip at a ground-fault current equal to 15 % of the current setting.
- The response delay amounts to between 0.5 s and 1 s.

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3RB24 for IO-Link, up to 630 A for High-Feature applications

Overview



1. Green LED "DEVICE/IO-Link:
A continuous green light signals that the device is working correctly, a green flickering light signals the communication through IO-Link.
2. Red LED "GND FAULT":
A continuous red light signals an active ground-fault trip.
3. Red LED "THERMISTOR":
A continuous red light signals an active thermistor trip.
4. Red LED "OVERLOAD":
A continuous red light signals an active overload trip; a flickering red light signals an imminent trip (overload warning).
5. Motor current and trip class setting:
Setting the device to the motor current and to the required trip class dependent on the start-up conditions is easy with the two rotary switches.
6. Selector switch for manual/automatic RESET:
With this switch you can choose between manual and automatic RESET.
7. Test/RESET button:
Enables testing of all important device components and functions, plus resetting of the device after a trip when manual RESET is selected.
8. Connecting terminals (removable terminal block):
The generously sized terminals permit connection of two conductors with different cross-sections for the auxiliary, control and sensor circuits. Connection is possible with screw connection and alternatively with spring-type connection.
9. Plug-in point for operator panel:
enables connection of the 3RA69 35-0A operator panel.

SIRIUS 3RB24 evaluation module

The modular electronic overload relay 3RB24, which is powered via IO-Link (with monostable auxiliary contacts) up to 630 A (up to 820 A possible with a series transformer) have been designed for inverse-time delayed protection of loads with normal and heavy starting ("Function" see "Manual for SIRIUS 3RB24 Solid-State Overload Relay for IO-Link", ordering information under "Accessories" on page 7/137) against excessive temperature rises due to overload, phase unbalance or phase failure. It comprises an evaluation unit, a current measuring module and a connecting cable. The evaluation module 3RB24 also offers an motor starter function: The contactors, which are connected via the auxiliary contacts, can also be actuated for operation via IO-Link. In this way, direct, reversing and star-delta starters up to 630 A (or 830 A) can be connected to the controller wirelessly via the IO-Link controller.

An overload, phase unbalance or phase failure result in an increase of the motor current beyond the set rated motor current.

This current rise is detected by means of the current measuring module (see page 7/134) and electronically evaluated by the evaluation module which is connected to it. The evaluation electronics sends a signal to the auxiliary contacts. The auxiliary contacts then switch off the load by means of a contactor. The break time depends on the ratio between the tripping current and current setting I_e and is stored in the form of a long-term stable tripping characteristic see www.siemens.com/sirius/support → "Characteristic Curves"). The "tripped" status is signaled by means of a continuously illuminated red "OVERLOAD" LED and also reported as a group fault via IO-Link.

The LED indicates imminent tripping of the relay due to overload, phase unbalance or phase failure by flickering when the limit current has been violated. This warning can also be reported to the higher-level PLC via IO-Link at the 3RB24 overload relay.

In addition to the described inverse-time delayed protection of loads against excessive temperature rises, the 3RB24 solid-state overload relays also allow direct temperature monitoring of the motor windings (full motor protection) by connection with broken-wire interlock of a PTC sensor circuit. With this temperature-dependent protection, the loads can be protected against overheating caused indirectly by reduced coolant flow, for example, which cannot be detected by means of the current alone. In the event of overheating, the devices switch off the contactor, and thus the load, by means of the auxiliary contacts. The "tripped" status is signaled by means of a continuously illuminated "THERMISTOR" LED and also reported as a group fault via IO-Link.

To the loads against incomplete ground faults due to damage to the insulation, humidity, condensation, etc., to protect the electronic overload relay 3RB24 offer the possibility of internal ground-fault detection (for details see "Manual for SIRIUS 3RB24 Solid-State Overload Relay for IO-Link", ordering information under "Accessories" on page 7/137, not possible in conjunction with contactor assembly for wye-delta starting). In the event of a ground fault, the 3RB24 relays trip instantaneously.

The "tripped" status is signaled by means of a flashing red LED "Ground Fault" and reported at the overload relay 3RB24 as a group fault via IO-Link.

The reset after overload, phase unbalance, phase failure, thermistor or ground-fault tripping is performed manually by key on site, via IO-Link or by electrical remote RESET or automatically after the cooling time (motor model) or for thermistor protection after sufficient cooling. Power cuts in devices due to function monitoring (broken wire or short circuit on the thermistor) can only be reset on-site ("Function" see "Manual for SIRIUS 3RB24 Solid-State Overload Relay for IO-Link", ordering information under "Accessories" on page 7/137). In conjunction with a function expansion module, the motor current measured by the microprocessor can be output in the form of an analog signal DC 4 to 20 mA for operating rotary coil instruments or for feeding into analog inputs of programmable logic controllers.

The current values can be transmitted to the higher-level controller via IO-Link.

The devices are manufactured in accordance with environmental guidelines and contain environmentally friendly and reusable materials.

They comply with all important worldwide standards and approvals.

Type of protection "increased safety EEx e and explosion-proof enclosure EEx d" in accordance with ATEX Directive 94/9/EC

The electronic overload relay 3RB24 (monostable) are suitable for the overload protection of explosion-proof motors of types of protection EEx e and EEx d.

They comply with the requirements of EN 60079-7 (Electrical apparatus for areas subject to explosion hazards - Increased safety "e" as well as for flameproof enclosure "d");
see www.siemens.com/sirius/atex.

EC type test certificate for Group II, Category (2) G/D has been submitted. On request.

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Order No. scheme

Digit of the Order No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th
	□□□	□	□	□	□	–	□	□	□	□
Solid-state overload relays	**3 R B**									
SIRIUS 2nd generation		**2**								
Device series			□							
Size, rated operational current and power				□						
Version of the automatic RESET, electrical remote RESET					□					
Trip class (CLASS)							□			
Setting range of the overload release								□		
Connection methods									□	
Installation type										□
Example	**3 R B**	**2**	**4**	**8**	**3**	**–**	**4**	**A**	**A**	**1**

Note:

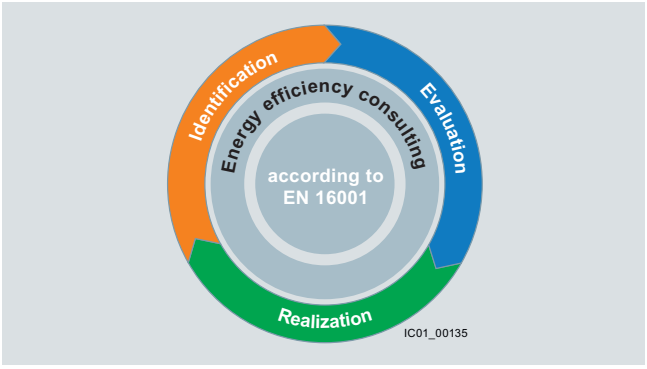
The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quoted in the catalog in the Selection and ordering data.

Benefits

The most important features and benefits of the 3RB24 solid-state overload relays for IO-Link are listed in the overview table (see "General Data", page 7/72 onwards).

Advantages through energy efficiency



Overview of the energy management process

We offer you a unique portfolio for industrial energy management, using an energy management system that helps to optimally define your energy needs. We split up our industrial energy management into three phases – Identification, Evaluation and Realization – and we support you with the appropriate hardware and software solutions in every process phase.

The innovative products of the SIRIUS industrial controls portfolio can also make a substantial contribution to a plant's energy efficiency (see www.siemens.com/sirius/energysaving).

3RB24 solid-state overload relays for IO-Link contribute to energy efficiency throughout the plant as follows:

- Transmission of current values
- Reduced inherent power loss
- Less heating of the control cabinet
- Smaller control cabinet air conditioners can be used

Application

Industries

The 3RB24 solid-state overload relays are suitable for customers from all industries who want to guarantee optimum inverse-time delayed and temperature-dependent protection of their electrical loads (e.g. motors) under normal and heavy starting conditions (CLASS 5 to 30), minimize project completion times, inventories and energy consumption, and optimize plant availability and maintenance management.

Application

The 3RB24 solid-state overload relays have been designed for the protection of three-phase asynchronous and single-phase AC motors.

In addition to protection function, these devices can be used together with contactors as direct or reversing starters (star-delta (wye-delta) start also possible), which are controlled via IO-Link. This makes it possible to directly control drives via IO-Link from a higher-level controller or on site via the optional hand-held device lamps and also, for example, to return current values directly via IO-Link.

If single-phase AC motors are to be protected by the 3RB24 solid-state overload relays, the main current paths of the current measuring modules must be series-connected ("Schematics" see "Manual for SIRIUS 3RB24 Solid-State Overload Relay for IO-Link", ordering information under "Accessories" on page 7/137).

Ambient conditions

The devices are insensitive to external influences such as shocks, corrosive ambient conditions, ageing and temperature fluctuations.

For the temperature range from –25 C to +60 °C, the 3RB24 solid-state overload relays compensate the temperature in accordance with IEC 60947-4-1.

Configuration notes for use of the devices below –25 °C or above +60 °C on request.

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Technical specifications

Type – Overload relay of evaluation modules		**3RB24 83-4A.1**
Size of contactor		S00 ... S10/S12
General data		
Trips in the event of		Overload, phase failure and phase unbalance (> 40 % according to NEMA), + ground fault (connectable and disconnectable) and activation of the thermistor motor protection (with closed PTC sensor circuit)
Trip class acc. to IEC 60947-4-1	CLASS	5, 10, 20 and 30 adjustable
Phase failure sensitivity		Yes
Overload warning		Yes, from 1.125 x I_e for symmetrical loads and from 0.85 x I_e for unsymmetrical loads
Reset and recovery		
• Reset options after tripping		Manual and automatic RESET, electrical remote RESET or through IO-Link
• Recovery time		
- For automatic RESET	min	- for tripping due to overcurrent: 3 (stored permanently) - for tripping by thermistor: time until the motor temperature has fallen 5 K below the response temperature - for tripping due to a ground fault: no automatic RESET
- For manual RESET	min	- for tripping due to overcurrent: 3 (stored permanently) - for tripping by thermistor: time until the motor temperature has fallen 5 K below the response temperature - for tripping due to a ground fault: Immediately
- For remote RESET	min	- for tripping due to overcurrent: 3 (stored permanently) - for tripping by thermistor: time until the motor temperature has fallen 5 K below the response temperature - for tripping due to a ground fault: Immediately
Features		
• Display of operating state on device		Yes, with 4 LEDs - Green LED "DEVICE/IO-Link" - Red "Ground Fault" LED - Red "Thermistor" LED - Red "Overload" LED
• TEST function		Yes, test of LEDs, electronics, auxiliary contacts and wiring of control circuit by pressing the button TEST/RESET / self-monitoring
• RESET button		Yes, with the TEST/RESET button
• STOP button		No
Explosion protection – Safe operation of motors with "increased safety EEX e and explosion-proof enclosure EEx d" type of protection		
EC type test certificate number according to directive 94/9/EC (ATEX)		On request
Ambient temperatures		
• Storage/transport	°C	-40 ... +80
• Operation	°C	-25 ... +60
• Temperature compensation	°C	+60
• Permissible rated current		
- Temperature inside control cabinet 60 °C	%	100
- Temperature inside control cabinet 70 °C	%	On request
Repeat terminals		
• Coil repeat terminals		Not required
• Auxiliary contact repeat terminal		Not required
Degree of protection acc. to IEC 60529		IP20: Current measuring modules in sizes S6 and S10/S12 with busbar connection in conjunction with the cover
Touch protection acc. to IEC 61140		Finger-safe: Current measuring modules in sizes S6 and S10/S12 with busbar connection in conjunction with the cover
Shock resistance with sine acc. to IEC 60068-2-27	g/ms	15/11
Electromagnetic compatibility (EMC) – Interference immunity		
• Conductor-related interference		
- Burst acc. to IEC 61000-4-4 (corresponds to degree of severity 3)	kV	2 (power ports), 1 (signal ports)
- Surge acc. to IEC 61000-4-5 (corresponds to degree of severity 3)	kV	2 (line to earth), 1 (line to line)
• Electrostatic discharge according to IEC 61000-4-2 (corresponds to degree of severity 3)	kV	8 (air discharge), 6 (contact discharge)
• Field-related interference according to IEC 61000-4-3 (corresponds to degree of severity 3)	V/m	10
Electromagnetic compatibility (EMC) – emitted interference		Degree of severity A according to EN 55011 (CISPR 11) and EN 55022 (CISPR 22)
Resistance to extreme climates – air humidity	%	100
Dimensions		"Dimensional drawings" see "Manual for SIRIUS 3RB24 Solid-State Overload Relay for IO-Link", ordering information under "Accessories" on page 7/137.
Installation altitude above sea level	m	Up to 2000
Mounting position		Any
Type of mounting		
• Evaluation modules		Stand-alone installation
• Current measuring module	Size	S00 to S3: Stand-alone installation, S6 and S10/S12: stand-alone installation or mounting onto contactors

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Type – Overload relay of evaluation modules		**3RB24 83-4A.1**
Size of contactor		S00 ... S10/S12
Dimensions of evaluation modules (W x H x D)	mm	45 x 111 x 95
Auxiliary circuit		
Number of auxiliary switches		1 CO contact, 1 NO contact connected in series internally
Auxiliary contacts – assignment		• 1 CO contact for selecting the contactor (for reversing starter function), actuated by the control system • 1 NO contact for normal switching duty, actuated by the control system (opens automatically when tripping occurs)
Rated insulation voltage U_i (pollution degree 3)	V	300
Rated impulse withstand voltage U_{imp}	kV	4
Auxiliary contacts – contact rating		
• NC contact with alternating current AC-14/AC-15, rated operational current I_e at U_e		
- 24 V	A	6
- 120 V	A	6
- 125 V	A	6
- 250 V	A	3
• NO contact with alternating current AC-14/AC-15, rated operational current I_e at U_e		
- 24 V	A	6
- 120 V	A	6
- 125 V	A	6
- 250 V	A	3
• NC contact, NO contact with direct current DC-13, rated operational current I_e at U_e		
- 24 V	A	2
- 60 V	A	0.55
- 110 V	A	0.3
- 125 V	A	0.3
- 250 V	A	0.2
• Conventional thermal current I_{th}	A	5
• Contact reliability (suitability for PLC control; 17 V, 5 mA)		Yes
Short-circuit protection		
• With fuse, operational class gG	A	6
• With miniature circuit breaker, C characteristic	A	1.6
Protective separation between auxiliary conducting paths acc. to IEC 60947-1	V	300
CSA, UL, UR rated data		
Auxiliary circuit – switching capacity		B300, R300
Conductor cross-sections of the auxiliary circuit		
Connection type		**Screw terminals**
Terminal screw		M3, Pozidriv size 2
Operating devices	mm	3.0 x 0.5
Prescribed tightening torque	Nm	0.8 ... 1.2
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected		
• Solid	mm^2	1 × (0.5 ... 4), 2 × (0.5 ... 2.5)
• Finely stranded without end sleeve	mm^2	--
• Finely stranded with end sleeve	mm^2	1 × (0.5 ... 2.5), 2 × (0.5 ... 1.5)
• Stranded	mm^2	--
• AWG cables, solid or stranded	AWG	2 × (20 ... 14)
Connection type		**Spring-type terminals**
Operating devices	mm	3.0 x 0.5
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected		
• Solid	mm^2	2 × (0.25 ... 1.5)
• Finely stranded without end sleeve	mm^2	–
• Finely stranded with end sleeve	mm^2	2 × (0.25 ... 1.5)
• Stranded	mm^2	2 × (0.25 ... 1.5)
• AWG cables, solid or stranded	AWG	2 × (24 ... 16)

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3RB24 for IO-Link, up to 630 A for High-Feature applications

Type – Overload relay of evaluation modules		**3RB24 83-4A.1**
Size of contactor		S00 ... S10/S12
Control and sensor circuit as well as the analog output		
Rated insulation voltage U_i (pollution degree 3)[1]	V	300
Rated impulse withstand voltage U_{imp}[1]	kV	4
Rated control supply voltage U_s[1]		
• DC	V	24 through IO-Link
Operating range[1]		
• DC		$0.85 \times U_{s\,min} \leq U_s \leq 1.1 \times U_{s\,max}$
Rated power[1]		
• DC	W	0.5
Mains buffering time[1]	ms	200
Thermistor motor protection (PTC thermistor detector)[2]		
• Summation cold resistance	kΩ	≤ 1.5
• Response value	kΩ	3.4 ... 3.8
• Return value	kΩ	1.5 ... 1.65
Ground-fault detection		The information refers to sinusoidal residual currents at 50/60 Hz.
• Tripping value I_Δ - For $0.3 \times I_e < I_{motor} < 2.0 \times I_e$ - For $2.0 \times I_e < I_{motor} < 8.0 \times I_e$		 $> 0.3 \times I_e$ $> 0.15 \times I_{motor}$
• Response time t_{trip}	ms	500 ... 1 000
Analog output[3]		
• Output signal	mA	4 ... 20
• Measuring range		0 ... $1.25 \times I_e$ 4 mA corresponds to $0 \times I_e$ 16.8 mA corresponds to $1.0 \times I_e$ 20 mA corresponds to $1.25 \times I_e$
• Load, max.	Ω	100
Conductor cross-sections for the control and sensor circuit as well as the analog output		
Connection type		**Screw terminals**
Terminal screw		M3, Pozidriv size 2
Operating devices	mm	3.0 x 0.5
Prescribed tightening torque	Nm	0.8 ... 1.2
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected		
• Solid	mm^2	1 × (0.5 ... 4), 2 × (0.5 ... 2.5)
• Finely stranded without end sleeve	mm^2	--
• Finely stranded with end sleeve	mm^2	1 × (0.5 ... 2.5), 2 × (0.5 ... 1.5)
• Stranded	mm^2	--
• AWG cables, solid or stranded	AWG	2 × (20 ... 14)
Connection type		**Spring-type terminals**
Operating devices	mm	3.0 x 0.5
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected		
• Solid	mm^2	2 × (0.25 ... 1.5)
• Finely stranded without end sleeve	mm^2	--
• Finely stranded with end sleeve	mm^2	2 × (0.25 ... 1.5)
• Stranded	mm^2	2 × (0.25 ... 1.5)
• AWG cables, solid or stranded	AWG	2 × (24 ... 16)

1) Control circuit.

2) Sensor circuit.

3) Analog input modules, e.g. SM 331, must be configured for 4-wire measuring transducers. The analog input module may not supply current to the analog output of the 3RB24 overload relay.

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Selection and ordering data

3RB24 solid-state overload relays (evaluation module) for full motor protection, stand-alone installation, CLASS 5, 10, 20 and 30, adjustable

Type	3RB24 83-4A.1
Features and technical specifications	
Overload protection, phase failure protection and unbalance protection	✓
Supplied from an external voltage	✓ 24 V DC through IO-Link
Direct-on-line or reversing starters (wye-delta starting also possible) controllable through IO-Link	✓
Auxiliary contacts	✓ 1 CO and 1 NO in series
Manual and automatic RESET	✓
Remote-RESET	✓ (electrically or via IO-Link)
4 LEDs for operating and status displays	✓
TEST function and self-monitoring	✓
Internal ground-fault detection	✓
Screw or spring-type terminals for auxiliary, control and sensor circuits	✓
Input for PTC sensor circuit	✓
Analog output	✓
IO-Link-specific functions	
• Connection of direct-on-line, reversing and star-delta starters to the controller via IO-Link	✓
• On-site controlling of the starter using the hand-held device	✓
• Accessing process data (e.g. current values in all three phases) via IO-Link	✓
• Accessing parameterization and diagnostics data (e.g. tripped signals) via IO-Link	✓

✓ Available

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41G



3RB24 83-4AA1



3RB24 83-4AC1

Size of contactor	Version	DT	Screw terminals		DT	Spring-type terminals	
			Order No.	Price per PU		Order No.	Price per PU
Evaluation modules							
S00 ... S12	Monostable	►	**3RB24 83-4AA1**		A	**3RB24 83-4AC1**	

Notes:

- Overview of overload relays – matching contactors see page 7/78.
- Analog input modules, e.g. SM 331, must be configured for 4-wire measuring transducers. The analog input module may not supply current to the analog output of the 3RB24 relay.

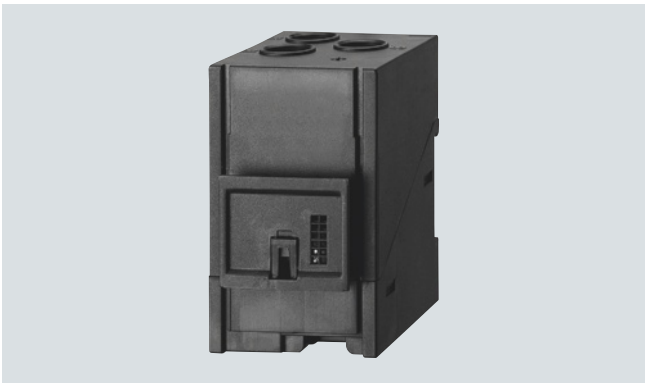
Current measuring modules and related connecting cables see page 7/136, accessories see pages 7/137 and 7/138.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Current measuring modules for 3RB22, 3RB23, 3RB24

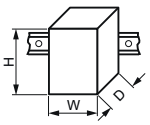
Overview



SIRIUS 3RB29 06 current measuring module

The current measuring modules are designed as system components for connecting to evaluation units 3RB22 to 3RB24. Using these evaluation units the motor current is measured and the measured value sent to the evaluation unit for evaluation. The current measuring modules in sizes S00 to S3 up to 55 mm wide are equipped with straight-through transformers and can be snap-fitted under the evaluation units. The larger evaluation units are installed directly on the contactor or as stand-alond units.

Technical specifications

Type – Overload relays: Current measuring modules			3RB29 06		3RB29 56	3RB29 66
Size of contactor			S00/S0	S2/S3	S6	S10/S12
Dimensions of current measuring modules (W x H x D)		mm	45 x 84 x 45	55 x 94 x 72	120 x 119 x 145	145 x 147 x 148
Main circuit						
Rated insulation voltage U_i (pollution degree 3)		V	1 000			
Rated impulse withstand voltage U_{imp}		kV	6		8	
Rated operational voltage U_e		V	1 000			
Type of current						
• Direct current			No			
• Alternating current			Yes, 50/60 Hz ±5 %			
Current setting		A	0.3 ... 3; 2.4 ... 25	10 ... 100	20 ... 200	63 ... 630
Power loss per unit (max.)		W	0.5			
Short-circuit protection						
• With fuse without contactor			See "Selection and ordering data" on page 7/136			
• With fuse and contactor			See - "Configuration Manual for Configuring SIRIUS – Selection Data for Load Feeders in Fuseless and Fused Designs" - "Configuration Manual for Configuring SIRIUS Innovations – Selection Data for Load Feeders in Fuseless and Fused Designs"			
Protective separation between main and auxiliary conducting paths acc. to IEC 60947-1 (pollution degree 2)		V	690 for grounded networks, otherwise 600			

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Type – Overload relays: Current measuring modules		3RB29 06		3RB29 56	3RB29 66
Size of contactor		S00/S0	S2/S3	S6	S10/S12
Dimensions of current measuring modules (W x H x D)	mm	45 x 84 x 45	55 x 94 x 72	120 x 119 x 145	145 x 147 x 148
Conductor cross-sections of the main circuit					
Connection type		**Screw terminals with box terminal**			
Terminal screw	mm	--		4 mm Allen screw	5 mm Allen screw
Operating devices	mm	--		4 mm Allen screw	5 mm Allen screw
Prescribed tightening torque	Nm	--		10 ... 12	20 ... 22
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected					
• Solid	mm^2	--		--	--
• Finely stranded without end sleeve	mm^2	--		With 3RT19 55-4G box terminal: 2 × (1 × max. 50, 1 × max. 70), 1 × (10 ... 70)	2 × (50 ... 185), rear clamping point only: 1 × (70 ... 240)
				With 3RT19 56-4G box terminal: 2 × (1 × max. 95, 1 × max. 120), 1 × (10 ... 120)	Rear clamping point only: 1 × (120 ... 185)
• Finely stranded with end sleeve	mm^2	--		With 3RT19 55-4G box terminal: 2 × (1 × max. 50, 1 × max. 70), 1 × (10 ... 70)	2 × (50 ... 185), rear clamping point only: 1 × (70 ... 240)
				With 3RT19 56-4G box terminal: 2 × (1 × max. 95, 1 × max. 120), 1 × (10 ... 120)	Rear clamping point only: 1 × (120 ... 185)
• Stranded	mm^2	--		With 3RT19 55-4G box terminal: 2 × (max. 70), 1 × (16 ... 70)	2 × (70 ... 240), rear clamping point only: 1 × (95 ... 300)
				With 3RT19 56-4G box terminal: 2 × (max. 120), 1 × (16 ... 120)	Rear clamping point only: 1 × (120 ... 240)
• AWG cables, solid or stranded	AWG	--		With 3RT19 55-4G box terminal: 2 × (max. 1/0), 1 × (6 ... 2/0)	2 × (2/0 ... 500 kcmil), rear clamping point only: 1 × (3/0 ... 600 kcmil)
				With 3RT19 56-4G box terminal: 2 × (max. 3/0), 1 × (6 ... 250 kcmil)	Rear clamping point only: 1 × (250 kcmil ... 500 kcmil)
• Ribbon cables (number x width x thickness)	mm	--		With 3RT19 55-4G box terminal: 2 × (6 × 15.5 × 0.8), 1 × (3 × 9 × 0.8 ... 6 × 15.5 × 0.8)	2 × (20 × 24 × 0.5), 1 × (6 × 9 × 0.8 ... 20 × 24 × 0.5)
				With 3RT19 56-4G box terminal: 2 × (10 × 15.5 × 0.8), 1 × (3 × 9 × 0.8 ... 10 × 15.5 × 0.8)	
Connection type		**Busbar connections**			
Terminal screw		--		M8 × 25	M10 x 30
Prescribed tightening torque	Nm	--		10 ... 14	14 ... 24
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected					
• Solid with cable lug	mm^2	--		16 ... 95[1)]	50 ... 240[2)]
• Stranded with cable lug	mm^2	--		25 ... 120[1)]	70 ... 240[2)]
• AWG cable, solid or stranded, with cable lug	AWG	--		4 ... 250 kcmil	2/0 ... 500 kcmil
• with connecting bar (max. width)	mm	--		17	25
Connection type		**Straight-through transformers**			
Diameter of opening	mm	7.5	14	25	--

1) When connecting cable lugs according to DIN 46235 with conductor cross-sections of 95 mm^2 and more, the 3RT19 56-4EA1 terminal cover must be used to ensure phase spacing.

2) When connecting cable lugs according to DIN 46234 with conductor cross-sections of 240 mm^2 and more as well as to DIN 46235 with conductor cross-sections of 185 mm^2 and more, the 3RT19 56-4EA1 terminal cover must be used for to keep the phase clearance.

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Current measuring modules for 3RB22, 3RB23, 3RB24

Selection and ordering data

Current measuring modules for mounting onto contactor[1] and stand-alone installation[1)2] (essential accessories)

	Size contactor[3]	Rating for induction motor,[4]	Current setting of the inverse-time delayed overload release	Short-circuit protection with fuse, type of coordination "2", operational class gG[5]	For overload relays	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		kW	A	A							
Sizes S00/S0[2)6)]											
 3RB29 06-2.G1	S00/S0	0.09 … 1.1	0.3 … 3	20	3RB22 to 3RB24	▶	**3RB29 06-2BG1**		1	1 unit	41G
		1.1 … 11	2.4 … 25	63		▶	**3RB29 06-2DG1**		1	1 unit	41G
Sizes S2/S3[2)6)]											
 3RB29 06-2JG1	S2/S3	5.5 … 45	10 … 100	315	3RB22 to 3RB24	▶	**3RB29 06-2JG1**		1	1 unit	41G
Size S6[1)6)]											
 3RB29 56-2TG2	S6 with busbar connection	11 … 90	20 … 200	315	3RB22 to 3RB24	▶	**3RB29 56-2TH2**		1	1 unit	41G
	For mounting to S6 contactors with box terminals				3RB22 to 3RB24	▶	**3RB29 56-2TG2**		1	1 unit	41G
Sizes S10/S12[1)]											
 3RB29 66-2WH2	S10/S12 and size 14 (3TF68/ 3TF69)	37 … 450	63 … 630	800	3RB22 to 3RB24	▶	**3RB29 66-2WH2**		1	1 unit	41G

Note:

The connecting cable between the current measuring module and the evaluation module is not included in the scope of supply; please order separately.

1) The current measuring modules with an Order No. ending with **"2"** are designed for mounting onto contactor and stand-alone installation. For 3TF68/3TF69 contactors, direct mounting is not possible.

2) The current measuring modules with an Order No. ending with **"1"** are designed for stand-alone installation.

3) Observe maximum rated operational current of the devices.

4) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

5) Maximum protection by fuse for overload relay, type of coordination "2". "Fuse Values in Connection with Contactors" see
- "Configuration Manual for Configuring SIRIUS – Selection Data for Load Feeders in Fuseless and Fused Designs"
- "Configuration Manual for Configuring SIRIUS Innovations – Selection Data for Load Feeders in Fuseless and Fused Designs".

6) The modules with an Order No. with **"G"** in penultimate position are equipped with a straight-through transformer.

Accessories

	Size of contactor	Version	For overload relays	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Connecting cables (necessary accessories)									
 3RB29 87-2.		For connection between evaluation module and current measuring module							
	S00 ... S3	• Length 0.1 m (only for mounting of the evaluation module directly onto the current measuring module)	3RB24, 3RB29	▶	**3RB29 87-2B**		1	1 unit	41F
	S00 ... S12	• Length 0.5 m	3RB24, 3RB29	▶	**3RB29 87-2D**		1	1 unit	41F

Additional general accessories see page 7/138.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Overload relays for High-Feature applications

The following optional accessories are available for the 3RB22 to 3RB24 solid-state overload relays:

- Operator panel for the evaluation modules 3RB24
- Manual 3RB24
- Sealable cover for the evaluation modules 3RB22 to 3RB24
- Terminal covers for the 3RB29 current measuring modules sizes S6 and S10/S12
- Box terminal blocks for the 3RB29 current measuring modules sizes S6 and S10/S12
- Push-in lugs for screw fixing for 3RB22 to 3RB24 evaluation modules and 3RB29 06 current measuring modules

Selection and ordering data

Accessories for overload relay 3RB24

	Version	For overload relays	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Operator panels for evaluation modules								
 3RA69 35-0A	**Operator panels (set)** 1 set comprises: • 1 x operator panel • 1 x 3RA69 36-0A enabling module • 1 x 3RA69 33-0B interface cover • 1 x fixing terminal Note: The connecting cable between the evaluation module and the operator panel is not included in the scope of supply; please order separately.	3RB24	A	**3RA69 35-0A**		1	1 unit	42F
	Connecting cable Length 2 m (round), for connecting the evaluation module to the operator panel	3RB24	▶	**3UF79 33-0BA00-0**		1	1 unit	42J
	Enabling modules (replacement)	3RB24	A	**3RA69 36-0A**		1	1 unit	42F
	Interface covers	3RB24	A	**3RA69 33-0B**		1	5 units	42F
Manuals								
	**Solid-state overload relays for IO-Link** The manual is printed only on demand (Print-on-demand PoD).	3RB24						
	• German[1)]		C	**3ZX1012-0RB24-0AB0**		1	1 unit	401
	• English[1)]		C	**3ZX1012-0RB24-0AC0**		1	1 unit	401
	• French[1)]		C	**3ZX1012-0RB24-0AD0**		1	1 unit	401
	• Spanish[1)]		C	**3ZX1012-0RB24-0AE0**		1	1 unit	401

[1)] The manual is also available as a free PDF download on the Internet at www.siemens.com/sirius/support → "Manuals/Operating Instructions".

Additional general accessories see next page.

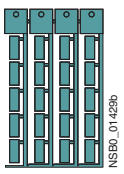
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Accessories for 3RB22, 3RB23, 3RB24

General accessories

	Version	Size	For overload relays	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Sealable covers for evaluation modules									
 3RB29 84-2	For covering the setting knobs	--	3RB22 to 3RB24	▶	**3RB29 84-2**		1	10 units	41F
Terminal covers for current measuring modules									
	Covers for cable lugs and busbar connections								
	• Length 100 mm	S6	3RB29 56	▶	**3RT19 56-4EA1**		1	1 unit	41B
	• Length 120 mm	S10/S12	3RB29 66	▶	**3RT19 66-4EA1**		1	1 unit	41B
	Covers for box terminals								
	• Length 25 mm	S6	3RB29 56	▶	**3RT19 56-4EA2**		1	1 unit	41B
	• Length 30 mm	S10/S12	3RB29 66	▶	**3RT19 66-4EA2**		1	1 unit	41B
	Covers for screw terminals between contactor and overload relay, without box terminals (1 unit required per combination)	S6	3RB29 56	▶	**3RT19 56-4EA3**		1	1 unit	41B
		S10/S12	3RB29 66	▶	**3RT19 66-4EA3**		1	1 unit	41B
Box terminal blocks for current measuring modules									
 3RT19 5.-4G	For round and ribbon cables								
	• Up to 70 mm^2	S6[1)]	3RB29 56	▶	**3RT19 55-4G**		1	1 unit	41B
	• Up to 120 mm^2	S6	3RB29 56	▶	**3RT19 56-4G**		1	1 unit	41B
	• Up to 240 mm^2	S10/S12	3RB29 66	▶	**3RT19 66-4G**		1	1 unit	41B
	Technical specifications for conductor cross-sections see "Reference Manual for Protection Equipment– 3RU1, 3RB2 Overload Relays".								
Push-in lugs for evaluation modules and current measuring modules									
 3RP19 03	For screw fixing the evaluation modules	--	3RB22 to 3RB24	B	**3RP19 03**		1	10 units	41H
 3RB19 00-0B	For screw fixing the current measuring modules (2 units per module)	S00 ... S3	3RB29 06	A	**3RB19 00-0B**		100	10 units	41F

[1)] In the scope of supply for 3RT10 54-1 contactors (55 kW).

	Version	Size	Color	For overload relays	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Tools for opening spring-type terminals										
						Spring-type terminals				
 3RA29 08-1A	**Screwdrivers** For all SIRIUS devices with spring-type terminals	Length approx. 200 mm, 3.0 mm x 0.5 mm	Titanium gray/ black, partially insulated	Main and auxiliary circuit connection: 3RB2	A	**3RA29 08-1A**		1	1 unit	41B
Blank labels										
 3RT19 00-1SB20	**Unit labeling plates**[1)] for SIRIUS devices	20 mm x 7 mm	Titanium gray	3RB24	D	**3RT29 00-1SB20**		100	340 units	41B
		20 mm x 7 mm	Pastel turquoise	3RB22, 3RB23	D	**3RT19 00-1SB20**		100	340 units	41B

[1)] PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH (see Chapter 16, "Appendix" → "External Partners").

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Load Feeders and Motor Starters for Use in the Control Cabinet



Price groups
PG 2AP, 2F0, 41A, 41B, 41D, 41E, 42C, 42D, 42F, 5K1, 5K2, 5N2, 041,143, 230, 231, 241, 250, 260, 401, 471, 764, 815, 816

8/2 **Introduction**

SIRIUS 3RA2 load feeders
8/4 General data
3RA21 direct-on-line starters
8/16 For snapping onto standard mounting rails or for screw fixing
8/20 For 60 mm busbars
3RA22 reversing starters
8/24 For snapping onto standard mounting rails or for screw fixing
8/28 For 60 mm busbars
8/32 Accessories
8/40 3RV29 infeed system for load feeders

SIRIUS 3RA1 load feeders
8/41 General data
3RA11 direct-on-line starters
8/46 For snapping onto standard mounting rails or for screw fixing
8/47 For busbar systems
3RA12 reversing starters
8/48 For snapping onto standard mounting rails or for screw fixing
8/49 For busbar systems
8/50 Accessories
8/54 SENTRON 8US busbar systems

SIRIUS 3RA6 compact feeders
8/55 General data
3RA61, 3RA62 compact feeders
8/64 3RA61 direct-on-line starters
8/65 3RA62 reversing starters
3RA64, 3RA65 compact feeders for IO-Link
8/66 3RA64 direct-on-line starters
8/67 3RA65 reversing starters
8/68 Accessories
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ET 200S motor starters and safety motor starters
8/83 General data
8/90 Standard motor starters
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8/101 Failsafe terminal modules
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8/111 Safety modules local and PROFIsafe terminal modules
8/113 Accessories
8/117 ET 200S – interface modules
8/124 ET 200S – I/O modules
8/134 ET 200S – failsafe I/O modules
8/137 ET 200S – IO-Link master modules
8/138 ET 200S software

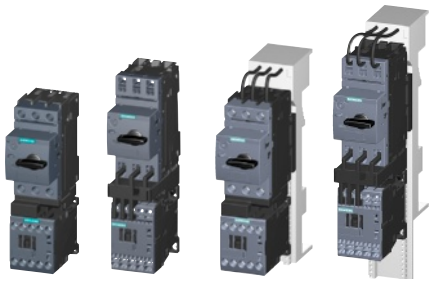
More information can be found on the Internet: see opening information, page 13

Note:
The 3RA1 load feeders (sizes S00/S0 to S3) can be found
- in the Catalog Add-On IC 10 AO · 2012 in the CD/DVD box
- in the Catalog Add-On IC 10 AO · 2012 at the Information and Download Center
- in the interactive catalog CA 01
- in the Industry Mall

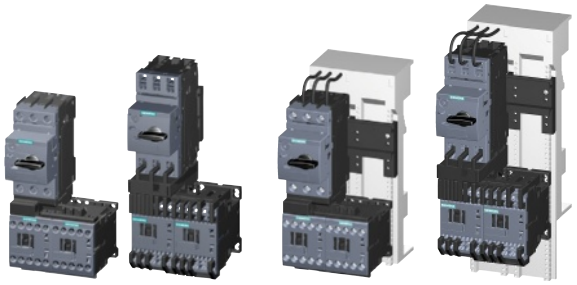
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Introduction

Overview



3RA21 10



3RA22 10



3RA11 30

		Order No.	Page
SIRIUS 3RA2 load feeders			
	• The 3RA2 fuseless load feeders consist of the 3RV2 motor starter protector and the 3RT2 contactor. The motor starter protector and contactor are prewired and mechanically and electrically connected in pre-assembled assembly kits (link modules, wiring kits and standard mounting rail or busbar adapters). • 2 sizes (S00, S0) • Can be supplied for direct-on-line start or reversing duty as - complete unit or - single devices for self-assembly • Can be supplied with screw or spring-type terminals		
3RA21 direct-on-line starters for snapping onto standard mounting rails or for screw fixing	• Rated control supply voltage 50/60 Hz 230 V AC and 24 V DC	**3RA21**	8/16
3RA21 direct-on-line starters for 60 mm busbars	• Rated control supply voltage 50/60 Hz 230 V AC and 24 V DC	**3RA21**	8/20
3RA22 reversing starters for snapping onto standard mounting rails or for screw fixing	• Rated control supply voltage 50/60 Hz 230 V AC and 24 V DC	**3RA2**	8/24
3RA22 reversing starters for 60 mm busbars	• Rated control supply voltage 50/60 Hz 230 V AC and 24 V DC	**3RA22**	8/28
SIRIUS 3RA1 load feeders			
	• The 3RA1 fuseless load feeders consist of the 3RV1 motor starter protector and the 3RT1 contactor. The motor starter protector and contactor are prewired and mechanically and electrically connected in pre-assembled assembly kits (link modules, wiring kits and standard mounting rail or busbar adapters). • 2 sizes (S2, S3) • Can be supplied for direct-on-line start or reversing duty as - complete unit or - single devices for self-assembly • Can be supplied with screw terminals		
3RA11 direct-on-line starters for snapping onto standard mounting rails or for screw fixing	• Rated control supply voltage 230 V AC, 50 Hz and 24 V DC for 35 mm standard mounting rail or for screw fixing	**3RA11 30**	8/46
3RA11 direct-on-line starters for busbar systems	• Rated control supply voltage 230 V AC, 50 Hz and 24 V DC for 40 and 60 mm busbar systems	Only for self-assembly	8/47
3RA12 reversing starters for snapping onto standard mounting rails or for screw fixing	• Rated control supply voltage 230 V AC, 50 Hz and 24 V DC for 35 mm standard mounting rail or for screw fixing	Only for self-assembly	8/48
3RA12 reversing starters for busbar systems	• Rated control supply voltage 230 V AC, 50 Hz and 24 V DC for 40 and 60 mm busbar systems	Only for self-assembly	8/49

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3RA61


3RA62


3RA64


3RA65


3RA68


3RK1 301

		Order No.	Page
SIRIUS 3RA6 compact feeders			
	• Integrated functionality of a circuit breaker, contactor and solid-state overload relay and various functions of optional mountable accessories • Usable for direct starting of standard induction motors up to 32 A		
3RA61 direct-on-line starters	• Up to 15 kW/400 V, weld-free, wide setting range, removable terminals	**3RA61**	8/64
3RA62 reversing starters	• Up to 15 kW/400 V, weld-free, wide setting range, removable terminals	**3RA62**	8/65
3RA64 direct-on-line starters for IO-Link	• Up to 15 kW/400 V, weld-free, wide setting range, removable terminals	**3RA64**	8/66
3RA65 reversing starters for IO-Link	• Up to 15 kW/400 V, weld-free, wide setting range, removable terminals	**3RA65**	8/67
Accessories for 3RA6 direct-on-line and reversing starters		**3RA69**	8/68
Add-on modules for AS-Interface		**3RA69**	8/74
Infeed systems for 3RA6	• Modular expandability, up to 100 A, terminals up to 70 mm^2	**3RA68**	8/76
ET 200S motor starters and safety motor starters			
ET 200S motor starters	• Completely factory-wired motor starters for switching and protecting any AC loads, optionally as direct-on-line, reversing or soft starters		8/83
• Standard motor starters • High-Feature motor starters		**3RK1 301** **3RK1 301**	8/90 8/93
Power modules for ET 200S motor starters	• For infeed and monitoring the auxiliary voltages for motor starters	**3RK1 903-0BA00**	8/97
ET 200S Failsafe motor starters	• High-Feature direct-on-line and reversing starters	**3RK1 301**	8/99
Terminal modules for ET 200S motor starters	• Mechanical modules in which the motor starter and expansion modules are inserted	**3RK1 903**	
• Standard terminal modules • High-Feature terminal modules • Failsafe terminal modules • Power module terminal modules • Safety modules local and PROFIsafe terminal modules			8/91 8/96 8/101 8/98 8/111
Safety modules local	• For safety category 4 acc. to EN 954-1	**3RK1 903**	8/102
Safety modules PROFIsafe	• Sensor and actuator assignment are freely configurable (distributed safety concept)	**3RK1 903**	8/102
ET 200S – interface modules	• Interface modules - With CPU - With failsafe CPU - Without CPU	**6ES7 6AG1**	8/117
ET 200S – I/O modules	• Power modules, reserve modules, potential distributor modules, digital/analog solid-state modules • Technology modules: SSI modules, 2 PULSE pulse generators, 1 STEP step modules, positioning modules, counter modules, 1 SI interface modules, SIWAREX CS, SIMAREX CF, terminal modules for power and solid-state modules, • 4 IQ-Sense and 8 IQ-Sense sensor modules	**6ES7 6AG1 7MH4**	8/124
ET 200S – failsafe I/O modules	• F power and F solid-state modules, F terminal modules	**6ES7 6AG1**	8/134
ET 200S – IO-Link master modules	• IO-Link 4SI and SIRIUS 4SI electronic modules	**6ES7 3RK1**	8/137

Central and compact starter solutions

Our range offers you many different possibilities for simple and practical starter solutions in the control cabinet. Features common to all our load feeders, compact feeders and motor starters: Like all SIRIUS devices they are optimally coordinated with each other, have a very compact design and are particularly easy and quick to install and wire up.

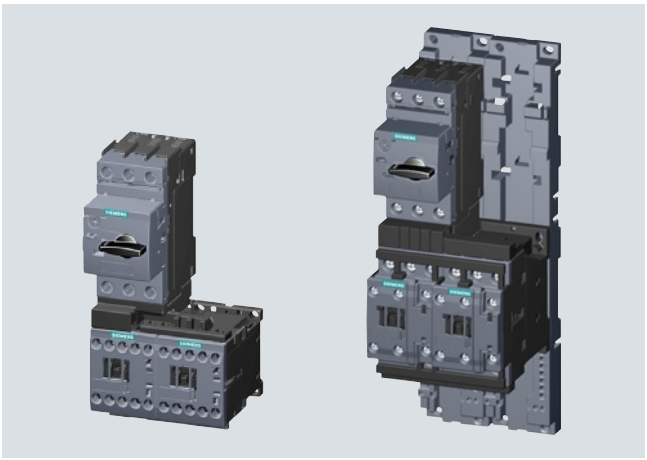
In addition, there is a seamless range of SIRIUS 3RW soft starters available for soft starting in the control cabinet (see Chapter 6 "Soft Starters and Solid-State Switching Devices" → "SIRIUS 3RW Soft Starters").

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General data

Overview

3RA2 load feeders



3RA22 reversing starters for snapping onto standard mounting rails or for screw fixing with screw terminals

The 3RA2 fuseless load feeders consist of the 3RV2 motor starter protector and the 3RT2 electromechanical contactor. The devices are electrically and mechanically connected using preassembled assembly kits (link modules, wiring kits and standard mounting rail or busbar adapters).

Around 500 preassembled 3RA2 combinations of these innovative 3RT2 controls and 3RV2 protection equipment can be ordered for direct-on-line and reversing starting of standard induction motors up to 32 A (approx.15 kW/400 V).

In the 3RA2 load feeder, the 3RV2 motor starter protector is responsible for overload and short-circuit protection. Back-up protective devices, such as melting fuses or limiters, are superfluous here, as the motor starter protector is short-circuit proof up to 150 kA at 400 V.

The 3RT2 contactor is particularly suitable for extremely complex switching tasks requiring the greatest endurance.

The 3RA2 load feeders are available with setting ranges from 0.14 to 32 A in sizes S00 and S0:

Size	Width Direct-on-line starters/ reversing starters	Max. rated current $I_{n\ max}$	For induction motors up to
	mm	A	kW
S00	45/90	16	7.5
S0	45/90	32	15

The size of the 3RA2 load feeders is based on the size of the contactor:

Size 3RA2	S00	S0
Size of 3RV2 motor starter protector	S00	S00[1], S0
Size of 3RT2 contactor	S00	S0

[1] The combination of an S00 motor starter protector with an S0 contactor is possible only for screw connection versions.

Operating conditions

3RA2 load feeders are climate-proof. They are intended for use in enclosed rooms in which no severe operating conditions (such as dust, caustic vapors, hazardous gases) prevail. Suitable covers must be provided for installation in dusty and damp locations.

Behavior in the event of short circuit

IEC 60947-4-1 and IEC 60947-4-1 make a distinction between two different types of coordination (types "1" and "2"). Any short circuits that occur are cleared safely by both types of coordination. The only differences concern the extent of the damage caused to the device by a short circuit.

ToC 1 Type of coordination "1"
The fuseless load feeder may be non-operational after a short circuit has been cleared. Damage to the contactor or to the overload release is permissible. For 3RA2 load feeders, the motor starter protector itself always achieves type of coordination "2".

ToC 2 Type of coordination "2"
There must be no damage to the overload release or to any other component after a short circuit has been cleared. The 3RA2 fuseless load feeder can resume operation without needing to be renewed. At most, welding of the contactor contacts is permissible if they can be disconnected easily without any significant deformation.

The types of coordination are indicated in the corresponding tables by the symbols shown on orange backgrounds.

Tripping times

All 3RA2 load feeders described here are designed for normal starting, in other words for overload tripping times of less than 10 s (CLASS 10). At rated-load operating temperature the tripping times are shorter, depending on the particular equipment and the setting range. The exact values can be derived from the tripping characteristics of the motor starter protectors.

Connection methods

For all 3RA2 feeders up to 32 A, spring-type connection is available as well as screw connection. To connect two devices with spring-type connection there are plug-in connection modules for sizes S00 and S0 which enable very quick mounting of the feeders and a vibration-resistant assembly.

To connect a motor starter protector with screw connection to a contactor with spring-type connection there are special hybrid connection modules for the sizes S00 and S0.

Screw terminals

Spring-type terminals

The terminals are indicated in the corresponding tables by the symbols shown on orange backgrounds.

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3RA2 complete units

The 3RA2 fuseless load feeders can be ordered as preassembled complete units for direct-on-line starting (3RA21) or for reversing duty (3RA22) with screw or spring-type connection.

There are control supply voltages available of 50/60 Hz 230 V AC and 24 V DC.

A distinction is also drawn between whether the feeder is mounted on a TH 35 standard mounting rail, on a flat surface using screws, or on a 60 mm busbar system.

3RA21 load feeders in the size S0 must be configured on standard mounting rail adapters if high vibration and shock loads (railways, power generation,...) are involved.

A vibration and shock kit is available for mounting on busbar adapters.

Accessories

As the 3RA2 fuseless load feeders are constructed from 3RV2 motor starter protectors and 3RT2 contactors, the same accessories – such as auxiliary switches, undervoltage releases or door-coupling rotary operating mechanisms – can be used for the 3RA2 fuseless load feeders as for these motor starter protectors and contactors.

In particular, certain accessories have been optimized for the fuseless load feeders. They include the top-connected, transverse auxiliary switch on the motor starter protector, which is available with 1 CO contact or 1 NO contact + 1 NC contact. Special auxiliary switch blocks that can be snapped on from below are available for the contactor. These two accessories enable the fuseless load feeders to be wired simply without having to route cables through the device.

Incoming energy supply

On the whole four different infeed possibilities are available (see "3RV29 Infeed System for Load Feeders" on 8/40).

Customer assembly of fuseless load feeders

While the preassembled 3RA2 load feeds can be ordered up to 32 A, combinations up to 40 A (approx. 18.5 kW/400 V) are possible for customer assembly.

The standard devices can be combined optimally – in terms of both technical specifications and dimensions, thanks to the modular system of the SIRIUS series.

The fuseless load feeders can thus be assembled easily by the customer. It is simply necessary to assemble the standard 3RV2 motor starter protector, the 3RT2 contactor and the appropriate assembly kit.

For single devices and assembly kits see the "Selection and ordering data" for 3RA21 direct-on-line starters and 3RA22 reversing starters.

For assembly kits for direct-on-line starting or reversing duty for mounting on standard mounting rails or busbars see "Selection and ordering data" at "Accessories".

For reversing starters size S0 it is imperative to use a standard mounting rail adapter in order to ensure the necessary mechanical strength. A standard mounting rail adapter is not necessary if a busbar adapter is used.

The 3RA1 fuseless load feeders can be used for fuseless load feeders between 32 and 100 A.

The SENTRON 3VL circuit breakers and the SIRIUS 3RT contactors are available for rated currents >100 A.

Special equipment for customer assembly can be ordered if other rated control supply voltages are required. Assembly kits can be used to facilitate assembly.

Customers can also assemble tested combinations of motor starter protectors with solid-state controls (soft starters, solid-state contactors) and load feeders with additional monitoring and control devices (3RR monitoring relays, SIMOCODE 3UF).

For the electrical and mechanical connection of protection equipment and controls there are preassembled assembly kits (link modules, wiring kits and standard mounting rail or busbar adapters).

The following types of configuration are possible:

- Direct-on-line/reversing starting (see preassembled 3RA2 combinations)
- Wye-delta starting (only customer assembly with link module)
- Solid-state/soft starting (only customer assembly with link module)

For more information and assignment tables for combinations of the 3RA2 generation for self-assembly see the configuration manual (see "Selection and ordering data" on page 8/39).

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General data

Communications integration using IO-Link

Load feeders can also be assembled with IO-Link for connection to the higher-level control system. For each feeder this requires a communication-capable contactor onto which a 3RA27 11 function module is plugged (various versions for direct-on-line, reversing and wye-delta starts). The design of the SIRIUS load feeders permits a group of up to 4 SIRIUS controls to be conveniently connected through the standardized, open IO-Link system to a control system, thus reducing wiring work considerably compared to the conventional parallel wiring method. The electrical connection is made using only three standard cables.

The function modules perform not only the communication (contactor operation and feedback, ready signal) but also the electrical interlocking (for reversing and wye-delta starters) and the timing relay function (wye-delta reversing time).

Communication information and control supply voltages are passed on through ribbon cables so that the complete control current wiring on the feeder is no longer needed.

The monitoring and maintenance of a plant is made considerably easier by transmitting diverse diagnostics data from the function modules (e.g. missing main and auxiliary voltage, local disconnection…) through IO-Link to the higher-level control system. Also, feeders equipped for IO-Link can be conveniently controlled from the control cabinet door using the optional operator panel.

More information:

- IO-Link see Chapter 2 "Industrial Communication"
- 3RA27 function modules see Chapter 3 "Controls – Contactors and Contactor Assemblies" → "Function Modules".

Communications integration through AS-Interface

Connection of the load feeders to the higher-level control system is possible not only through IO-Link but also through AS-Interface. The AS-Interface connection is recommended wherever load feeders are used in distributed applications. This solution also requires a communication-capable contactor and a corresponding 3RA27 12 function module (various versions for direct-on-line, reversing and wye-delta starts). The devices are implemented in A/B technology, making it easy to connect up to 62 feeders to an AS-i master (regardless of whether they are direct-on-line, reversing or wye-delta starters). This results in a significant reduction of wiring compared to the conventional parallel wiring method. The electrical connection is made using standard cables.

The function modules perform not only the communication (contactor operation and feedback, ready signal) but also the electrical interlocking (for reversing and wye-delta starters) and the timing relay function (wye-delta reversing time).

Communication information and control supply voltages are passed on through ribbon cables so that the complete control current wiring on the starter is no longer needed.

More information:

- AS-Interface see Chapter 2 "Industrial Communication"
- 3RA27 function modules see Chapter 3 "Controls – Contactors and Contactor Assemblies" → "Function Modules".

Contactors with communication interface

Contactors with a communication interface are required for constructing load feeders with a communications interface (AS-i/IO-Link). These contactors are not included as standard in the preassembled 3RA2 load feeders. A load feeder with communications interface must be assembled therefore from single devices.

Complete integration in the automation landscape

As the result of the communication connection through IO-Link or AS-i, the SIRIUS load feeders are fully integrated in the automation landscape and can draw on all the advantages of TIA (e.g. integration in the TIA Maintenance Station).

Mounting

3RA2 fuseless load feeders can be supplied:

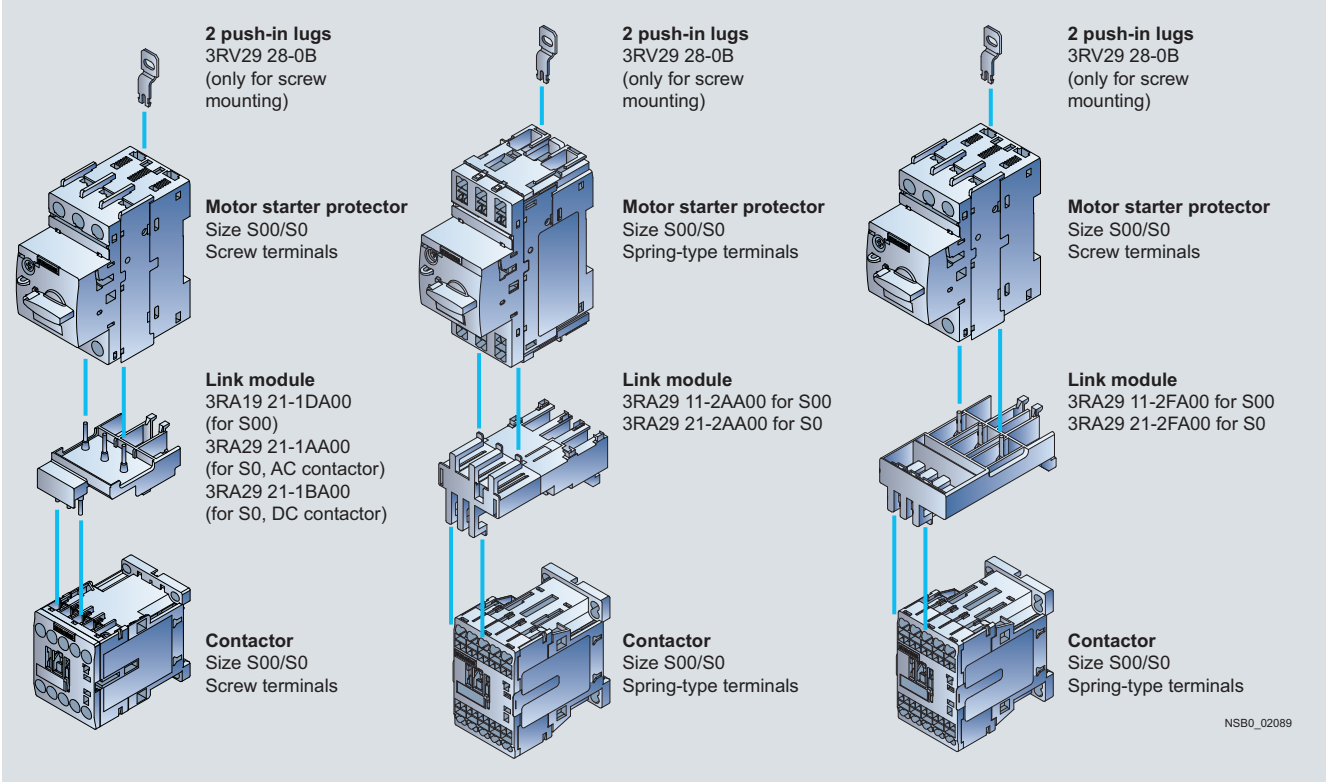
- For assembly on TH 35 standard mounting rails according to IEC 60715 (depth 15 mm)
- For assembly on busbar adapters (busbar center-to-center clearance 60 mm, busbar thickness 5 to 10 mm with beveled edges)

The fuseless load feeders are also suitable for screw fixing using two 3RV29 28-0B push-in lugs.

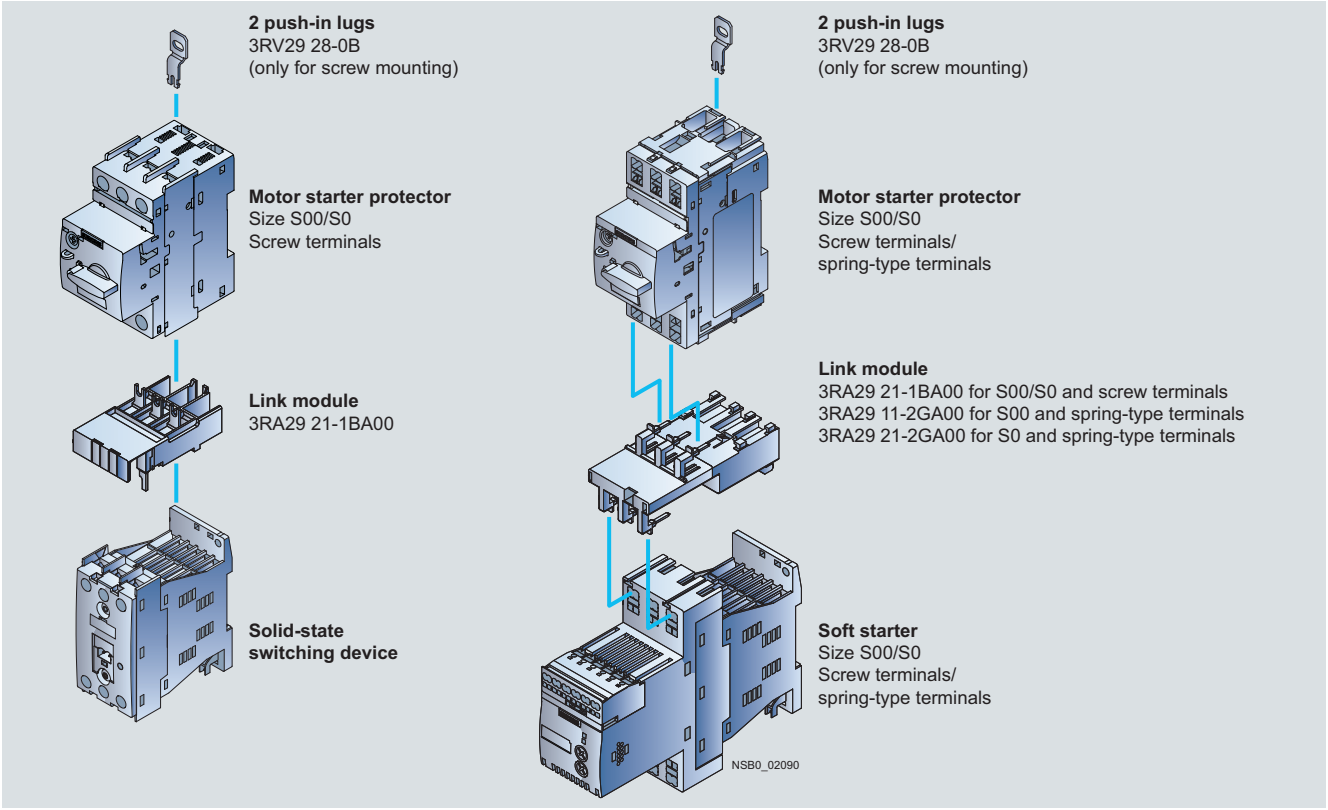
The 3RA2 fuseless load feeders can also be configured with the 3RV29 infeed system (see Chapter 7 "Protection Equipment" → "Motor Starter Protectors" → "SIRIUS 3RV2 Motor Starter Protectors up to 40 A" → "Accessories" → "3RV29 Infeed System").

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Direct-on-line starting • For standard rail mounting or screw fixing • Sizes S00 and S0



Left: 3RA21 load feeder with screw terminals
Center: 3RA21 load feeder with spring-type terminals
Right: Motor starter protector combination with screw connection, with contactor with spring-type connection

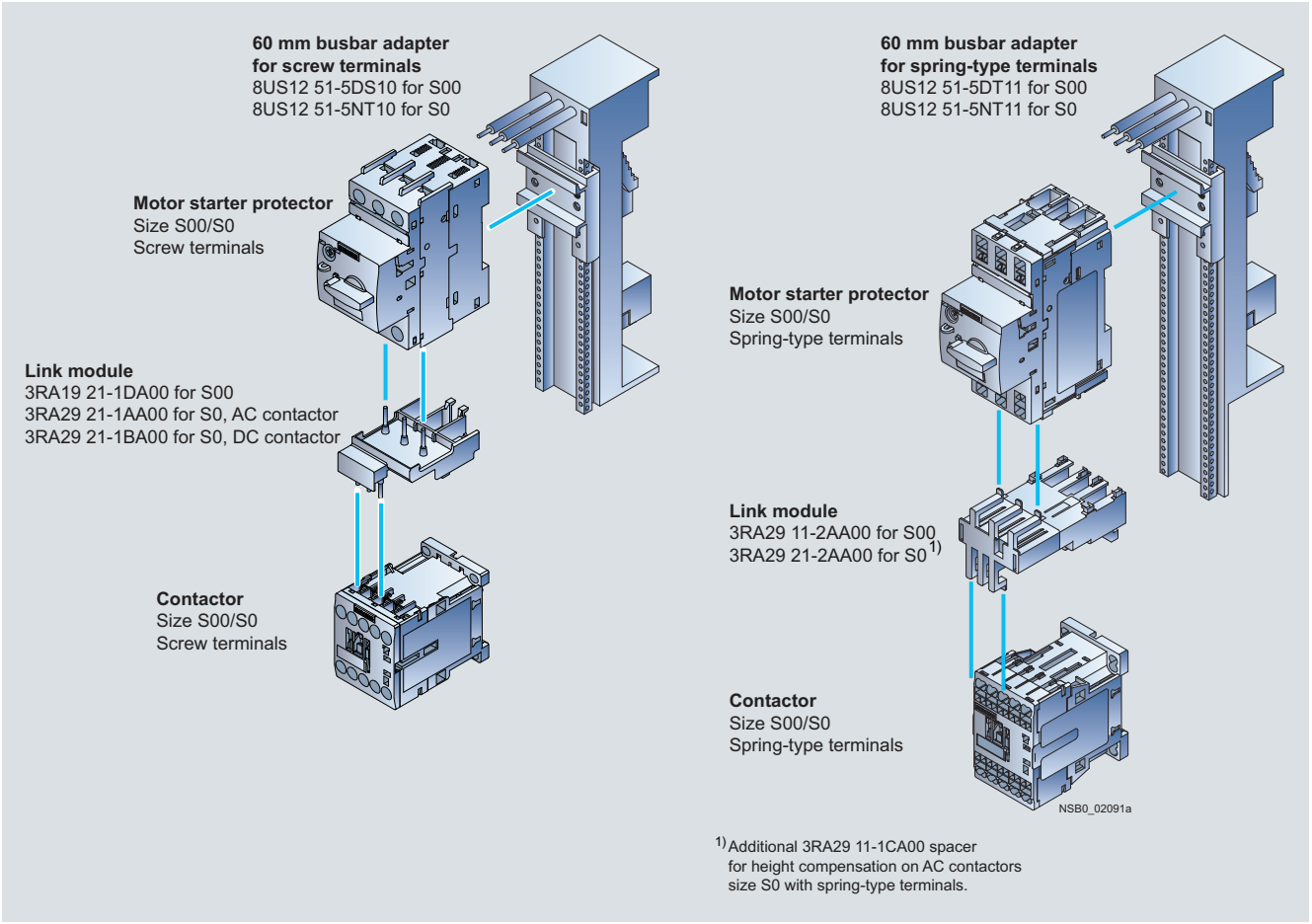


Left: Motor starter protector combination with solid-state switching device with screw connection
Right: Motor starter protector combination with soft starter with spring-type connection

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General data

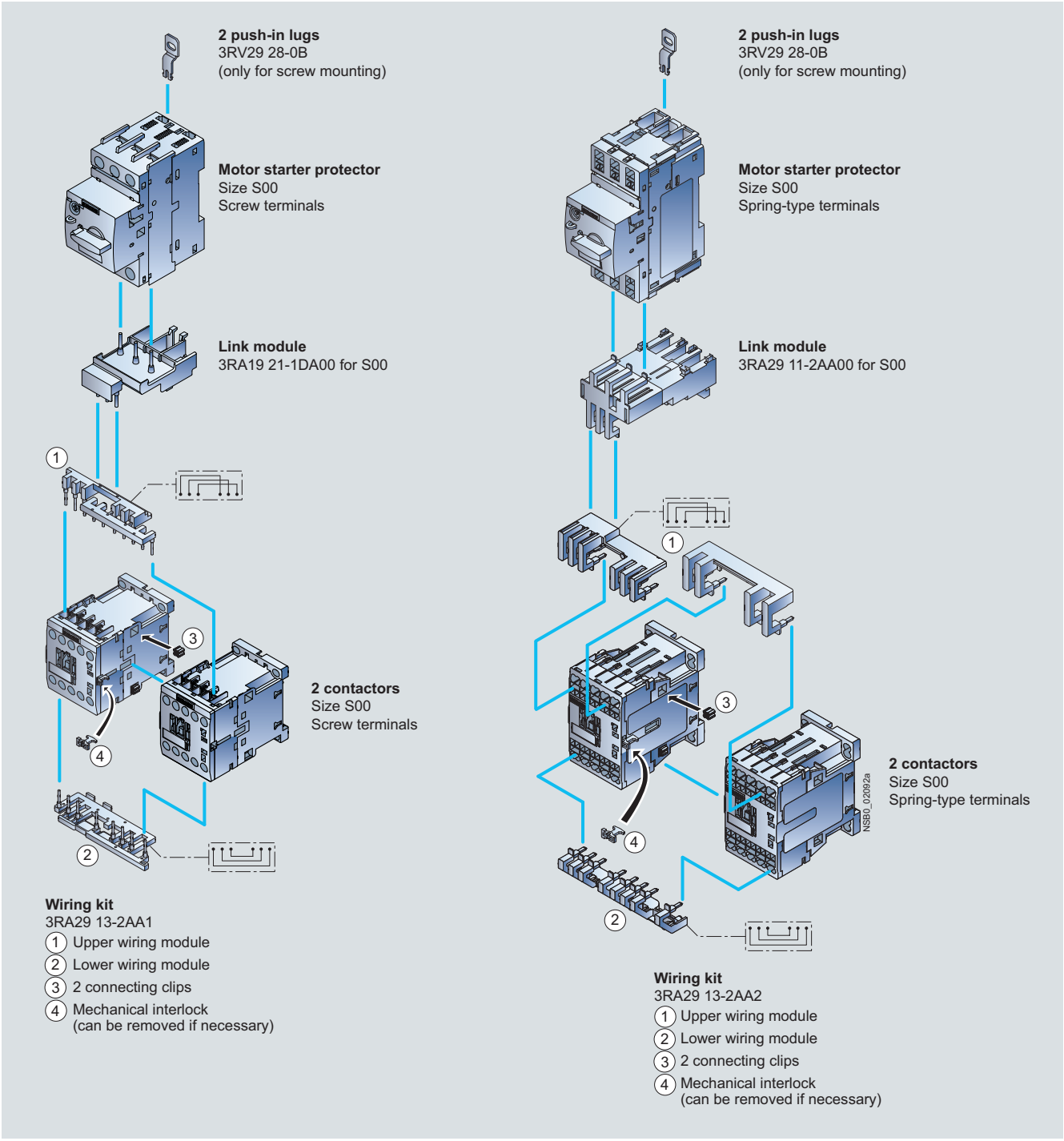
Direct-on-line starting • For 60 mm busbar systems • Sizes S00 and S0



Left: 3RA21 load feeder for direct-on-line starting with busbar adapters with screw terminals
Right: 3RA21 load feeder for direct-on-line starting with busbar adapters with spring-type terminals

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Reversing duty • For standard rail mounting or screw fixing • Size S00



Left: 3RA22 load feeder with screw terminals, push-in lugs, 2 contactors for reversing duty and 3RA29 13-2AA1 wiring kit for connecting the contactors (incl. mechanical interlocking and connecting clips)
Right: 3RA22 load feeder with spring-type terminals, push-in lugs, 2 contactors for reversing duty and 3RA29 13-2AA2 wiring kit (incl. mechanical interlocking and connecting clips)

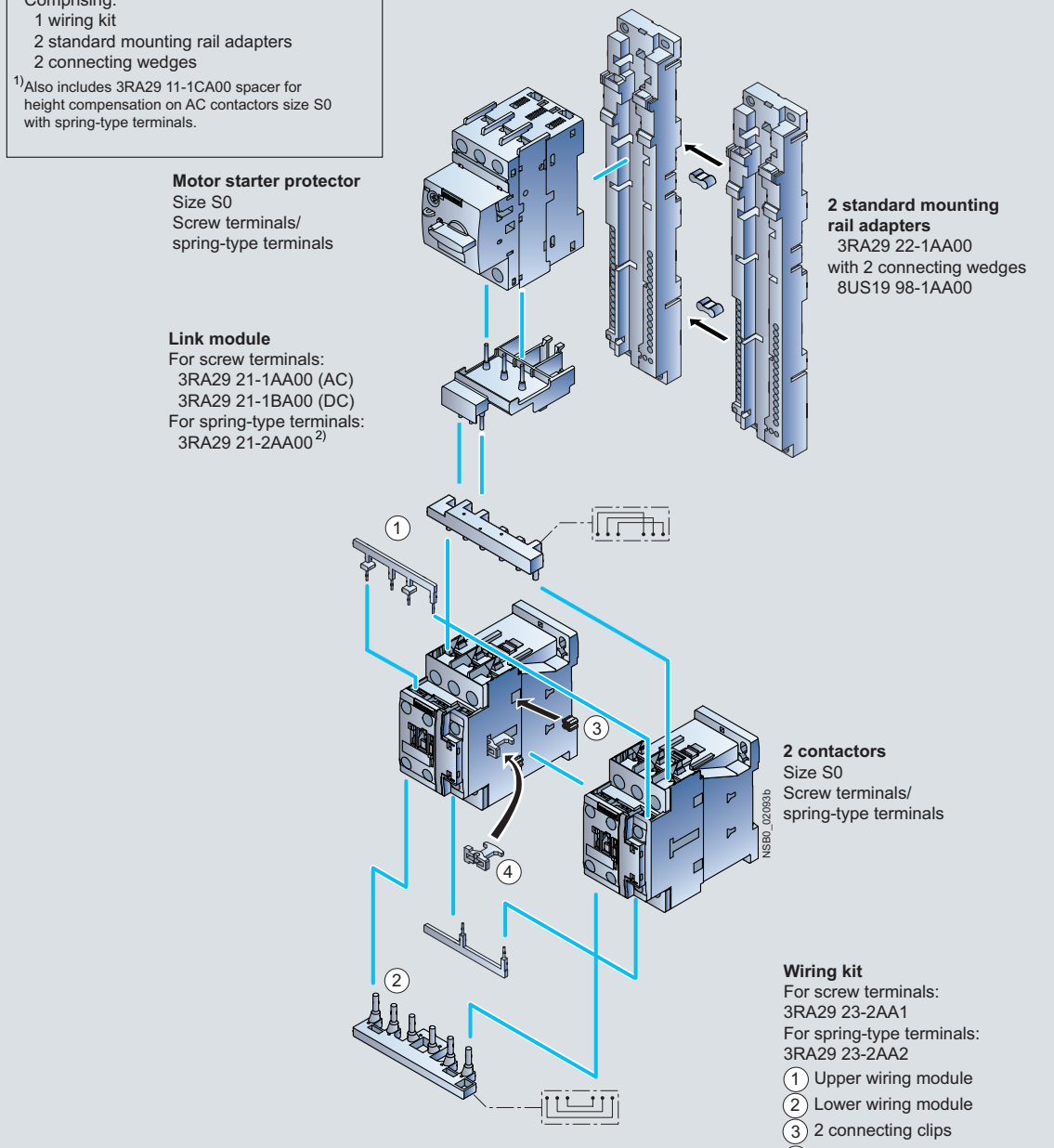
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General data

Reversing duty • For standard rail mounting • Size S0

RH assembly kit for reversing duty and standard rail mounting in size S0
For screw terminals:
3RA29 23-1BB1
For spring-type terminals:
3RA29 23-1BB2[1)]
Comprising:
1 wiring kit
2 standard mounting rail adapters
2 connecting wedges

[1)] Also includes 3RA29 11-1CA00 spacer for height compensation on AC contactors size S0 with spring-type terminals.

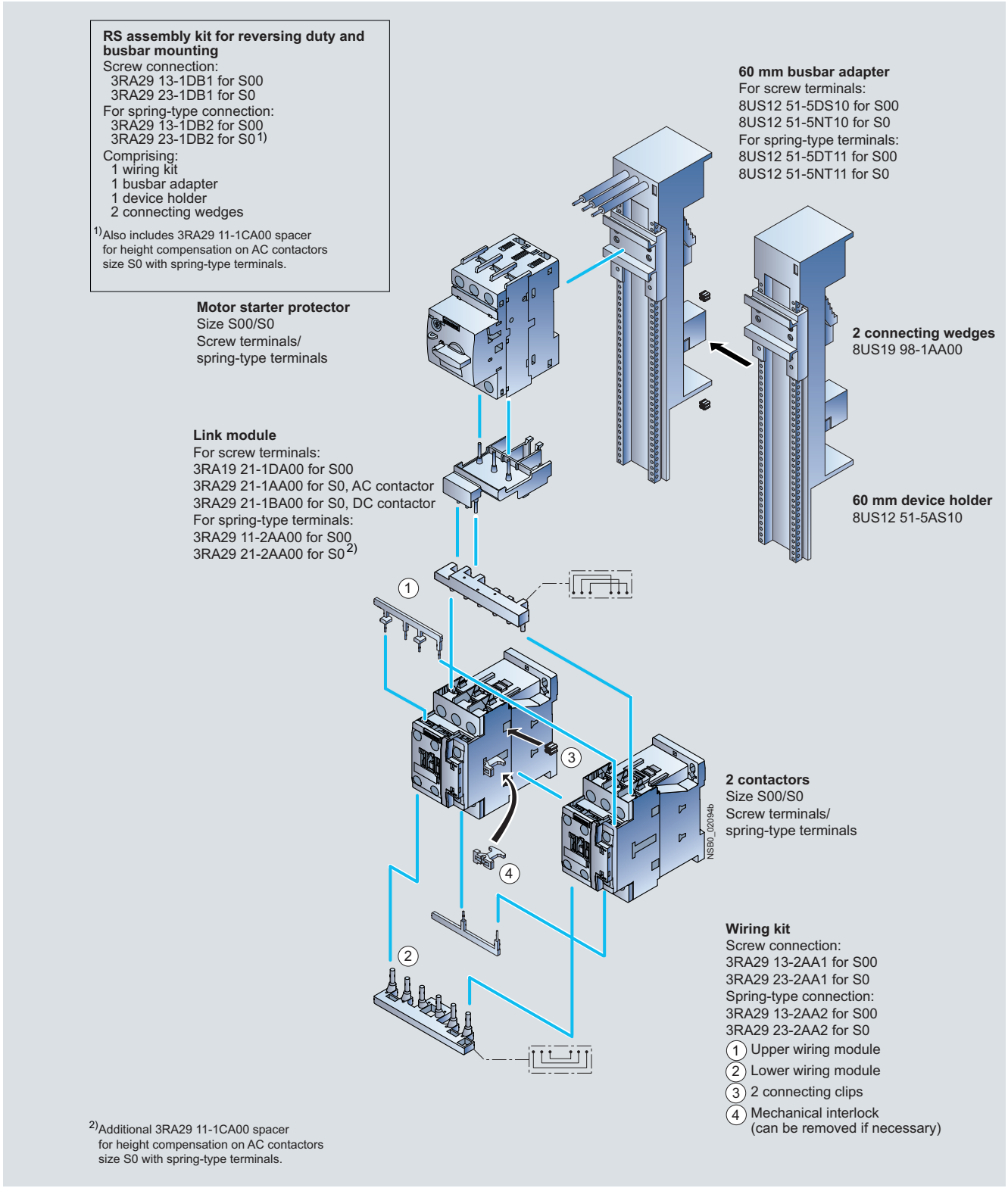


[2)] Additional 3RA29 11-1CA00 spacer for height compensation on AC contactors size S0 with spring-type terminals

3RA22 load feeder for reversing duty and standard rail mounting in size S0
(the version with screw terminals is shown in the picture)

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Reversing duty • For 60 mm busbar systems • Sizes S00 and S0



3RA22 load feeder for reversing duty and 60 mm standard mounting rail in size S00/S0
(the version with screw terminals is shown in the picture)

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General data

Order No. scheme

Digit of the Order No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th		13th	14th	15th	16th
	□□□	□	□	□	**0**	–	□	□	□	□	□	–	□	□	□	□
SIRIUS feeders	**3 R A**															
SIRIUS 2nd generation		**2**														
Type of feeder (direct-on-line starter = 1, reversing starter = 2)			□													
Size (S00 = 1, S0 = 2)				□												
Setting range for overload release							□	□								
Design type and connection method									□							
Rated power at 400 V AC										□	□					
Integrated auxiliary switches of the contactor													□			
Operating range / solenoid coil circuit (contactor)														□		
Rated control supply voltage (contactor)															□	□
Example	**3 R A**	**2**	**1**	**1**	**0**	**–**	**0**	**B**	**A**	**1**	**5**	**–**	**1**	**A**	**P**	**0**

Note:

The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quoted in the catalog in the Selection and ordering data.

Benefits

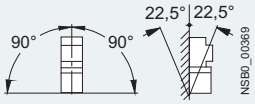
The 3RA2 fuseless load feeders offer a number of benefits:

- Minimum planning and assembly work and far less wiring with the preassembled complete units (only one order number 3RA2)
- Plug-in connectors from the motor starter protector to all types of SIRIUS controls, for quicker and error-free assembly of feeders with screw and spring-type connection
- High planning reliability through consistent combination tests for fuseless (400 V according to IEC) and fused configuration (400 V, 500 V and 690 V according to IEC)
- Comprehensive approvals for use world-wide on request, see Chapter 16 "Appendix" → "Standards and Approvals".
- High operational reliability through short-circuit breaking capacity of 150 kA with type of coordination "1" and "2"
- Uniform accessories for the two sizes S00 and S0
- Spring-type connection possible throughout: Enhanced operational reliability (vibration-resistant wiring) and less wiring work thanks to plug-in connections
- Power loss 5 to 10 % smaller than for comparable devices, hence lower energy consumption
- Connection of feeders to the control system through standardized system connection (IO-Link and AS-i), for fast integration in TIA and less wiring work

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Technical specifications

Direct-on-line starters/ reversing starters	Size	Connection methods	Mounting	Control voltage	Width W	Height H	Depth D
					mm	mm	mm
Mounting dimensions							
Direct-on-line starters 3RA21.	S00 3RA21 1.	Screw terminals	Standard mounting rails	AC/DC	45	167	97
			Busbar adapters	AC/DC	45	200	155
		Spring-type terminals	Standard mounting rails	AC/DC	45	198	97
			Busbar adapters	AC/DC	45	260	155
	S0 3RA21 2.	Screw terminals	Standard mounting rails	AC	45	193	97
				DC	45	193	107
			Busbar adapters	AC	45	260	155
				DC	45	260	165
		Spring-type terminals	Standard mounting rails	AC/DC	45	243	107
			Busbar adapters	AC/DC	45	260	165
Reversing starters 3RA22.	S00 3RA22 1.	Screw terminals	Standard mounting rails	AC/DC	90	170	97
			Busbar adapters	AC/DC	90	200	155
		Spring-type terminals	Standard mounting rails	AC/DC	90	204	97
			Busbar adapters	AC/DC	90	260	155
	S0 3RA22 2.	Screw terminals	Standard mounting rail adapters	AC	90	265	120.3
				DC	90	265	130
			Busbar adapters	AC	90	260	155
				DC	90	260	165
		Spring-type terminals	Standard mounting rail adapters	AC/DC	90	270	131
			Busbar adapters	AC/DC	90	260	165

Type Size Number of poles			**3RA2. 1** **S00** **3**	**3RA2. 2** **S0** **3**
Mechanics and environment				
Permissible ambient temperature • During operation • During storage and transport		°C °C	-20 ... +60 -55 ... +80	
Weight		kg	0.6 ... 1.5	0.8 ... 2.3
Permissible mounting positions			 Important: acc. to DIN 43602 start command "I" at the right or top	
Shock resistance (sine-wave pulse)	Acc. to IEC 60086 Part 2-27	*g*	up to 6	up to 6
Degree of protection	According to IEC 60947-1		IP20	

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General data

Type			**3RA2. 1**	**3RA2. 2**
Size			**S00**	**S0**
Number of poles			**3**	**3**
Electrical specifications				
Standards			IEC 60947-1, EN 60947-1 IEC 60947-2, EN 60947-2 IEC 60947-4-1, EN 60947-4-1	
Max. rated current $I_{n\ max}$ (= max. rated operational current I_e)		A	16	32
Rated operational voltage U_e		V	690	
Rated frequency		Hz	50/60	
Rated insulation voltage U_i (pollution degree 3)		V	690	
Rated impulse withstand voltage U_{imp}		kV	6	
Trip class (CLASS) according to IEC 60947-4-1			10	
Rated short-circuit current I_q **at AC 50/60 Hz 400 V** according to IEC 60947-4-1		kA	150	
Types of coordination according to IEC 60947-4-1			See "Selection and ordering data"	
Power loss $P_{v\ max}$ **of all main current paths** Dependent on the rated current I_n (upper setting range)	Up to 1.25 A	W	2	--
	1.6 ... 6.3 A	W	2.3	--
	8 ... 12 A	W	3.5	--
	16 A	W	4.3	--
	5 ... 6.3 A	W	--	2.3
	8 ... 12 A	W	--	3.5
	16 ... 32 A	W	--	4.3
Power consumption of the solenoid coils for contactors as a function of the standard output ***P*** **of the motor** (when coil is cold and U_s, 50 Hz)				
• AC operation				
- Closing	Up to 4 kW	VA	27	--
	5.5 ... 7.5 kW	VA	37	--
	Up to 5.5 kW	VA	--	65
	7.5 ... 15 kW	VA	--	77
	P.f.		0.8	0.82
- Closed	Up to 4 kW	VA	4.2	--
	5.5 ... 7.5 kW	VA	5.7	--
	Up to 5.5 kW	VA	--	8.5
	7.5 ... 15 kW	VA	--	9.8
	P.f.		0.25	0.25
• DC operation	Closing = Closed	W	4	5.9
Magnetic coil operating range for contactors			0.8 ... 1.1 x U_s	
	Low limit at 55 °C		0.8 x U_s	--
	At 60 °C		0.85 x U_s	--
Endurance of the motor starter protector				
• Mechanical endurance	Operating cycles		100 000	
• Electrical endurance	Operating cycles		100 000	
• Max. switching frequency per hour (motor starts)		1/h	15	
Endurance of contactor				
• Mechanical endurance	Operating cycles		30 million	10 million
• Electrical endurance	Operating cycles		See endurance characteristic curves of the contactors → Chapter 3 "Controls – Contactors and Contactor Assemblies"	
Touch protection	According to EN 50274		Finger-safe	
Phase failure sensitivity of the motor starter protector	Acc. to IEC 60947-1		Yes	
Isolating features of the motor starter protector	Acc. to IEC 60947-2		Yes	
Main control and EMERGENCY-STOP switch characteristics of the motor starter protector and accessories	Acc. to IEC 60204-1		Yes (with overvoltage releases of category "1" under conditions of proper use)	
Protective separation between main and auxiliary circuits	Acc. to IEC 60947-1, Appendix N	V	Up to 400	
Mirror contacts for contactors			Yes	Yes, from main contact to auxiliary NC contact

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Type		SIRIUS 3RA2 load feeders		
Connection type		**Screw terminals**	**Spring-type terminals**	
Conductor cross-sections for main conductors Size S00				
		Motor starter protectors, contactors	**Motor starter protectors, contactors**	
Terminal screw		M3, Pozidriv size 2	--	
Operating devices	mm	∅ 5 ... 6	3.0 x 0.5 and 3.5 x 0.5	
Prescribed tightening torque	Nm	0.8 ... 1.2	--	
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected				
• Solid and stranded	mm^2 mm^2 mm^2	2 x (0.5 ...1.5)[1] only for contactors, 2 x (0.75 ... 2.5)[1], max. 2 x 4	2 x (0.5 ... 4)	
• Finely stranded without end sleeve	mm^2	--	2 x (0.5 ... 2.5)	
• Finely stranded with end sleeves (DIN 46 228 T1)	mm^2 mm^2	2 x (0.5 ... 1.5)[1], 2 x (0.75 ... 2.5)[1]	2 x (0.5 ... 2.5)	
• AWG cables, solid or stranded	AWG AWG AWG	2 x (20 ... 16)[1] only for contactors, 2 x (18 ... 14)[1], 2 x 12	2 x (20 ... 12)	
Max. external diameter of the conductor insulation	mm	--	3.6	
Conductor cross-sections for main conductors Size S0				
		Motor starter protectors, contactors	**Motor starter protectors, contactors**	
Terminal screw		M4, Pozidriv size 2	--	
Operating devices	mm	∅ 5 ... 6	3.0 x 0.5 and 3.5 x 0.5	
Prescribed tightening torque	Nm	2.0 ... 2.5	--	
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected				
• Solid and stranded	mm^2 mm^2	2 x (1.0 ... 2.5)[1], 2 x (2.5 ... 10)[1]	2 x (1.0 ... 10)	
• Finely stranded without end sleeve	mm^2	--	2 x (1.0 ... 6.0)	
• Finely stranded with end sleeves (DIN 46 228 T1)	mm^2 mm^2 mm^2	2 x (1.0 ... 2.5)[1], 2 x (2.5 ... 6)[1] max. 1 x 10	2 x (1.0 ... 6.0)	
• AWG cables, solid or stranded	AWG AWG	2 x (16 ... 12)[1], 2 x (14 ... 8)[1]	2 x (18 ... 8)	
Max. external diameter of the conductor insulation	mm	--	3.6	
Conductor cross-sections for auxiliary conductors Size S00/S0				
		Contactors (basic unit), motor starter protectors (accessories), contactors (mountable accessories), overload relays	**Contactors S00**	**Contactors S0, motor starter protectors (accessories), contactors (accessories), overload relays**
Terminal screw		M3, Pozidriv size 2	--	
Operating devices	mm	∅ 5 ... 6	3.0 x 0.5 and 3.5 x 0.5	
Prescribed tightening torque	Nm	0.8 ... 1.2	--	
Conductor cross-sections (min./max.), 1 or 2 conductors can be connected				
• Solid and stranded	mm^2 mm^2 mm^2	2 x (0.5 ... 1.5)[1], 2 x (0.75 ... 2.5)[1], Max. 2 x 4 only for contactors S00	2 x (0.5 ... 4)	2 x (0.5 ... 2.5)
• Finely stranded without end sleeve	mm^2	--	2 x (0.5 ... 2.5)	2 x (0.5 ... 1.5)
• Finely stranded with end sleeve	mm^2 mm^2	2 x (0.5 ... 1.5)[1], 2 x (0.75 ... 2.5)[1]	2 x (0.5 ... 2.5)	2 x (0.5 ... 1.5)
• AWG cables, solid or stranded	AWG AWG AWG	2 x (20 ... 16)[1], 2 x (18 ... 14)[1], 2 x 12 only for contactors S00	2 x (20 ... 12)	2 x (20 ... 14)
Max. external diameter of the conductor insulation	mm	--	3.6	3.6

[1] If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in the range specified. If identical cross-sections are used, this restriction does not apply.

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3RA21 direct-on-line starters for snapping onto standard mounting rails or for screw fixing

Selection and ordering data

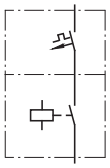


3RA21 10



3RA21 20

Direct-on-line start



Rated control supply voltage AC 50/60 Hz 230 V
With screw connections

- Screw fixing with 2 push-in lugs each per load feeder is possible[1)]
- The motor starter protector and contactor are mechanically and electrically connected by means of the link module
- Auxiliary switches[2)] on the motor starter protector and the contactor can be easily fitted due to the modular system.
- Integrated auxiliary switches:
  Contactor size S00: 1 NO,
  contactor size S0: 1 NO + 1 NC

Size	Standard induction motor 4-pole at 400 V AC[3)]		Setting range for thermal overload release	Consisting of the following single devices			DT	Fuseless load feeders	PU (UNIT, SET, M)	PS*	PG
	Standard output P	Motor current I (guide value)		Motor starter protector	+ Contactor	+ Link module		Screw terminals / Configurator / Order No.	Basic price per PU		
	kW	A	A								
Type of coordination "2" at I_q = 150 kA at 400 V (compatible with type of coordination "1")											
				3RV20	**3RT20**	**3RA**		ToC 2			
S00	0.06	0.2	0.14 ... 0.2	11-0BA10	15-1AP01	19 21-1DA00	A	**3RA21 10-0BA15-1AP0**	1	1 unit	41D
	0.06	0.2	0.18 ... 0.25	11-0CA10			A	**3RA21 10-0CA15-1AP0**	1	1 unit	41D
	0.09	0.3	0.22 ... 0.32	11-0DA10			A	**3RA21 10-0DA15-1AP0**	1	1 unit	41D
	0.09	0.3	0.28 ... 0.4	11-0EA10			A	**3RA21 10-0EA15-1AP0**	1	1 unit	41D
	0.12	0.4	0.35 ... 0.5	11-0FA10			A	**3RA21 10-0FA15-1AP0**	1	1 unit	41D
	0.18	0.6	0.45 ... 0.63	11-0GA10			A	**3RA21 10-0GA15-1AP0**	1	1 unit	41D
	0.18	0.6	0.55 ... 0.8	11-0HA10			A	**3RA21 10-0HA15-1AP0**	1	1 unit	41D
	0.25	0.85	0.7 ... 1	11-0JA10			A	**3RA21 10-0JA15-1AP0**	1	1 unit	41D
	0.37	1.1	0.9 ... 1.25	11-0KA10			A	**3RA21 10-0KA15-1AP0**	1	1 unit	41D
	0.55	1.5	1.1 ... 1.6	11-1AA10			A	**3RA21 10-1AA15-1AP0**	1	1 unit	41D
	0.75	1.9	1.4 ... 2	11-1BA10			A	**3RA21 10-1BA15-1AP0**	1	1 unit	41D
	0.75	1.9	1.8 ... 2.5	11-1CA10			A	**3RA21 10-1CA15-1AP0**	1	1 unit	41D
	1.1	2.7	2.2 ... 3.2	11-1DA10			A	**3RA21 10-1DA15-1AP0**	1	1 unit	41D
	1.5	3.6	2.8 ... 4	11-1EA10			A	**3RA21 10-1EA15-1AP0**	1	1 unit	41D
S0	1.5	3.6	3.5 ... 5	11-1FA10	24-1AP00	29 21-1AA00	A	**3RA21 20-1FA24-0AP0**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA10			A	**3RA21 20-1GA24-0AP0**	1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA10			A	**3RA21 20-1HA24-0AP0**	1	1 unit	41D
	4	8.5	7 ... 10	11-1JA10			A	**3RA21 20-1JA24-0AP0**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA10			A	**3RA21 20-1KA24-0AP0**	1	1 unit	41D
	7.5	15.5	11 ... 16	21-4AA10	26-1AP00		A	**3RA21 20-4AA26-0AP0**	1	1 unit	41D
	7.5	15.5	14 ... 20	21-4BA10			B	**3RA21 20-4BA27-0AP0**	1	1 unit	41D
	11	22	17 ... 22	21-4CA10	27-1AP00		A	**3RA21 20-4CA27-0AP0**	1	1 unit	41D
	11	22	20 ... 25	21-4DA10			A	**3RA21 20-4DA27-0AP0**	1	1 unit	41D
	15	29	27 ... 32	21-4EA10			A	**3RA21 20-4EA27-0AP0**	1	1 unit	41D
Type of coordination "1" at I_q = 150 kA at 400 V (the motor starter protector is compatible with type of coordination "2")											
S00	For load feeders for lower outputs, see this table at type of coordination "2".							ToC 1			
	1.5	3.6	3.5 ... 5	11-1FA10	15-1AP01	19 21-1DA00	A	**3RA21 10-1FA15-1AP0**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA10			A	**3RA21 10-1GA15-1AP0**	1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA10			A	**3RA21 10-1HA15-1AP0**	1	1 unit	41D
	4	8.5	7 ... 10	11-1JA10	16-1AP01		A	**3RA21 10-1JA16-1AP0**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA10	17-1AP01		A	**3RA21 10-1KA17-1AP0**	1	1 unit	41D
	7.5	15.5	11 ... 16	11-4AA10	18-1AP01		A	**3RA21 10-4AA18-1AP0**	1	1 unit	41D

For online configurator see www.siemens.com/sirius/configurators.

1) Push-in lugs see "Accessories" on page 8/37.

2) Auxiliary switches see "Accessories" on page 8/32.

3) Selection depends on the concrete startup and rated data of the protected motor.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3RA21 direct-on-line starters for snapping onto standard mounting rails or for screw fixing

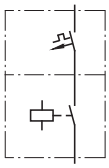


3RA21 10



3RA21 20

Direct-on-line start



Rated control supply voltage AC 50/60 Hz 230 V
With spring-type connection

- Screw fixing with 2 push-in lugs each per load feeder is possible[1)]
- The motor starter protector and contactor are mechanically and electrically connected by means of the link module
- Auxiliary switches[2)] on the motor starter protector and the contactor can be easily fitted due to the modular system.
- Integrated auxiliary switches:
  Contactor size S00: 1 NO,
  contactor size S0: 1 NO + 1 NC

Size	Standard induction motor 4-pole at 400 V AC[3)]		Setting range for thermal overload release	Consisting of the following single devices			DT	Fuseless load feeders	PU (UNIT, SET, M)	PS*	PG
	Standard output P	Motor current I (guide value)		Motor starter protector	+ Contactor	+ Link module		Spring-type terminals / Configurator / Order No.			
	kW	A	A					Basic price per PU			
Type of coordination "2" at I_q = 150 kA at 400 V (compatible with type of coordination "1")				**3RV20**	**3RT20**	**3RA**		ToC 2			
S00	0.06	0.2	0.14 ... 0.2	11-0BA20	15-2AP01	29 11-2AA00	A	**3RA21 10-0BE15-1AP0**	1	1 unit	41D
	0.06	0.2	0.18 ... 0.25	11-0CA20			A	**3RA21 10-0CE15-1AP0**	1	1 unit	41D
	0.09	0.3	0.22 ... 0.32	11-0DA20			A	**3RA21 10-0DE15-1AP0**	1	1 unit	41D
	0.09	0.3	0.28 ... 0.4	11-0EA20			A	**3RA21 10-0EE15-1AP0**	1	1 unit	41D
	0.12	0.4	0.35 ... 0.5	11-0FA20			A	**3RA21 10-0FE15-1AP0**	1	1 unit	41D
	0.18	0.6	0.45 ... 0.63	11-0GA20			A	**3RA21 10-0GE15-1AP0**	1	1 unit	41D
	0.18	0.6	0.55 ... 0.8	11-0HA20			A	**3RA21 10-0HE15-1AP0**	1	1 unit	41D
	0.25	0.85	0.7 ... 1	11-0JA20			A	**3RA21 10-0JE15-1AP0**	1	1 unit	41D
	0.37	1.1	0.9 ... 1.25	11-0KA20			A	**3RA21 10-0KE15-1AP0**	1	1 unit	41D
	0.55	1.5	1.1 ... 1.6	11-1AA20			A	**3RA21 10-1AE15-1AP0**	1	1 unit	41D
	0.75	1.9	1.4 ... 2	11-1BA20			A	**3RA21 10-1BE15-1AP0**	1	1 unit	41D
	0.75	1.9	1.8 ... 2.5	11-1CA20			A	**3RA21 10-1CE15-1AP0**	1	1 unit	41D
	1.1	2.7	2.2 ... 3.2	11-1DA20			A	**3RA21 10-1DE15-1AP0**	1	1 unit	41D
	1.5	3.6	2.8 ... 4	11-1EA20			A	**3RA21 10-1EE15-1AP0**	1	1 unit	41D
S0	1.5	3.6	3.5 ... 5	21-1FA20	24-2AP00			4)			
	2.2	4.9	4.5 ... 6.3	21-1GA20				4)			
	3	6.5	5.5 ... 8	21-1HA20				4)			
	4	8.5	7 ... 10	21-1JA20				4)			
	5.5	11.5	9 ... 12.5	21-1KA20				4)			
	7.5	15.5	11 ... 16	21-4AA20	26-2AP00	29 21-2AA00	A	**3RA21 20-4AE26-0AP0**	1	1 unit	41D
	7.5	15.5	14 ... 20	21-4BA20			B	**3RA21 20-4BE27-0AP0**	1	1 unit	41D
	11	22	17 ... 22	21-4CA20	27-2AP00		A	**3RA21 20-4CE27-0AP0**	1	1 unit	41D
	11	22	20 ... 25	21-4DA20			A	**3RA21 20-4DE27-0AP0**	1	1 unit	41D
	15	29	27 ... 32	21-4EA20			A	**3RA21 20-4EE27-0AP0**	1	1 unit	41D
Type of coordination "1" at I_q = 150 kA at 400 V (the motor starter protector is compatible with type of coordination "2")											
S00	For load feeders for lower outputs, see this table at type of coordination "2".							ToC 1			
	1.5	3.6	3.5 ... 5	11-1FA20	15-2AP01	29 11-2AA00	A	**3RA21 10-1FE15-1AP0**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA20			A	**3RA21 10-1GE15-1AP0**	1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA20			A	**3RA21 10-1HE15-1AP0**	1	1 unit	41D
	4	8.5	7 ... 10	11-1JA20	16-2AP01		A	**3RA21 10-1JE16-1AP0**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA20	17-2AP01		A	**3RA21 10-1KE17-1AP0**	1	1 unit	41D
	7.5	15.5	11 ... 16	11-4AA20	18-2AP01		A	**3RA21 10-4AE18-1AP0**	1	1 unit	41D

For online configurator see www.siemens.com/sirius/configurators.

1) Push-in lugs see "Accessories" on page 8/37.

2) Auxiliary switches see "Accessories" on page 8/32.

3) Selection depends on the concrete startup and rated data of the protected motor.

4) These combinations are not available as preassembled 3RA2 feeders, but they can be constructed as discrete assemblies. Mounting on a standard mounting rail adapter (3RA29 22-1AA00) is possible for feeder-oriented construction, in which case the contactor must be screwed to the adapter.

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For Use in the Control Cabinet

SIRIUS 3RA2 Load Feeders

3RA21 direct-on-line starters for snapping onto standard mounting rails or for screw fixing

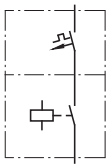


3RA21 10



3RA21 20

Direct-on-line start



Rated control supply voltage 24 V DC
With screw connections

- Screw fixing with 2 push-in lugs each per load feeder is possible[1)]
- The motor starter protector and contactor are mechanically and electrically connected by means of the link module
- Auxiliary switches[2)] on the motor starter protector and the contactor can be easily fitted due to the modular system.
- Integrated auxiliary switches:
  Contactor size S00: 1 NO,
  contactor size S0: 1 NO + 1 NC

Size	Standard induction motor 4-pole at 400 V AC[3)]		Setting range for thermal overload release	Consisting of the following single devices			DT	Fuseless load feeders	PU (UNIT, SET, M)	PS*	PG
	Standard output P	Motor current I (guide value)		Motor starter protector	+ Contactor	+ Link module		Screw terminals / Configurator / Order No.	Basic price per PU		
	kW	A	A								
Type of coordination "2" at I_q = 150 kA at 400 V (compatible with type of coordination "1")											
				3RV20	**3RT20**	**3RA**		ToC 2			
S00	0.06	0.2	0.14 ... 0.2	11-0BA10	15-1BB41	19 21-1DA00	A	**3RA21 10-0BA15-1BB4**	1	1 unit	41D
	0.06	0.2	0.18 ... 0.25	11-0CA10			A	**3RA21 10-0CA15-1BB4**	1	1 unit	41D
	0.09	0.3	0.22 ... 0.32	11-0DA10			A	**3RA21 10-0DA15-1BB4**	1	1 unit	41D
	0.09	0.3	0.28 ... 0.4	11-0EA10			A	**3RA21 10-0EA15-1BB4**	1	1 unit	41D
	0.12	0.4	0.35 ... 0.5	11-0FA10			A	**3RA21 10-0FA15-1BB4**	1	1 unit	41D
	0.18	0.6	0.45 ... 0.63	11-0GA10			A	**3RA21 10-0GA15-1BB4**	1	1 unit	41D
	0.18	0.6	0.55 ... 0.8	11-0HA10			A	**3RA21 10-0HA15-1BB4**	1	1 unit	41D
	0.25	0.85	0.7 ... 1	11-0JA10			A	**3RA21 10-0JA15-1BB4**	1	1 unit	41D
	0.37	1.1	0.9 ... 1.25	11-0KA10			A	**3RA21 10-0KA15-1BB4**	1	1 unit	41D
	0.55	1.5	1.1 ... 1.6	11-1AA10			A	**3RA21 10-1AA15-1BB4**	1	1 unit	41D
	0.75	1.9	1.4 ... 2	11-1BA10			A	**3RA21 10-1BA15-1BB4**	1	1 unit	41D
	0.75	1.9	1.8 ... 2.5	11-1CA10			A	**3RA21 10-1CA15-1BB4**	1	1 unit	41D
	1.1	2.7	2.2 ... 3.2	11-1DA10			A	**3RA21 10-1DA15-1BB4**	1	1 unit	41D
	1.5	3.6	2.8 ... 4	11-1EA10			A	**3RA21 10-1EA15-1BB4**	1	1 unit	41D
S0	1.5	3.6	3.5 ... 5	11-1FA10	24-1BB40	29 21-1BA00	A	**3RA21 20-1FA24-0BB4**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA10			A	**3RA21 20-1GA24-0BB4**	1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA10			A	**3RA21 20-1HA24-0BB4**	1	1 unit	41D
	4	8.5	7 ... 10	11-1JA10			A	**3RA21 20-1JA24-0BB4**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA10			A	**3RA21 20-1KA24-0BB4**	1	1 unit	41D
	7.5	15.5	11 ... 16	21-4AA10	26-1BB40		A	**3RA21 20-4AA26-0BB4**	1	1 unit	41D
	7.5	15.5	14 ... 20	21-4BA10			B	**3RA21 20-4BA27-0BB4**	1	1 unit	41D
	11	22	17 ... 22	21-4CA10	27-1BB40		A	**3RA21 20-4CA27-0BB4**	1	1 unit	41D
	11	22	20 ... 25	21-4DA10			A	**3RA21 20-4DA27-0BB4**	1	1 unit	41D
	15	29	27 ... 32	21-4EA10			A	**3RA21 20-4EA27-0BB4**	1	1 unit	41D
Type of coordination "1" at I_q = 150 kA at 400 V (the motor starter protector is compatible with type of coordination "2")											
S00	For load feeders for lower outputs, see this table at type of coordination "2".							ToC 1			
	1.5	3.6	3.5 ... 5	11-1FA10	15-1BB41	19 21-1DA00	A	**3RA21 10-1FA15-1BB4**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA10			A	**3RA21 10-1GA15-1BB4**	1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA10			A	**3RA21 10-1HA15-1BB4**	1	1 unit	41D
	4	8.5	7 ... 10	11-1JA10	16-1BB41		A	**3RA21 10-1JA16-1BB4**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA10	17-1BB41		A	**3RA21 10-1KA17-1BB4**	1	1 unit	41D
	7.5	15.5	11 ... 16	11-4AA10	18-1BB41		A	**3RA21 10-4AA18-1BB4**	1	1 unit	41D

For online configurator see www.siemens.com/sirius/configurators.

1) Push-in lugs see "Accessories" on page 8/37.

2) Auxiliary switches see "Accessories" on page 8/32.

3) Selection depends on the concrete startup and rated data of the protected motor.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3RA21 direct-on-line starters for snapping onto standard mounting rails or for screw fixing

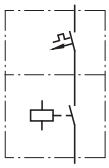


3RA21 10



3RA21 20

Direct-on-line start



Rated control supply voltage 24 V DC
With spring-type connection

- Screw fixing with 2 push-in lugs each per load feeder is possible[1)]
- The motor starter protector and contactor are mechanically and electrically connected by means of the link module
- Auxiliary switches[2)] on the motor starter protector and the contactor can be easily fitted due to the modular system.
- Integrated auxiliary switches:
  Contactor size S00: 1 NO,
  contactor size S0: 1 NO + 1 NC

Size	Standard induction motor 4-pole at 400 V AC[3)]		Setting range for thermal overload release	Consisting of the following single devices			DT	Fuseless load feeders	PU (UNIT, SET, M)	PS*	PG
	Standard output P	Motor current I (guide value)		Motor starter protector	+ Contactor	+ Link module		Spring-type terminals			
								Configurator			
								Order No.	Basic price per PU		
	kW	A	A								
Type of coordination "2" at I_q = 150 kA at 400 V (compatible with type of coordination "1")											
				3RV20	**3RT20**	**3RA**		ToC 2			
S00	0.06	0.2	0.14 ... 0.2	11-0BA20	15-2BB41	29 11-2AA00	A	**3RA21 10-0BE15-1BB4**	1	1 unit	41D
	0.06	0.2	0.18 ... 0.25	11-0CA20			A	**3RA21 10-0CE15-1BB4**	1	1 unit	41D
	0.09	0.3	0.22 ... 0.32	11-0DA20			A	**3RA21 10-0DE15-1BB4**	1	1 unit	41D
	0.09	0.3	0.28 ... 0.4	11-0EA20			A	**3RA21 10-0EE15-1BB4**	1	1 unit	41D
	0.12	0.4	0.35 ... 0.5	11-0FA20			A	**3RA21 10-0FE15-1BB4**	1	1 unit	41D
	0.18	0.6	0.45 ... 0.63	11-0GA20			A	**3RA21 10-0GE15-1BB4**	1	1 unit	41D
	0.18	0.6	0.55 ... 0.8	11-0HA20			A	**3RA21 10-0HE15-1BB4**	1	1 unit	41D
	0.25	0.85	0.7 ... 1	11-0JA20			A	**3RA21 10-0JE15-1BB4**	1	1 unit	41D
	0.37	1.1	0.9 ... 1.25	11-0KA20			A	**3RA21 10-0KE15-1BB4**	1	1 unit	41D
	0.55	1.5	1.1 ... 1.6	11-1AA20			A	**3RA21 10-1AE15-1BB4**	1	1 unit	41D
	0.75	1.9	1.4 ... 2	11-1BA20			A	**3RA21 10-1BE15-1BB4**	1	1 unit	41D
	0.75	1.9	1.8 ... 2.5	11-1CA20			A	**3RA21 10-1CE15-1BB4**	1	1 unit	41D
	1.1	2.7	2.2 ... 3.2	11-1DA20			A	**3RA21 10-1DE15-1BB4**	1	1 unit	41D
	1.5	3.6	2.8 ... 4	11-1EA20			A	**3RA21 10-1EE15-1BB4**	1	1 unit	41D
S0	1.5	3.6	3.5 ... 5	21-1FA20	24-2BB40			4)			
	2.2	4.9	4.5 ... 6.3	21-1GA20				4)			
	3	6.5	5.5 ... 8	21-1HA20				4)			
	4	8.5	7 ... 10	21-1JA20				4)			
	5.5	11.5	9 ... 12.5	21-1KA20				4)			
	7.5	15.5	11 ... 16	21-4AA20	26-2BB40	29 21-2AA00	A	**3RA21 20-4AE26-0BB4**	1	1 unit	41D
	7.5	15.5	14 ... 20	21-4BA20			B	**3RA21 20-4BE27-0BB4**	1	1 unit	41D
	11	22	17 ... 22	21-4CA10	27-2BB40		A	**3RA21 20-4CE27-0BB4**	1	1 unit	41D
	11	22	20 ... 25	21-4DA10			A	**3RA21 20-4DE27-0BB4**	1	1 unit	41D
	15	29	27 ... 32	21-4EA10			A	**3RA21 20-4EE27-0BB4**	1	1 unit	41D
Type of coordination "1" at I_q = 150 kA at 400 V (the motor starter protector is compatible with type of coordination "2")											
S00	For load feeders for lower outputs, see this table at type of coordination "2".							ToC 1			
	1.5	3.6	3.5 ... 5	11-1FA20	15-2BB41	29 11-2AA00	A	**3RA21 10-1FE15-1BB4**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA20			A	**3RA21 10-1GE15-1BB4**	1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA20			A	**3RA21 10-1HE15-1BB4**	1	1 unit	41D
	4	8.5	7 ... 10	11-1JA20	16-2BB41		A	**3RA21 10-1JE16-1BB4**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA20	17-2BB41		A	**3RA21 10-1KE17-1BB4**	1	1 unit	41D
	7.5	15.5	11 ... 16	11-4AA20	18-2BB40		A	**3RA21 10-4AE18-1BB4**	1	1 unit	41D

For online configurator see www.siemens.com/sirius/configurators.

1) Push-in lugs see "Accessories" on page 8/37.

2) Auxiliary switches see "Accessories" on page 8/32.

3) Selection depends on the concrete startup and rated data of the protected motor.

4) These combinations are not available as preassembled 3RA2 feeders, but they can be constructed as discrete assemblies. Mounting on a standard mounting rail adapter (3RA29 22-1AA00) is possible for feeder-oriented construction, in which case the contactor must be screwed to the adapter.

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3RA21 direct-on-line starters for 60 mm busbars

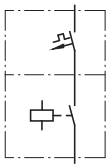


3RA21 10



3RA21 20

Direct-on-line start



Rated control supply voltage AC 50/60 Hz 230 V
With screw terminals

- With busbar adapter
- The motor starter protector and contactor are mechanically and electrically connected by means of the link module
- Auxiliary switches[1] on the motor starter protector and the contactor can be easily fitted due to the modular system.
- Integrated auxiliary switches:
  Contactor size S00: 1 NO,
  contactor size S0: 1 NO + 1 NC

Size	Standard induction motor 4-pole at 400 V AC[2]		Setting range for thermal overload release	Consisting of the following single devices			DT	Fuseless load feeders	PU (UNIT, SET, M)	PS*	PG
	Standard output *P*	Motor current *I* (guide value)		Motor starter protector	+ Contactor	+ Link module + Busbar adapter		Screw terminals / Configurator / Order No. / Basic price per PU			
	kW	A	A								
Type of coordination "2" at I_q = 150 kA at 400 V (compatible with type of coordination "1")				**3RV20**	**3RT20**	**3RA**		ToC 2			
S00	0.06	0.2	0.14 ... 0.2	11-0BA10	15-1AP01	19 21-1DA00	A	**3RA21 10-0BD15-1AP0**	1	1 unit	41D
	0.06	0.2	0.18 ... 0.25	11-0CA10		+ 8US12 51-	A	**3RA21 10-0CD15-1AP0**	1	1 unit	41D
	0.09	0.3	0.22 ... 0.32	11-0DA10		5DS10	A	**3RA21 10-0DD15-1AP0**	1	1 unit	41D
	0.09	0.3	0.28 ... 0.4	11-0EA10			A	**3RA21 10-0ED15-1AP0**	1	1 unit	41D
	0.12	0.4	0.35 ... 0.5	11-0FA10			A	**3RA21 10-0FD15-1AP0**	1	1 unit	41D
	0.18	0.6	0.45 ... 0.63	11-0GA10			A	**3RA21 10-0GD15-1AP0**	1	1 unit	41D
	0.18	0.6	0.55 ... 0.8	11-0HA10			A	**3RA21 10-0HD15-1AP0**	1	1 unit	41D
	0.25	0.85	0.7 ... 1	11-0JA10			A	**3RA21 10-0JD15-1AP0**	1	1 unit	41D
	0.37	1.1	0.9 ... 1.25	11-0KA10			A	**3RA21 10-0KD15-1AP0**	1	1 unit	41D
	0.55	1.5	1.1 ... 1.6	11-1AA10			A	**3RA21 10-1AD15-1AP0**	1	1 unit	41D
	0.75	1.9	1.4 ... 2	11-1BA10			A	**3RA21 10-1BD15-1AP0**	1	1 unit	41D
	0.75	1.9	1.8 ... 2.5	11-1CA10			A	**3RA21 10-1CD15-1AP0**	1	1 unit	41D
	1.1	2.7	2.2 ... 3.2	11-1DA10			A	**3RA21 10-1DD15-1AP0**	1	1 unit	41D
	1.5	3.6	2.8 ... 4	11-1EA10			A	**3RA21 10-1ED15-1AP0**	1	1 unit	41D
S0	1.5	3.6	3.5 ... 5	11-1FA10	24-1AP00	29 21-1AA00	A	**3RA21 20-1FD24-0AP0**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA10		+ 8US12 51-	A	**3RA21 20-1GD24-0AP0**	1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA10		5DT10	A	**3RA21 20-1HD24-0AP0**	1	1 unit	41D
	4	8.5	7 ... 10	11-1JA10			A	**3RA21 20-1JD24-0AP0**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA10			A	**3RA21 20-1KD24-0AP0**	1	1 unit	41D
	7.5	15.5	11 ... 16	21-4AA10	26-1AP00	29 21-1AA00	A	**3RA21 20-4AD26-0AP0**	1	1 unit	41D
	7.5	15.5	14 ... 20	21-4BA10		+ 8US12 51-	B	**3RA21 20-4BD27-0AP0**	1	1 unit	41D
	11	22	17 ... 22	21-4CA10	27-1AP00	5NT10	A	**3RA21 20-4CD27-0AP0**	1	1 unit	41D
	11	22	20 ... 25	21-4DA10			A	**3RA21 20-4DD27-0AP0**	1	1 unit	41D
	15	29	27 ... 32	21-4EA10			A	**3RA21 20-4ED27-0AP0**	1	1 unit	41D
Type of coordination "1" at I_q = 150 kA at 400 V (the motor starter protector is compatible with type of coordination "2")											
S00	For load feeders for lower outputs, see this table at type of coordination "2".							ToC 1			
	1.5	3.6	3.5 ... 5	11-1FA10	15-1AP01	19 21-1DA00	A	**3RA21 10-1FD15-1AP0**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA10		+ 8US12 51-	A	**3RA21 10-1GD15-1AP0**	1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA10		5DS10	A	**3RA21 10-1HD15-1AP0**	1	1 unit	41D
	4	8.5	7 ... 10	11-1JA10	16-1AP01		A	**3RA21 10-1JD16-1AP0**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA10	17-1AP01		A	**3RA21 10-1KD17-1AP0**	1	1 unit	41D
	7.5	15.5	11 ... 16	11-4AA10	18-1AP01		A	**3RA21 10-4AD18-1AP0**	1	1 unit	41D

For online configurator see www.siemens.com/sirius/configurators.

1) Auxiliary switches see "Accessories" on page 8/32.

2) Selection depends on the concrete startup and rated data of the protected motor.

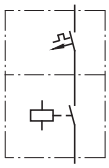
* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3RA21 10


3RA21 20

Direct-on-line start



Rated control supply voltage AC 50/60 Hz 230 V
With spring-type connection

- With busbar adapter
- The motor starter protector and contactor are mechanically and electrically connected by means of the link module
- Auxiliary switches[1] on the motor starter protector and the contactor can be easily fitted due to the modular system.
- Integrated auxiliary switches: Contactor size S00: 1 NO, contactor size S0: 1 NO + 1 NC

Size	Standard induction motor 4-pole at 400 V AC[2]		Setting range for thermal overload release	Consisting of the following single devices			DT	Fuseless load feeders	PU (UNIT, SET, M)	PS*	PG
	Standard output P	Motor current I (guide value)		Motor starter protector	+ Contactor	+ Link module + Busbar adapter		Spring-type terminals / Configurator / Order No. / Basic price per PU			
	kW	A	A								
Type of coordination "2" at I_q = 150 kA at 400 V (compatible with type of coordination "1")				**3RV20**	**3RT20**	**3RA**		ToC 2			
S00	0.06	0.2	0.14 ... 0.2	11-0BA20	15-2AP01	29 11-2AA00	A	**3RA21 10-0BH15-1AP0**	1	1 unit	41D
	0.06	0.2	0.18 ... 0.25	11-0CA20		+ 8US12 51-	A	**3RA21 10-0CH15-1AP0**	1	1 unit	41D
	0.09	0.3	0.22 ... 0.32	11-0DA20		5DT11	A	**3RA21 10-0DH15-1AP0**	1	1 unit	41D
	0.09	0.3	0.28 ... 0.4	11-0EA20			A	**3RA21 10-0EH15-1AP0**	1	1 unit	41D
	0.12	0.4	0.35 ... 0.5	11-0FA20			A	**3RA21 10-0FH15-1AP0**	1	1 unit	41D
	0.18	0.6	0.45 ... 0.63	11-0GA20			A	**3RA21 10-0GH15-1AP0**	1	1 unit	41D
	0.18	0.6	0.55 ... 0.8	11-0HA20			A	**3RA21 10-0HH15-1AP0**	1	1 unit	41D
	0.25	0.85	0.7 ... 1	11-0JA20			A	**3RA21 10-0JH15-1AP0**	1	1 unit	41D
	0.37	1.1	0.9 ... 1.25	11-0KA20			A	**3RA21 10-0KH15-1AP0**	1	1 unit	41D
	0.55	1.5	1.1 ... 1.6	11-1AA20			A	**3RA21 10-1AH15-1AP0**	1	1 unit	41D
	0.75	1.9	1.4 ... 2	11-1BA20			A	**3RA21 10-1BH15-1AP0**	1	1 unit	41D
	0.75	1.9	1.8 ... 2.5	11-1CA20			A	**3RA21 10-1CH15-1AP0**	1	1 unit	41D
	1.1	2.7	2.2 ... 3.2	11-1DA20			A	**3RA21 10-1DH15-1AP0**	1	1 unit	41D
	1.5	3.6	2.8 ... 4	11-1EA20			A	**3RA21 10-1EH15-1AP0**	1	1 unit	41D
S0	1.5	3.6	3.5 ... 5	21-1FA20	24-2AP00	8US12 51-		3)			
	2.2	4.9	4.5 ... 6.3	21-1GA20		5DT11		3)			
	3	6.5	5.5 ... 8	21-1HA20				3)			
	4	8.5	7 ... 10	21-1JA20				3)			
	5.5	11.5	9 ... 12.5	21-1KA20				3)			
	7.5	15.5	11 ... 16	21-4AA20	26-2AP00	29 21-2AA00	A	**3RA21 20-4AH26-0AP0**	1	1 unit	41D
	7.5	15.5	14 ... 20	21-4BA20		+ 8US12 51-	B	**3RA21 20-4BH27-0AP0**	1	1 unit	41D
	11	22	17 ... 22	21-4CA20	27-2AP00	5NT11[4]	A	**3RA21 20-4CH27-0AP0**	1	1 unit	41D
	11	22	20 ... 25	21-4DA20			A	**3RA21 20-4DH27-0AP0**	1	1 unit	41D
	15	29	27 ... 32	21-4EA20			A	**3RA21 20-4EH27-0AP0**	1	1 unit	41D
Type of coordination "1" at I_q = 150 kA at 400 V (the motor starter protector is compatible with type of coordination "2")											
S00	For load feeders for lower outputs, see this table at type of coordination "2".							ToC 1			
	1.5	3.6	3.5 ... 5	11-1FA20	15-2AP01	29 11-2AA00	A	**3RA21 10-1FH15-1AP0**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA20		+ 8US12 51-	A	**3RA21 10-1GH15-1AP0**	1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA20		5DT11	A	**3RA21 10-1HH15-1AP0**	1	1 unit	41D
	4	8.5	7 ... 10	11-1JA20	16-2AP01		A	**3RA21 10-1JH16-1AP0**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA20	17-2AP01		A	**3RA21 10-1KH17-1AP0**	1	1 unit	41D
	7.5	15.5	11 ... 16	11-4AA20	18-2AP01		A	**3RA21 10-4AH18-1AP0**	1	1 unit	41D

For online configurator see www.siemens.com/sirius/configurators.

1) Auxiliary switches see "Accessories" on page 8/32.

2) Selection depends on the concrete startup and rated data of the protected motor.

3) These combinations are not available as preassembled 3RA2 feeders, but they can be constructed as discrete assemblies. The additional component 8US19 98-7CB45 is needed to mount a contactor on the busbar adapter.

4) A 3RA29 11-1CA00 spacer for height compensation on AC contactors size S0 with spring-type terminals is included in the scope of supply.

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3RA21 direct-on-line starters for 60 mm busbars

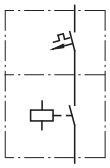


3RA21 10



3RA21 20

Direct-on-line start



Rated control supply voltage 24 V DC
With screw connections

- With busbar adapter
- The motor starter protector and contactor are mechanically and electrically connected by means of the link module
- Auxiliary switches[1] on the motor starter protector and the contactor can be easily fitted due to the modular system.
- Integrated auxiliary switches: Contactor size S00: 1 NO, contactor size S0: 1 NO + 1 NC

Size	Standard induction motor 4-pole at 400 V AC[2]		Setting range for thermal overload release	Consisting of the following single devices			DT	Fuseless load feeders		PU (UNIT, SET, M)	PS*	PG
	Standard output P	Motor current I (guide value)		Motor starter protector	+ Contactor	+ Link module + Busbar adapter		Screw terminals				
								Configurator				
								Order No.	Basic price per PU			
	kW	A	A									
Type of coordination "2" at I_q = 150 kA at 400 V (compatible with type of coordination "1")				**3RV20**	**3RT20**	**3RA**		ToC 2				
S00	0.06	0.2	0.14 ... 0.2	11-0BA10	15-1BB41	19 21-1DA00	A	**3RA21 10-0BD15-1BB4**		1	1 unit	41D
	0.06	0.2	0.18 ... 0.25	11-0CA10		+ 8US12 51-	A	**3RA21 10-0CD15-1BB4**		1	1 unit	41D
	0.09	0.3	0.22 ... 0.32	11-0DA10		5DS10	A	**3RA21 10-0DD15-1BB4**		1	1 unit	41D
	0.09	0.3	0.28 ... 0.4	11-0EA10			A	**3RA21 10-0ED15-1BB4**		1	1 unit	41D
	0.12	0.4	0.35 ... 0.5	11-0FA10			A	**3RA21 10-0FD15-1BB4**		1	1 unit	41D
	0.18	0.6	0.45 ... 0.63	11-0GA10			A	**3RA21 10-0GD15-1BB4**		1	1 unit	41D
	0.18	0.6	0.55 ... 0.8	11-0HA10			A	**3RA21 10-0HD15-1BB4**		1	1 unit	41D
	0.25	0.85	0.7 ... 1	11-0JA10			A	**3RA21 10-0JD15-1BB4**		1	1 unit	41D
	0.37	1.1	0.9 ... 1.25	11-0KA10			A	**3RA21 10-0KD15-1BB4**		1	1 unit	41D
	0.55	1.5	1.1 ... 1.6	11-1AA10			A	**3RA21 10-1AD15-1BB4**		1	1 unit	41D
	0.75	1.9	1.4 ... 2	11-1BA10			A	**3RA21 10-1BD15-1BB4**		1	1 unit	41D
	0.75	1.9	1.8 ... 2.5	11-1CA10			A	**3RA21 10-1CD15-1BB4**		1	1 unit	41D
	1.1	2.7	2.2 ... 3.2	11-1DA10			A	**3RA21 10-1DD15-1BB4**		1	1 unit	41D
	1.5	3.6	2.8 ... 4	11-1EA10			A	**3RA21 10-1ED15-1BB4**		1	1 unit	41D
S0	1.5	3.6	3.5 ... 5	11-1FA10	24-1BB40	29 21-1BA00	A	**3RA21 20-1FD24-0BB4**		1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA10		+ 8US12 51-	A	**3RA21 20-1GD24-0BB4**		1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA10		5DT10	A	**3RA21 20-1HD24-0BB4**		1	1 unit	41D
	4	8.5	7 ... 10	11-1JA10			A	**3RA21 20-1JD24-0BB4**		1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA10			A	**3RA21 20-1KD24-0BB4**		1	1 unit	41D
	7.5	15.5	11 ... 16	21-4AA10	26-1BB40	29 21-1BA00	A	**3RA21 20-4AD26-0BB4**		1	1 unit	41D
	7.5	15.5	14 ... 20	21-4BA10		+ 8US12 51-	B	**3RA21 20-4BD27-0BB4**		1	1 unit	41D
	11	22	17 ... 22	21-4CA10	27-1BB40	5NT10	A	**3RA21 20-4CD27-0BB4**		1	1 unit	41D
	11	22	20 ... 25	21-4DA10			A	**3RA21 20-4DD27-0BB4**		1	1 unit	41D
	15	29	27 ... 32	21-4EA10			A	**3RA21 20-4ED27-0BB4**		1	1 unit	41D
Type of coordination "1" at I_q = 150 kA at 400 V (the motor starter protector is compatible with type of coordination "2")												
S00	For load feeders for lower outputs, see this table at type of coordination "2".							ToC 1				
	1.5	3.6	3.5 ... 5	11-1FA10	15-1BB41	19 21-1DA00	A	**3RA21 10-1FD15-1BB4**		1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA10		+ 8US12 51-	A	**3RA21 10-1GD15-1BB4**		1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA10		5DS10	A	**3RA21 10-1HD15-1BB4**		1	1 unit	41D
	4	8.5	7 ... 10	11-1JA10	16-1BB41		A	**3RA21 10-1JD16-1BB4**		1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA10	17-1BB41		A	**3RA21 10-1KD17-1BB4**		1	1 unit	41D
	7.5	15.5	11 ... 16	11-4AA10	18-1BB41		A	**3RA21 10-4AD18-1BB4**		1	1 unit	41D

For online configurator see www.siemens.com/sirius/configurators.

1) Auxiliary switches see "Accessories" on page 8/32.

2) Selection depends on the concrete startup and rated data of the protected motor.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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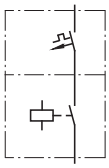


3RA21 10



3RA21 20

Direct-on-line start



Rated control supply voltage 24 V DC
With spring-type connection

- With busbar adapter
- The motor starter protector and contactor are mechanically and electrically connected by means of the link module
- Auxiliary switches[1] on the motor starter protector and the contactor can be easily fitted due to the modular system.
- Integrated auxiliary switches: Contactor size S00: 1 NO, contactor size S0: 1 NO + 1 NC

Size	Standard induction motor 4-pole at 400 V AC[2]		Setting range for thermal overload release	Consisting of the following single devices			DT	Fuseless load feeders	PU (UNIT, SET, M)	PS*	PG
	Standard output P	Motor current I (guide value)		Motor starter protector	+ Contactor	+ Link module + Busbar adapter		Spring-type terminals / Configurator / Order No.			
	kW	A	A					Basic price per PU			
Type of coordination "2" at I_q = 150 kA at 400 V (compatible with type of coordination "1")				**3RV20**	**3RT20**	**3RA**		ToC 2			
S00	0.06	0.2	0.14 ... 0.2	11-0BA20	15-2BB41	29 11-2AA00	A	**3RA21 10-0BH15-1BB4**	1	1 unit	41D
	0.06	0.2	0.18 ... 0.25	11-0CA20		+ 8US12 51-	A	**3RA21 10-0CH15-1BB4**	1	1 unit	41D
	0.09	0.3	0.22 ... 0.32	11-0DA20		5DT11	A	**3RA21 10-0DH15-1BB4**	1	1 unit	41D
	0.09	0.3	0.28 ... 0.4	11-0EA20			A	**3RA21 10-0EH15-1BB4**	1	1 unit	41D
	0.12	0.4	0.35 ... 0.5	11-0FA20			A	**3RA21 10-0FH15-1BB4**	1	1 unit	41D
	0.18	0.6	0.45 ... 0.63	11-0GA20			A	**3RA21 10-0GH15-1BB4**	1	1 unit	41D
	0.18	0.6	0.55 ... 0.8	11-0HA20			A	**3RA21 10-0HH15-1BB4**	1	1 unit	41D
	0.25	0.85	0.7 ... 1	11-0JA20			A	**3RA21 10-0JH15-1BB4**	1	1 unit	41D
	0.37	1.1	0.9 ... 1.25	11-0KA20			A	**3RA21 10-0KH15-1BB4**	1	1 unit	41D
	0.55	1.5	1.1 ... 1.6	11-1AA20			A	**3RA21 10-1AH15-1BB4**	1	1 unit	41D
	0.75	1.9	1.4 ... 2	11-1BA20			A	**3RA21 10-1BH15-1BB4**	1	1 unit	41D
	0.75	1.9	1.8 ... 2.5	11-1CA20			A	**3RA21 10-1CH15-1BB4**	1	1 unit	41D
	1.1	2.7	2.2 ... 3.2	11-1DA20			A	**3RA21 10-1DH15-1BB4**	1	1 unit	41D
	1.5	3.6	2.8 ... 4	11-1EA20			A	**3RA21 10-1EH15-1BB4**	1	1 unit	41D
S0	1.5	3.6	3.5 ... 5	21-1FA20	24-2BB40	8US12 51-		[3]			
	2.2	4.9	4.5 ... 6.3	21-1GA20		5DT11		[3]			
	3	6.5	5.5 ... 8	21-1HA20				[3]			
	4	8.5	7 ... 10	21-1JA20				[3]			
	5.5	11.5	9 ... 12.5	21-1KA20				[3]			
	7.5	15.5	11 ... 16	21-4AA20	26-2BB40	29 21-2AA00	A	**3RA21 20-4AH26-0BB4**	1	1 unit	41D
	7.5	15.5	14 ... 20	21-4BA20		+ 8US12 51-	B	**3RA21 20-4BH27-0BB4**	1	1 unit	41D
	11	22	17 ... 22	21-4CA10	27-2BB40	5NT11	A	**3RA21 20-4CH27-0BB4**	1	1 unit	41D
	11	22	20 ... 25	21-4DA10			A	**3RA21 20-4DH27-0BB4**	1	1 unit	41D
	15	29	27 ... 32	21-4EA10			A	**3RA21 20-4EH27-0BB4**	1	1 unit	41D
Type of coordination "1" at I_q = 150 kA at 400 V (the motor starter protector is compatible with type of coordination "2")											
S00	For load feeders for lower outputs, see this table at type of coordination "2".							ToC 1			
	1.5	3.6	3.5 ... 5	11-1FA20	15-2BB41	29 11-2AA00	A	**3RA21 10-1FH15-1BB4**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA20		+ 8US12 51-	A	**3RA21 10-1GH15-1BB4**	1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA20		5DT11	A	**3RA21 10-1HH15-1BB4**	1	1 unit	41D
	4	8.5	7 ... 10	11-1JA20	16-2BB41		A	**3RA21 10-1JH16-1BB4**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA20	17-2BB41		A	**3RA21 10-1KH17-1BB4**	1	1 unit	41D
	7.5	15.5	11 ... 16	11-4AA20	18-2BB40		A	**3RA21 10-4AH18-1BB4**	1	1 unit	41D

For online configurator see www.siemens.com/sirius/configurators.

1) Auxiliary switches see "Accessories" on page 8/32.

2) Selection depends on the concrete startup and rated data of the protected motor.

3) These combinations are not available as preassembled 3RA2 feeders, but they can be constructed as discrete assemblies. The additional component 8US19 98-7CB45 is needed to mount a contactor on the busbar adapter.

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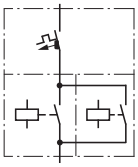
3RA22 reversing starters for snapping onto standard mounting rails or for screw fixing

Selection and ordering data



3RA22 10 3RA22 20

Reversing duty



Rated control supply voltage AC 50/60 Hz 230 V
With screw connections

- Screw fixing with 2 push-in lugs each per load feeder is possible[1)]
- Without standard mounting rail adapter for size S00
- With 2 standard mounting rail adapters for size S0 for mechanical reinforcement (included in the scope of supply)
- The motor starter protector and contactor are mechanically and electrically connected by means of the link module
- Auxiliary switches[2)] on the motor starter protector and the contactor can be easily fitted due to the modular system.
- With the contactor S0, an integrated NO contact is still available for free use.

Size	Standard induction motor 4-pole at 400 V AC[3)]		Setting range for thermal overload release	Consisting of the following single devices			DT	Fuseless load feeders		PU (UNIT, SET, M)	PS*	PG
	Standard output *P*	Motor current *I* (guide value)		Motor starter protectors	+ 2 contactors	+ Link module + Assembly kit RH[4)]/Wiring kit		Screw terminals				
								Configurator				
								Order No.	Basic price per PU			
	kW	A	A									
Type of coordination "2" at I_q = 150 kA at 400 V (compatible with type of coordination "1")				3RV20	3RT20	3RA		ToC 2				
S00	0.06	0.2	0.14 ... 0.2	11-0BA10	15-1AP02	19 21-1DA00	A	**3RA22 10-0BA15-2AP0**		1	1 unit	41D
	0.06	0.2	0.18 ... 0.25	11-0CA10		+ 29 13-2AA1	A	**3RA22 10-0CA15-2AP0**		1	1 unit	41D
	0.09	0.3	0.22 ... 0.32	11-0DA10			A	**3RA22 10-0DA15-2AP0**		1	1 unit	41D
	0.09	0.3	0.28 ... 0.4	11-0EA10			A	**3RA22 10-0EA15-2AP0**		1	1 unit	41D
	0.12	0.4	0.35 ... 0.5	11-0FA10			A	**3RA22 10-0FA15-2AP0**		1	1 unit	41D
	0.18	0.6	0.45 ... 0.63	11-0GA10			A	**3RA22 10-0GA15-2AP0**		1	1 unit	41D
	0.18	0.6	0.55 ... 0.8	11-0HA10			A	**3RA22 10-0HA15-2AP0**		1	1 unit	41D
	0.25	0.85	0.7 ... 1	11-0JA10			A	**3RA22 10-0JA15-2AP0**		1	1 unit	41D
	0.37	1.1	0.9 ... 1.25	11-0KA10			A	**3RA22 10-0KA15-2AP0**		1	1 unit	41D
	0.55	1.5	1.1 ... 1.6	11-1AA10			A	**3RA22 10-1AA15-2AP0**		1	1 unit	41D
	0.75	1.9	1.4 ... 2	11-1BA10			A	**3RA22 10-1BA15-2AP0**		1	1 unit	41D
	0.75	1.9	1.8 ... 2.5	11-1CA10			A	**3RA22 10-1CA15-2AP0**		1	1 unit	41D
	1.1	2.7	2.2 ... 3.2	11-1DA10			A	**3RA22 10-1DA15-2AP0**		1	1 unit	41D
	1.5	3.6	2.8 ... 4	11-1EA10			A	**3RA22 10-1EA15-2AP0**		1	1 unit	41D
S0	1.5	3.6	3.5 ... 5	11-1FA10	24-1AP00	29 21-1AA00	A	**3RA22 20-1FB24-0AP0**		1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA10		+ 29 23-1BB1	A	**3RA22 20-1GB24-0AP0**		1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA10			A	**3RA22 20-1HB24-0AP0**		1	1 unit	41D
	4	8.5	7 ... 10	11-1JA10			A	**3RA22 20-1JB24-0AP0**		1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA10			A	**3RA22 20-1KB24-0AP0**		1	1 unit	41D
	7.5	15.5	11 ... 16	21-4AA10	26-1AP00		A	**3RA22 20-4AB26-0AP0**		1	1 unit	41D
	7.5	15.5	14 ... 20	21-4BA10			B	**3RA22 20-4BB27-0AP0**		1	1 unit	41D
	11	22	17 ... 22	21-4CA10	27-1AP00		A	**3RA22 20-4CB27-0AP0**		1	1 unit	41D
	11	22	20 ... 25	21-4DA10			A	**3RA22 20-4DB27-0AP0**		1	1 unit	41D
	15	29	27 ... 32	21-4EA10			A	**3RA22 20-4EB27-0AP0**		1	1 unit	41D
Type of coordination "1" at I_q = 150 kA at 400 V (the motor starter protector is compatible with type of coordination "2")												
S00	For load feeders for lower outputs, see this table at type of coordination "2".							ToC 1				
S00	1.5	3.6	3.5 ... 5	11-1FA10	15-1AP02	19 21-1DA00	A	**3RA22 10-1FA15-2AP0**		1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA10		+ 29 13-2AA1	A	**3RA22 10-1GA15-2AP0**		1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA10			A	**3RA22 10-1HA15-2AP0**		1	1 unit	41D
	4	8.5	7 ... 10	11-1JA10	16-1AP02		A	**3RA22 10-1JA16-2AP0**		1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA10	17-1AP02		A	**3RA22 10-1KA17-2AP0**		1	1 unit	41D
	7.5	15.5	11 ... 16	11-4AA10	18-1AP02		A	**3RA22 10-4AA18-2AP0**		1	1 unit	41D

For online configurator see www.siemens.com/sirius/configurators.

1) Push-in lugs see "Accessories" on page 8/37.

2) Auxiliary switches see "Accessories" on page 8/32.

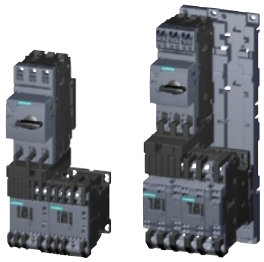
3) Selection depends on the concrete startup and rated data of the protected motor.

4) RH = assembly kit for reversing duty and standard rail mounting in size S0.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

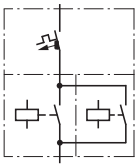
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3RA22 reversing starters for snapping onto standard mounting rails or for screw fixing



3RA22 10 3RA22 20

Reversing duty



Rated control supply voltage AC 50/60 Hz 230 V
With spring-type connection

- Screw fixing with 2 push-in lugs each per load feeder is possible[1)]
- Without standard mounting rail adapter for size S00
- With 2 standard mounting rail adapters for size S0 for mechanical reinforcement (included in the scope of supply)
- The motor starter protector and contactor are mechanically and electrically connected by means of the link module
- Auxiliary switches[2)] on the motor starter protector and the contactor can be easily fitted due to the modular system.
- With the contactor S0, an integrated NO contact is still available for free use.

Size	Standard induction motor 4-pole at 400 V AC[3)]		Setting range for thermal overload release	Consisting of the following single devices			DT	Fuseless load feeders	PU (UNIT, SET, M)	PS*	PG
	Standard output P	Motor current I (guide value)		Motor starter protector	+ 2 contactors	+ Link module + Assembly kit RH[4)]/Wiring kit		Spring-type terminals			
								Configurator			
								Order No.	Basic price per PU		
	kW	A	A								
Type of coordination "2" at I_q = 150 kA at 400 V (compatible with type of coordination "1")				3RV20	3RT20	3RA		ToC 2			
S00	0.06	0.2	0.14 ... 0.2	11-0BA20	15-2AP02	29 11-2AA00	A	**3RA22 10-0BE15-2AP0**	1	1 unit	41D
	0.06	0.2	0.18 ... 0.25	11-0CA20		+ 29 13-2AA2	A	**3RA22 10-0CE15-2AP0**	1	1 unit	41D
	0.09	0.3	0.22 ... 0.32	11-0DA20			A	**3RA22 10-0DE15-2AP0**	1	1 unit	41D
	0.09	0.3	0.28 ... 0.4	11-0EA20			A	**3RA22 10-0EE15-2AP0**	1	1 unit	41D
	0.12	0.4	0.35 ... 0.5	11-0FA20			A	**3RA22 10-0FE15-2AP0**	1	1 unit	41D
	0.18	0.6	0.45 ... 0.63	11-0GA20			A	**3RA22 10-0GE15-2AP0**	1	1 unit	41D
	0.18	0.6	0.55 ... 0.8	11-0HA20			A	**3RA22 10-0HE15-2AP0**	1	1 unit	41D
	0.25	0.85	0.7 ... 1	11-0JA20			A	**3RA22 10-0JE15-2AP0**	1	1 unit	41D
	0.37	1.1	0.9 ... 1.25	11-0KA20			A	**3RA22 10-0KE15-2AP0**	1	1 unit	41D
	0.55	1.5	1.1 ... 1.6	11-1AA20			A	**3RA22 10-1AE15-2AP0**	1	1 unit	41D
	0.75	1.9	1.4 ... 2	11-1BA20			A	**3RA22 10-1BE15-2AP0**	1	1 unit	41D
	0.75	1.9	1.8 ... 2.5	11-1CA20			A	**3RA22 10-1CE15-2AP0**	1	1 unit	41D
	1.1	2.7	2.2 ... 3.2	11-1DA20			A	**3RA22 10-1DE15-2AP0**	1	1 unit	41D
	1.5	3.6	2.8 ... 4	11-1EA20			A	**3RA22 10-1EE15-2AP0**	1	1 unit	41D
S0	1.5	3.6	3.5 ... 5	21-1FA20	24-2AP00	29 23-2AA2		5)			
	2.2	4.9	4.5 ... 6.3	21-1GA20				5)			
	3	6.5	5.5 ... 8	21-1HA20				5)			
	4	8.5	7 ... 10	21-1JA20				5)			
	5.5	11.5	9 ... 12.5	21-1KA20				5)			
	7.5	15.5	11 ... 16	21-4AA20	26-2AP00	29 21-2AA00	A	**3RA22 20-4AF26-0AP0**	1	1 unit	41D
	7.5	15.5	14 ... 20	21-4BA20		+ 29 23-1BB2[6)]	B	**3RA22 20-4BF27-0AP0**	1	1 unit	41D
	11	22	17 ... 22	21-4CA20			A	**3RA22 20-4CF27-0AP0**	1	1 unit	41D
	11	22	20 ... 25	21-4DA20	27-2AP00		A	**3RA22 20-4DF27-0AP0**	1	1 unit	41D
	15	29	27 ... 32	21-4EA20			A	**3RA22 20-4EF27-0AP0**	1	1 unit	41D
Type of coordination "1" at I_q = 150 kA at 400 V (the motor starter protector is compatible with type of coordination "2")											
S00	For load feeders for lower outputs, see this table at type of coordination "2".							ToC 1			
S00	1.5	3.6	3.5 ... 5	11-1FA20	15-2AP02	29 11-2AA00	A	**3RA22 10-1FE15-2AP0**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA20		+ 29 13-2AA2	A	**3RA22 10-1GE15-2AP0**	1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA20			A	**3RA22 10-1HE15-2AP0**	1	1 unit	41D
	4	8.5	7 ... 10	11-1JA20	16-2AP02		A	**3RA22 10-1JE16-2AP0**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA20	17-2AP02		A	**3RA22 10-1KE17-2AP0**	1	1 unit	41D
	7.5	15.5	11 ... 16	11-4AA20	18-2AP02		A	**3RA22 10-4AE18-2AP0**	1	1 unit	41D

For online configurator see www.siemens.com/sirius/configurators.

1) Push-in lugs see "Accessories" on page 8/37.

2) Auxiliary switches see "Accessories" on page 8/32.

3) Selection depends on the concrete startup and rated data of the protected motor.

4) RH = assembly kit for reversing duty and standard rail mounting in size S0.

5) These combinations are not available as preassembled 3RA2 feeders, but they can be constructed as discrete assemblies. The RH assembly kit for reversing duty and standard rail mounting (3RA29 23-1BB2) can be used for feeder-oriented construction instead of the 3RA29 23-2AA2 wiring kit, in which case the contactor must be screwed to the adapter.

6) The RH assembly kit also includes the 3RA29 11-1CA00 spacer for height compensation on AC contactors size S0 with spring-type terminals.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

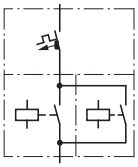
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3RA22 reversing starters for snapping onto standard mounting rails or for screw fixing



3RA22 10 3RA22 20

Reversing duty



Rated control supply voltage 24 V DC
With screw connections

- Screw fixing with 2 push-in lugs each per load feeder is possible[1)]
- Without standard mounting rail adapter for size S00
- With 2 standard mounting rail adapters for size S0 for mechanical reinforcement (included in the scope of supply)
- The motor starter protector and contactor are mechanically and electrically connected by means of the link module
- Auxiliary switches[2)] on the motor starter protector and the contactor can be easily fitted due to the modular system.
- With the contactor S0, an integrated NO contact is still available for free use.

Size	Standard induction motor 4-pole at 400 V AC[3)]		Setting range for thermal overload release	Consisting of the following single devices			DT	Fuseless load feeders	PU (UNIT, SET, M)	PS*	PG
	Standard output P	Motor current I (guide value)		Motor starter protector	+ 2 contactors	+ Link module + Assembly kit RH[4)]/Wiring kit		Screw terminals / Configurator / Order No.			
	kW	A	A					Basic price per PU			
Type of coordination "2" at I_q = 150 kA at 400 V (compatible with type of coordination "1")				**3RV20**	**3RT20**	**3RA**		ToC 2			
S00	0.06	0.2	0.14 ... 0.2	11-0BA10	15-1BB42	19 21-1DA00	A	**3RA22 10-0BA15-2BB4**	1	1 unit	41D
	0.06	0.2	0.18 ... 0.25	11-0CA10		+ 29 13-2AA1	A	**3RA22 10-0CA15-2BB4**	1	1 unit	41D
	0.09	0.3	0.22 ... 0.32	11-0DA10			A	**3RA22 10-0DA15-2BB4**	1	1 unit	41D
	0.09	0.3	0.28 ... 0.4	11-0EA10			A	**3RA22 10-0EA15-2BB4**	1	1 unit	41D
	0.12	0.4	0.35 ... 0.5	11-0FA10			A	**3RA22 10-0FA15-2BB4**	1	1 unit	41D
	0.18	0.6	0.45 ... 0.63	11-0GA10			A	**3RA22 10-0GA15-2BB4**	1	1 unit	41D
	0.18	0.6	0.55 ... 0.8	11-0HA10			A	**3RA22 10-0HA15-2BB4**	1	1 unit	41D
	0.25	0.85	0.7 ... 1	11-0JA10			A	**3RA22 10-0JA15-2BB4**	1	1 unit	41D
	0.37	1.1	0.9 ... 1.25	11-0KA10			A	**3RA22 10-0KA15-2BB4**	1	1 unit	41D
	0.55	1.5	1.1 ... 1.6	11-1AA10			A	**3RA22 10-1AA15-2BB4**	1	1 unit	41D
	0.75	1.9	1.4 ... 2	11-1BA10			A	**3RA22 10-1BA15-2BB4**	1	1 unit	41D
	0.75	1.9	1.8 ... 2.5	11-1CA10			A	**3RA22 10-1CA15-2BB4**	1	1 unit	41D
	1.1	2.7	2.2 ... 3.2	11-1DA10			A	**3RA22 10-1DA15-2BB4**	1	1 unit	41D
	1.5	3.6	2.8 ... 4	11-1EA10			A	**3RA22 10-1EA15-2BB4**	1	1 unit	41D
S0	1.5	3.6	3.5 ... 5	11-1FA10	24-1BB40	29 21-1BA00	A	**3RA22 20-1FB24-0BB4**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA10		+ 29 23-1BB1	A	**3RA22 20-1GB24-0BB4**	1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA10			A	**3RA22 20-1HB24-0BB4**	1	1 unit	41D
	4	8.5	7 ... 10	11-1JA10			A	**3RA22 20-1JB24-0BB4**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA10			A	**3RA22 20-1KB24-0BB4**	1	1 unit	41D
	7.5	15.5	11 ... 16	21-4AA10	26-1BB40		A	**3RA22 20-4AB26-0BB4**	1	1 unit	41D
	7.5	15.5	14 ... 20	21-4BA10			B	**3RA22 20-4BB27-0BB4**	1	1 unit	41D
	11	22	17 ... 22	21-4CA10	27-1BB40		A	**3RA22 20-4CB27-0BB4**	1	1 unit	41D
	11	22	20 ... 25	21-4DA10			A	**3RA22 20-4DB27-0BB4**	1	1 unit	41D
	15	29	27 ... 32	21-4EA10			A	**3RA22 20-4EB27-0BB4**	1	1 unit	41D
Type of coordination "1" at I_q = 150 kA at 400 V (the motor starter protector is compatible with type of coordination "2")											
S00	For load feeders for lower outputs, see this table at type of coordination "2".							ToC 1			
S00	1.5	3.6	3.5 ... 5	11-1FA10	15-1BB42	19 21-1DA00	A	**3RA22 10-1FA15-2BB4**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA10		+ 29 13-2AA1	A	**3RA22 10-1GA15-2BB4**	1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA10			A	**3RA22 10-1HA15-2BB4**	1	1 unit	41D
	4	8.5	7 ... 10	11-1JA10	16-1BB42		A	**3RA22 10-1JA16-2BB4**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA10	17-1BB42		A	**3RA22 10-1KA17-2BB4**	1	1 unit	41D
	7.5	15.5	11 ... 16	11-4AA10	18-1BB42		A	**3RA22 10-4AA18-2BB4**	1	1 unit	41D

For online configurator see www.siemens.com/sirius/configurators.

1) Push-in lugs see "Accessories" on page 8/37.

2) Auxiliary switches see "Accessories" on page 8/32.

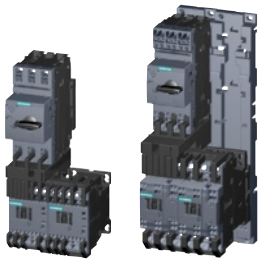
3) Selection depends on the concrete startup and rated data of the protected motor.

4) RH = assembly kit for reversing duty and standard rail mounting in size S0.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

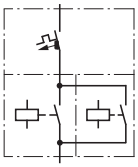
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3RA22 reversing starters for snapping onto standard mounting rails or for screw fixing



3RA22 10 3RA22 20

Reversing duty



Rated control supply voltage 24 V DC
With spring-type connection

- Screw fixing with 2 push-in lugs each per load feeder is possible[1)]
- Without standard mounting rail adapter for size S00
- With 2 standard mounting rail adapters for size S0 for mechanical reinforcement (included in the scope of supply)
- The motor starter protector and contactor are mechanically and electrically connected by means of the link module
- Auxiliary switches[2)] on the motor starter protector and the contactor can be easily fitted due to the modular system.
- With the contactor S0, an integrated NO contact is still available for free use.

Size	Standard induction motor 4-pole at 400 V AC[3)]		Setting range for thermal overload release	Consisting of the following single devices			DT	Fuseless load feeders	PU (UNIT, SET, M)	PS*	PG
	Standard output P	Motor current I (guide value)		Motor starter protector	+ 2 contactors	+ Link module + Assembly kit RH[4)]/Wiring kit		Spring-type terminals / Configurator / Order No. / Basic price per PU			
	kW	A	A								
Type of coordination "2" at I_q = 150 kA at 400 V (compatible with type of coordination "1")				**3RV20**	**3RT20**	**3RA29**		ToC 2			
S00	0.06	0.2	0.14 ... 0.2	11-0BA20	15-2BB42	29 11-2AA00	A	**3RA22 10-0BE15-2BB4**	1	1 unit	41D
	0.06	0.2	0.18 ... 0.25	11-0CA20		+ 29 13-2AA2	A	**3RA22 10-0CE15-2BB4**	1	1 unit	41D
	0.09	0.3	0.22 ... 0.32	11-0DA20			A	**3RA22 10-0DE15-2BB4**	1	1 unit	41D
	0.09	0.3	0.28 ... 0.4	11-0EA20			A	**3RA22 10-0EE15-2BB4**	1	1 unit	41D
	0.12	0.4	0.35 ... 0.5	11-0FA20			A	**3RA22 10-0FE15-2BB4**	1	1 unit	41D
	0.18	0.6	0.45 ... 0.63	11-0GA20			A	**3RA22 10-0GE15-2BB4**	1	1 unit	41D
	0.18	0.6	0.55 ... 0.8	11-0HA20			A	**3RA22 10-0HE15-2BB4**	1	1 unit	41D
	0.25	0.85	0.7 ... 1	11-0JA20			A	**3RA22 10-0JE15-2BB4**	1	1 unit	41D
	0.37	1.1	0.9 ... 1.25	11-0KA20			A	**3RA22 10-0KE15-2BB4**	1	1 unit	41D
	0.55	1.5	1.1 ... 1.6	11-1AA20			A	**3RA22 10-1AE15-2BB4**	1	1 unit	41D
	0.75	1.9	1.4 ... 2	11-1BA20			A	**3RA22 10-1BE15-2BB4**	1	1 unit	41D
	0.75	1.9	1.8 ... 2.5	11-1CA20			A	**3RA22 10-1CE15-2BB4**	1	1 unit	41D
	1.1	2.7	2.2 ... 3.2	11-1DA20			A	**3RA22 10-1DE15-2BB4**	1	1 unit	41D
	1.5	3.6	2.8 ... 4	11-1EA20			A	**3RA22 10-1EE15-2BB4**	1	1 unit	41D
S0	1.5	3.6	3.5 ... 5	21-1FA20	24-2BB40	29 23-2AA2		5)			
	2.2	4.9	4.5 ... 6.3	21-1GA20				5)			
	3	6.5	5.5 ... 8	21-1HA20				5)			
	4	8.5	7 ... 10	21-1JA20				5)			
	5.5	11.5	9 ... 12.5	21-1KA20				5)			
	7.5	15.5	11 ... 16	21-4AA20	26-2BB40	29 21-2AA00	A	**3RA22 20-4AF26-0BB4**	1	1 unit	41D
	7.5	15.5	14 ... 20	21-4BA20		+ 29 23-1BB2	B	**3RA22 20-4BF27-0BB4**	1	1 unit	41D
	11	22	17 ... 22	21-4CA20	27-2BB40		A	**3RA22 20-4CF27-0BB4**	1	1 unit	41D
	11	22	20 ... 25	21-4DA20			A	**3RA22 20-4DF27-0BB4**	1	1 unit	41D
	15	29	27 ... 32	21-4EA20			A	**3RA22 20-4EF27-0BB4**	1	1 unit	41D
Type of coordination "1" at I_q = 150 kA at 400 V (the motor starter protector is compatible with type of coordination "2")											
S00	For load feeders for lower outputs, see this table at type of coordination "2".							ToC 1			
S00	1.5	3.6	3.5 ... 5	11-1FA20	15-2BB42	29 11-2AA00	A	**3RA22 10-1FE15-2BB4**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA20		+ 29 13-2AA2	A	**3RA22 10-1GE15-2BB4**	1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA20			A	**3RA22 10-1HE15-2BB4**	1	1 unit	41D
	4	8.5	7 ... 10	11-1JA20	16-2BB42		A	**3RA22 10-1JE16-2BB4**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA20	17-2BB42		A	**3RA22 10-1KE17-2BB4**	1	1 unit	41D
	7.5	15.5	11 ... 16	11-4AA20	18-2BB42		A	**3RA22 10-4AE18-2BB4**	1	1 unit	41D

For online configurator see www.siemens.com/sirius/configurators.

1) Push-in lugs see "Accessories" on page 8/37.

2) Auxiliary switches see "Accessories" on page 8/32.

3) Selection depends on the concrete startup and rated data of the protected motor.

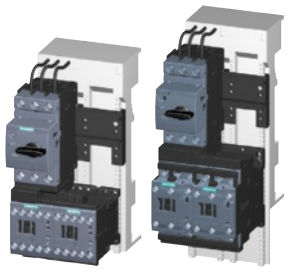
4) RH = assembly kit for reversing duty and standard rail mounting in size S0.

5) These combinations are not available as preassembled 3RA2 feeders, but they can be constructed as discrete assemblies. The RH assembly kit for reversing duty and standard rail mounting (3RA29 23-1BB2) can be used for feeder-oriented construction instead of the 3RA29 23-2AA2 wiring kit, in which case the contactor must be screwed to the adapter.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

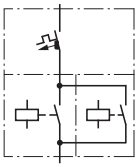
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3RA22 reversing starters for 60 mm busbars



3RA22 10 3RA22 20

Reversing duty



Rated control supply voltage AC 50/60 Hz 230 V
With screw terminals

- With busbar adapter and device holder (included in the scope of supply)
- The motor starter protector and contactor are mechanically and electrically connected by means of the link module
- Auxiliary switches[1] on the motor starter protector and the contactor can be easily fitted due to the modular system.
- With the contactor S0, an integrated NO contact is still available for free use.

Size	Standard induction motor 4-pole at 400 V AC[2]		Setting range for thermal overload release	Consisting of the following single devices			DT	Fuseless load feeders	PU (UNIT, SET, M)	PS*	PG
	Standard output *P*	Motor current *I* (guide value)		Motor starter protector	+ 2 contactors	+ Link module + Assembly kit RS[3]/Wiring kit		**Screw terminals** ⊕			
								Configurator ⚙			
			⊏					Order No. / Basic price per PU			
	kW	A	A								
Type of coordination "2" at I_q = 150 kA at 400 V (compatible with type of coordination "1")				**3RV20**	**3RT20**	**3RA**		ToC 2			
S00	0.06	0.2	0.14 ... 0.2	11-0BA10	15-1AP02	19 21-1DA00	A	**3RA22 10-0BD15-2AP0**	1	1 unit	41D
	0.06	0.2	0.18 ... 0.25	11-0CA10		+ 29 13-1DB1	A	**3RA22 10-0CD15-2AP0**	1	1 unit	41D
	0.09	0.3	0.22 ... 0.32	11-0DA10			A	**3RA22 10-0DD15-2AP0**	1	1 unit	41D
	0.09	0.3	0.28 ... 0.4	11-0EA10			A	**3RA22 10-0ED15-2AP0**	1	1 unit	41D
	0.12	0.4	0.35 ... 0.5	11-0FA10			A	**3RA22 10-0FD15-2AP0**	1	1 unit	41D
	0.18	0.6	0.45 ... 0.63	11-0GA10			A	**3RA22 10-0GD15-2AP0**	1	1 unit	41D
	0.18	0.6	0.55 ... 0.8	11-0HA10			A	**3RA22 10-0HD15-2AP0**	1	1 unit	41D
	0.25	0.85	0.7 ... 1	11-0JA10			A	**3RA22 10-0JD15-2AP0**	1	1 unit	41D
	0.37	1.1	0.9 ... 1.25	11-0KA10			A	**3RA22 10-0KD15-2AP0**	1	1 unit	41D
	0.55	1.5	1.1 ... 1.6	11-1AA10			A	**3RA22 10-1AD15-2AP0**	1	1 unit	41D
	0.75	1.9	1.4 ... 2	11-1BA10			A	**3RA22 10-1BD15-2AP0**	1	1 unit	41D
	0.75	1.9	1.8 ... 2.5	11-1CA10			A	**3RA22 10-1CD15-2AP0**	1	1 unit	41D
	1.1	2.7	2.2 ... 3.2	11-1DA10			A	**3RA22 10-1DD15-2AP0**	1	1 unit	41D
	1.5	3.6	2.8 ... 4	11-1EA10			A	**3RA22 10-1ED15-2AP0**	1	1 unit	41D
S0	1.5	3.6	3.5 ... 5	11-1FA10	24-1AP00	29 21-1AA00	A	**3RA22 20-1FD24-0AP0**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA10		+ 29 23-1DB1	A	**3RA22 20-1GD24-0AP0**	1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA10			A	**3RA22 20-1HD24-0AP0**	1	1 unit	41D
	4	8.5	7 ... 10	11-1JA10			A	**3RA22 20-1JD24-0AP0**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA10			A	**3RA22 20-1KD24-0AP0**	1	1 unit	41D
	7.5	15.5	11 ... 16	21-4AA10	26-1AP00		A	**3RA22 20-4AD26-0AP0**	1	1 unit	41D
	7.5	15.5	14 ... 20	21-4BA10			B	**3RA22 20-4BD27-0AP0**	1	1 unit	41D
	11	22	17 ... 22	21-4CA10	27-1AP00		A	**3RA22 20-4CD27-0AP0**	1	1 unit	41D
	11	22	20 ... 25	21-4DA10			A	**3RA22 20-4DD27-0AP0**	1	1 unit	41D
	15	29	27 ... 32	21-4EA10			A	**3RA22 20-4ED27-0AP0**	1	1 unit	41D
Type of coordination "1" at I_q = 150 kA at 400 V (the motor starter protector is compatible with type of coordination "2")											
S00	For load feeders for lower outputs, see this table at type of coordination "2".							ToC 1			
S00	1.5	3.6	3.5 ... 5	11-1FA10	15-1AP02	19 21-1DA00	A	**3RA22 10-1FD15-2AP0**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA10		+ 29 13-1DB1	A	**3RA22 10-1GD15-2AP0**	1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA10			A	**3RA22 10-1HD15-2AP0**	1	1 unit	41D
	4	8.5	7 ... 10	11-1JA10	16-1AP02		A	**3RA22 10-1JD16-2AP0**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA10	17-1AP02		A	**3RA22 10-1KD17-2AP0**	1	1 unit	41D
	7.5	15.5	11 ... 16	11-4AA10	18-1AP02		A	**3RA22 10-4AD18-2AP0**	1	1 unit	41D

⚙ For online configurator see www.siemens.com/sirius/configurators.

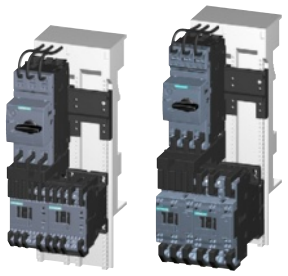
1) Auxiliary switches see "Accessories" on page 8/32.

2) Selection depends on the concrete startup and rated data of the protected motor.

3) RS = assembly kit for reversing duty and busbar mounting

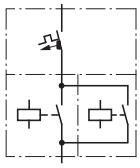
* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3RA22 10 3RA22 20

Reversing duty



Rated control supply voltage AC 50/60 Hz 230 V
With spring-type connection

- With busbar adapter and device holder (included in the scope of supply)
- The motor starter protector and contactor are mechanically and electrically connected by means of the link module
- Auxiliary switches[1] on the motor starter protector and the contactor can be easily fitted due to the modular system.
- With the contactor S0, an integrated NO contact is still available for free use.

Size	Standard induction motor 4-pole at 400 V AC[2]		Setting range for thermal overload release	Consisting of the following single devices			DT	Fuseless load feeders	PU (UNIT, SET, M)	PS*	PG
	Standard output P	Motor current I (guide value)		Motor starter protectors	+ 2 contactors	+ Link module + Assembly kit RS[3]/Wiring kit		Spring-type terminals			
								Configurator			
								Order No.	Basic price per PU		
	kW	A	A								
Type of coordination "2" at I_q = 150 kA at 400 V (compatible with type of coordination "1")				3RV20	3RT20	3RA		ToC 2			
S00	0.06	0.2	0.14 ... 0.2	11-0BA20	15-2AP02	29 11-2AA00	A	**3RA22 10-0BH15-2AP0**	1	1 unit	41D
	0.06	0.2	0.18 ... 0.25	11-0CA20		+ 29 13-1DB2	A	**3RA22 10-0CH15-2AP0**	1	1 unit	41D
	0.09	0.3	0.22 ... 0.32	11-0DA20			A	**3RA22 10-0DH15-2AP0**	1	1 unit	41D
	0.09	0.3	0.28 ... 0.4	11-0EA20			A	**3RA22 10-0EH15-2AP0**	1	1 unit	41D
	0.12	0.4	0.35 ... 0.5	11-0FA20			A	**3RA22 10-0FH15-2AP0**	1	1 unit	41D
	0.18	0.6	0.45 ... 0.63	11-0GA20			A	**3RA22 10-0GH15-2AP0**	1	1 unit	41D
	0.18	0.6	0.55 ... 0.8	11-0HA20			A	**3RA22 10-0HH15-2AP0**	1	1 unit	41D
	0.25	0.85	0.7 ... 1	11-0JA20			A	**3RA22 10-0JH15-2AP0**	1	1 unit	41D
	0.37	1.1	0.9 ... 1.25	11-0KA20			A	**3RA22 10-0KH15-2AP0**	1	1 unit	41D
	0.55	1.5	1.1 ... 1.6	11-1AA20			A	**3RA22 10-1AH15-2AP0**	1	1 unit	41D
	0.75	1.9	1.4 ... 2	11-1BA20			A	**3RA22 10-1BH15-2AP0**	1	1 unit	41D
	0.75	1.9	1.8 ... 2.5	11-1CA20			A	**3RA22 10-1CH15-2AP0**	1	1 unit	41D
	1.1	2.7	2.2 ... 3.2	11-1DA20			A	**3RA22 10-1DH15-2AP0**	1	1 unit	41D
	1.5	3.6	2.8 ... 4	11-1EA20			A	**3RA22 10-1EH15-2AP0**	1	1 unit	41D
S0	1.5	3.6	3.5 ... 5	21-1FA20	24-2AP00			4)			
	2.2	4.9	4.5 ... 6.3	21-1GA20				4)			
	3	6.5	5.5 ... 8	21-1HA20				4)			
	4	8.5	7 ... 10	21-1JA20				4)			
	5.5	11.5	9 ... 12.5	21-1KA20				4)			
	7.5	15.5	11 ... 16	21-4AA20	26-2AP00	29 21-2AA00	A	**3RA22 20-4AH26-0AP0**	1	1 unit	41D
	7.5	15.5	14 ... 20	21-4BA20		+ 29 23-1DB2[5]	B	**3RA22 20-4BH27-0AP0**	1	1 unit	41D
	11	22	17 ... 22	21-4CA20			A	**3RA22 20-4CH27-0AP0**	1	1 unit	41D
	11	22	20 ... 25	21-4DA20	27-2AP00		A	**3RA22 20-4DH27-0AP0**	1	1 unit	41D
	15	29	27 ... 32	21-4EA20			A	**3RA22 20-4EH27-0AP0**	1	1 unit	41D
Type of coordination "1" at I_q = 150 kA at 400 V (the motor starter protector is compatible with type of coordination "2")											
S00	For load feeders for lower outputs, see this table at type of coordination "2".							ToC 1			
S00	1.5	3.6	3.5 ... 5	11-1FA20	15-2AP02	29 11-2AA00	A	**3RA22 10-1FH15-2AP0**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA20		+ 29 13-1DB2	A	**3RA22 10-1GH15-2AP0**	1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA20			A	**3RA22 10-1HH15-2AP0**	1	1 unit	41D
	4	8.5	7 ... 10	11-1JA20	16-2AP02		A	**3RA22 10-1JH16-2AP0**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA20	17-2AP02		A	**3RA22 10-1KH17-2AP0**	1	1 unit	41D
	7.5	15.5	11 ... 16	11-4AA20	18-2AP02		A	**3RA22 10-4AH18-2AP0**	1	1 unit	41D

For online configurator see www.siemens.com/sirius/configurators.

1) Auxiliary switches see "Accessories" on page 8/32.

2) Selection depends on the concrete startup and rated data of the protected motor.

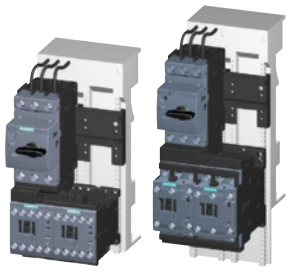
3) RS = assembly kit for reversing duty and busbar mounting

4) These combinations are not available as preassembled 3RA2 feeders, but they can be constructed as discrete assemblies. The RS assembly kit for reversing duty for 60 mm busbar systems (3RA29 23-1DB2) can be used for feeder-oriented construction instead of the 3RA29 23-2AA2 wiring kit, in which case the contactor must be screwed to the adapter. The connection between the motor starter protector and the contactor must be made with wires.

5) The RS assembly kit also includes the 3RA29 11-1CA00 spacer for height compensation on AC contactors size S0 with spring-type terminals.

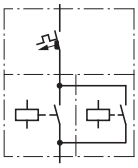
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3RA22 reversing starters for 60 mm busbars



3RA22 10 3RA22 20

Reversing duty



Rated control supply voltage 24 V DC
With screw connections

- With busbar adapter and device holder (included in the scope of supply)
- The motor starter protector and contactor are mechanically and electrically connected by means of the link module
- Auxiliary switches[1] on the motor starter protector and the contactor can be easily fitted due to the modular system.
- With the contactor S0, an integrated NO contact is still available for free use.

Size	Standard induction motor 4-pole at 400 V AC[2]		Setting range for thermal overload release	Consisting of the following single devices			DT	Fuseless load feeders	PU (UNIT, SET, M)	PS*	PG
	Standard output P	Motor current I (guide value)		Motor starter protectors	+ 2 contactors	+ Link module + Assembly kit RS[3]/Wiring kit		Screw terminals ⊕ / Configurator ⚙			
	kW	A	A					Order No. / Basic price per PU			
Type of coordination "2" at I_q = 150 kA at 400 V (compatible with type of coordination "1")				**3RV20**	**3RT20**	**3RA**		ToC 2			
S00	0.06	0.2	0.14 ... 0.2	11-0BA10	15-1BB42	19 21-1DA00	A	**3RA22 10-0BD15-2BB4**	1	1 unit	41D
	0.06	0.2	0.18 ... 0.25	11-0CA10		+ 29 13-1DB1	A	**3RA22 10-0CD15-2BB4**	1	1 unit	41D
	0.09	0.3	0.22 ... 0.32	11-0DA10			A	**3RA22 10-0DD15-2BB4**	1	1 unit	41D
	0.09	0.3	0.28 ... 0.4	11-0EA10			A	**3RA22 10-0ED15-2BB4**	1	1 unit	41D
	0.12	0.4	0.35 ... 0.5	11-0FA10			A	**3RA22 10-0FD15-2BB4**	1	1 unit	41D
	0.18	0.6	0.45 ... 0.63	11-0GA10			A	**3RA22 10-0GD15-2BB4**	1	1 unit	41D
	0.18	0.6	0.55 ... 0.8	11-0HA10			A	**3RA22 10-0HD15-2BB4**	1	1 unit	41D
	0.25	0.85	0.7 ... 1	11-0JA10			A	**3RA22 10-0JD15-2BB4**	1	1 unit	41D
	0.37	1.1	0.9 ... 1.25	11-0KA10			A	**3RA22 10-0KD15-2BB4**	1	1 unit	41D
	0.55	1.5	1.1 ... 1.6	11-1AA10			A	**3RA22 10-1AD15-2BB4**	1	1 unit	41D
	0.75	1.9	1.4 ... 2	11-1BA10			A	**3RA22 10-1BD15-2BB4**	1	1 unit	41D
	0.75	1.9	1.8 ... 2.5	11-1CA10			A	**3RA22 10-1CD15-2BB4**	1	1 unit	41D
	1.1	2.7	2.2 ... 3.2	11-1DA10			A	**3RA22 10-1DD15-2BB4**	1	1 unit	41D
	1.5	3.6	2.8 ... 4	11-1EA10			A	**3RA22 10-1ED15-2BB4**	1	1 unit	41D
S0	1.5	3.6	3.5 ... 5	11-1FA10	24-1BB40	29 21-1BA00	A	**3RA22 20-1FD24-0BB4**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA10		+ 29 23-1DB1	A	**3RA22 20-1GD24-0BB4**	1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA10			A	**3RA22 20-1HD24-0BB4**	1	1 unit	41D
	4	8.5	7 ... 10	11-1JA10			A	**3RA22 20-1JD24-0BB4**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA10			A	**3RA22 20-1KD24-0BB4**	1	1 unit	41D
	7.5	15.5	11 ... 16	21-4AA10	26-1BB40		A	**3RA22 20-4AD26-0BB4**	1	1 unit	41D
	7.5	15.5	14 ... 20	21-4BA10			B	**3RA22 20-4BD27-0BB4**	1	1 unit	41D
	11	22	17 ... 22	21-4CA10	27-1BB40		A	**3RA22 20-4CD27-0BB4**	1	1 unit	41D
	11	22	20 ... 25	21-4DA10			A	**3RA22 20-4DD27-0BB4**	1	1 unit	41D
	15	29	27 ... 32	21-4EA10			A	**3RA22 20-4ED27-0BB4**	1	1 unit	41D
Type of coordination "1" at I_q = 150 kA at 400 V (the motor starter protector is compatible with type of coordination "2")											
S00	For load feeders for lower outputs, see this table at type of coordination "2".							ToC 1			
S00	1.5	3.6	3.5 ... 5	11-1FA10	15-1BB42	19 21-1DA00	A	**3RA22 10-1FD15-2BB4**	1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA10		+ 29 13-1DB1	A	**3RA22 10-1GD15-2BB4**	1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA10			A	**3RA22 10-1HD15-2BB4**	1	1 unit	41D
	4	8.5	7 ... 10	11-1JA10	16-1BB42		A	**3RA22 10-1JD16-2BB4**	1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA10	17-1BB42		A	**3RA22 10-1KD17-2BB4**	1	1 unit	41D
	7.5	15.5	11 ... 16	11-4AA10	18-1BB42		A	**3RA22 10-4AD18-2BB4**	1	1 unit	41D

⚙ For online configurator see www.siemens.com/sirius/configurators.

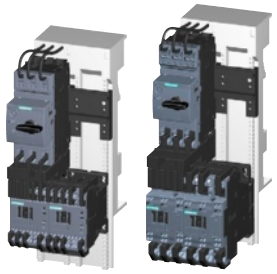
1) Auxiliary switches see "Accessories" on page 8/32.

2) Selection depends on the concrete startup and rated data of the protected motor.

3) RS = assembly kit for reversing duty and busbar mounting.

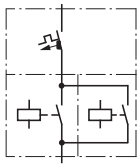
* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3RA22 10 3RA22 20

Reversing duty



Rated control supply voltage 24 V DC
With spring-type connection

- With busbar adapter and device holder (included in the scope of supply)
- The motor starter protector and contactor are mechanically and electrically connected by means of the link module
- Auxiliary switches[1] on the motor starter protector and the contactor can be easily fitted due to the modular system.
- With the contactor S0, an integrated NO contact is still available for free use.

Size	Standard induction motor 4-pole at 400 V AC[2]		Setting range for thermal overload release	Consisting of the following single devices			DT	Fuseless load feeders		PU (UNIT, SET, M)	PS*	PG
	Standard output *P*	Motor current *I* (guide value)		Motor starter protectors	+ 2 contactors	+ Link module + Assembly kit RS[3]/Wiring kit		Spring-type terminals				
								Configurator				
								Order No.	Basic price per PU			
	kW	A	A									
Type of coordination "2" at I_q = 150 kA at 400 V (compatible with type of coordination "1")				**3RV20**	**3RT20**	**3RA29**						
S00	0.06	0.2	0.14 ... 0.2	11-0BA20	15-2BB42	29 11-2AA00	A	**3RA22 10-0BH15-2BB4**		1	1 unit	41D
	0.06	0.2	0.18 ... 0.25	11-0CA20		+ 29 13-1DB2	A	**3RA22 10-0CH15-2BB4**		1	1 unit	41D
	0.09	0.3	0.22 ... 0.32	11-0DA20			A	**3RA22 10-0DH15-2BB4**		1	1 unit	41D
	0.09	0.3	0.28 ... 0.4	11-0EA20			A	**3RA22 10-0EH15-2BB4**		1	1 unit	41D
	0.12	0.4	0.35 ... 0.5	11-0FA20			A	**3RA22 10-0FH15-2BB4**		1	1 unit	41D
	0.18	0.6	0.45 ... 0.63	11-0GA20			A	**3RA22 10-0GH15-2BB4**		1	1 unit	41D
	0.18	0.6	0.55 ... 0.8	11-0HA20			A	**3RA22 10-0HH15-2BB4**		1	1 unit	41D
	0.25	0.85	0.7 ... 1	11-0JA20			A	**3RA22 10-0JH15-2BB4**		1	1 unit	41D
	0.37	1.1	0.9 ... 1.25	11-0KA20			A	**3RA22 10-0KH15-2BB4**		1	1 unit	41D
	0.55	1.5	1.1 ... 1.6	11-1AA20			A	**3RA22 10-1AH15-2BB4**		1	1 unit	41D
	0.75	1.9	1.4 ... 2	11-1BA20			A	**3RA22 10-1BH15-2BB4**		1	1 unit	41D
	0.75	1.9	1.8 ... 2.5	11-1CA20			A	**3RA22 10-1CH15-2BB4**		1	1 unit	41D
	1.1	2.7	2.2 ... 3.2	11-1DA20			A	**3RA22 10-1DH15-2BB4**		1	1 unit	41D
	1.5	3.6	2.8 ... 4	11-1EA20			A	**3RA22 10-1EH15-2BB4**		1	1 unit	41D
S0	1.5	3.6	3.5 ... 5	21-1FA20	24-2BB40			4)				
	2.2	4.9	4.5 ... 6.3	21-1GA20				4)				
	3	6.5	5.5 ... 8	21-1HA20				4)				
	4	8.5	7 ... 10	21-1JA20				4)				
	5.5	11.5	9 ... 12.5	21-1KA20				4)				
	7.5	15.5	11 ... 16	21-4AA20	26-2BB40	29 21-2AA00	A	**3RA22 20-4AH26-0BB4**		1	1 unit	41D
	7.5	15.5	14 ... 20	21-4BA20		+ 29 23-1DB2	B	**3RA22 20-4BH27-0BB4**		1	1 unit	41D
	11	22	17 ... 22	21-4CA20	27-2BB40		A	**3RA22 20-4CH27-0BB4**		1	1 unit	41D
	11	22	20 ... 25	21-4DA20			A	**3RA22 20-4DH27-0BB4**		1	1 unit	41D
	15	29	27 ... 32	21-4EA20			A	**3RA22 20-4EH27-0BB4**		1	1 unit	41D
Type of coordination "1" at I_q = 150 kA at 400 V (the motor starter protector is compatible with type of coordination "2")												
S00	For load feeders for lower outputs, see this table at type of coordination "2".											
S00	1.5	3.6	3.5 ... 5	11-1FA20	15-2BB42	29 11-2AA00	A	**3RA22 10-1FH15-2BB4**		1	1 unit	41D
	2.2	4.9	4.5 ... 6.3	11-1GA20		+ 29 13-1DB2	A	**3RA22 10-1GH15-2BB4**		1	1 unit	41D
	3	6.5	5.5 ... 8	11-1HA20			A	**3RA22 10-1HH15-2BB4**		1	1 unit	41D
	4	8.5	7 ... 10	11-1JA20	16-2BB42		A	**3RA22 10-1JH16-2BB4**		1	1 unit	41D
	5.5	11.5	9 ... 12.5	11-1KA20	17-2BB42		A	**3RA22 10-1KH17-2BB4**		1	1 unit	41D
	7.5	15.5	11 ... 16	11-4AA20	18-2BB42		A	**3RA22 10-4AH18-2BB4**		1	1 unit	41D

For online configurator see www.siemens.com/sirius/configurators.

1) Auxiliary switches see "Accessories" on page 8/32.

2) Selection depends on the concrete startup and rated data of the protected motor.

3) RS = assembly kit for reversing duty and busbar mounting

4) These combinations are not available as preassembled 3RA2 feeders, but they can be constructed as discrete assemblies. The RS assembly kit for reversing duty for 60 mm busbar systems (3RA29 23-1DB2) can be used for feeder-oriented construction instead of the 3RA29 23-2AA2 wiring kit, in which case the contactor must be screwed to the adapter. The connection between the motor starter protector and the contactor must be made with wires.

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Accessories

Overview

The accessories listed here are parts and add-ons for the 3RA2 direct-on-line and reversing starters as well as components for the customer assembly of fuseless load feeders.

Selection and ordering data

Accessories for motor starter protectors

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41E


3RV29 01-1E


3RV29 01-2E


3RV29 01-1A


3RV29 01-2A

Version	For motor starter protectors	DT	Screw terminals	DT	Spring-type terminals
			Order No. / Price per PU		Order No. / Price per PU
	Size				
Auxiliary switches					
Transverse auxiliary switches for front mounting					
1 CO	S00/S0	▶	**3RV29 01-1D**	▶	**--**
1 NO + 1 NC		▶	**3RV29 01-1E**	▶	**3RV29 01-2E**
Lateral auxiliary switches mountable on the left					
1 NO + 1 NC	S00/S0	▶	**3RV29 01-1A**	▶	**3RV29 01-2A**

1) Each motor starter protector can be fitted with one transverse and one lateral auxiliary switch. The lateral auxiliary switch with 2 NO + 2 NC is used without a transverse auxiliary switch.


3RV29 02-1A..


3RV29 02-2A..

Rated control supply voltage U_s				For motor starter protectors	DT	Screw terminals	DT	Spring-type terminals
AC 50 Hz	AC 60 Hz	AC 50/60 Hz 100 % ON period[1]	AC/DC 50/60 Hz, DC 5 s ON period[2]			Order No. / Price per PU		Order No. / Price per PU
V	V	V	V	Size				
Auxiliary releases for motor starter protectors[3]								
Undervoltage releases								
230	240	--	--	S00/S0	▶	**3RV29 02-1AP0**	▶	**3RV29 02-2AP0**
Shunt releases								
--	--	210 ... 240	190 ... 330	S00/S0	▶	**3RV29 02-1DP0**	▶	**3RV29 02-2DP0**

1) The voltage range is valid for 100 % (infinite) ON period. The response voltage lies at 0.9 of the lower limit of the voltage range.

2) The voltage range is valid for 5 s ON period at AC 50/60Hz and DC. The response voltage lies at 0.85 of the lower limit of the voltage range.

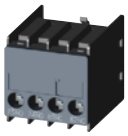
3) One auxiliary release can be mounted on the right per motor starter protector (does not apply to 3RV21 motor starter protectors with overload relay function).

Complete range of accessories for the motor starter protectors see Chapter 7 "Protection Equipment" → "Motor Starter Protectors" → "SIRIUS 3RV2 Motor Starter Protectors up to 40 A" → "Accessories".

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Accessories for contactors

	For contactors Size	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Auxiliary switch blocks for snapping onto the front of contactors								
				Screw terminals				
 3RH29 11-1BA..		Cable entry from below						
	S00/S0	1-pole						
		- 1 NO		**3RH29 11-1BA10**		1	1 unit	41A
		- 1 NC		**3RH29 11-1BA01**		1	1 unit	41A
 3RH29 11-1MA..	S00/S0	2-pole						
		- 1 NO + 1 NC		**3RH29 11-1MA11**		1	1 unit	41A
		- 2 NO		**3RH29 11-1MA20**		1	1 unit	41A
Laterally mountable auxiliary switch blocks for contactors								
				Screw terminals				
 3RH29 11-1DA..	S00	2 NC	A	**3RH29 11-1DA02**		1	1 unit	41A
	S00	1 NO + 1 NC	A	**3RH29 11-1DA11**		1	1 unit	41A
	S00	2 NO	A	**3RH29 11-1DA20**		1	1 unit	41A
	S0	2 NC	A	**3RH29 21-1DA02**		1	1 unit	41A
	S0	1 NO + 1 NC	A	**3RH29 21-1DA11**		1	1 unit	41A
	S0	2 NO	A	**3RH29 21-1DA20**		1	1 unit	41A
				Spring-type terminals				
 3RH29 11-2DA..	S00	2 NC	A	**3RH29 11-2DA02**		1	1 unit	41A
	S00	1 NO + 1 NC	A	**3RH29 11-2DA11**		1	1 unit	41A
	S00	2 NO	A	**3RH29 11-2DA20**		1	1 unit	41A
	S0	2 NC	A	**3RH29 21-2DA02**		1	1 unit	41A
	S0	1 NO + 1 NC	A	**3RH29 21-2DA11**		1	1 unit	41A
	S0	2 NO	A	**3RH29 21-2DA20**		1	1 unit	41A
Connection modules for contactors with screw terminals (can be used only for direct-on-line starters)								
				Screw terminals				
 3RT19 26-4RD01	**Adapters for contactors** Ambient temperature $T_{u\,max}$ = 60 °C							
	S00	Rated operational current I_e at AC-3/400 V: 20 A	C	**3RT19 16-4RD01**		1	1 unit	41B
	S0	Rated operational current I_e at AC-3/400 V: 25 A	C	**3RT19 26-4RD01**		1	1 unit	41B
 3RT19 00-4RE01	**Plugs for contactors**							
	S00, S0	--	B	**3RT19 00-4RE01**		1	1 unit	41B

Complete range of accessories for the contactors see Chapter 3 "Controls – Contactors and Contactor Assemblies" → "Accessories and Spare Parts".

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Accessories

For contactors	Version	Rated control supply voltage U_s [1]	DT	Order No. [2]	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type		V						
Surge suppressors without LED for contactors								
	Size S00							
	For plugging onto the front side of the contactors with and without auxiliary switch blocks							
3RT2.	**Varistor**	24 ... 48 AC, 24 ... 70 DC	►	**3RT29 16-1BB00**		1	1 unit	41B
		127 ... 240 AC, 150 ... 250 DC	►	**3RT29 16-1BD00**		1	1 unit	41B
3RT2.	**RC elements**	24 ... 48 AC, 24 ... 70 DC	►	**3RT29 16-1CB00**		1	1 unit	41B
		127 ... 240 AC, 150 ... 250 DC	►	**3RT29 16-1CD00**		1	1 unit	41B
3RT2.	**Noise suppression diodes**	12 ... 250 DC	►	**3RT29 16-1DG00**		1	1 unit	41B
3RT2.	**Diode assemblies** (diode and Zener diode) for DC operation and short break times	12 ... 250 DC	►	**3RT29 16-1EH00**		1	1 unit	41B
	Size S0							
	For plugging onto the front side of the contactors (prior to mounting of the auxiliary switch block)							
3RT20 2	**Varistor**	24 ... 48 AC, 24 ... 70 DC	►	**3RT29 26-1BB00**		1	1 unit	41B
		127 ... 240 AC, 150 ... 250 DC	►	**3RT29 26-1BD00**		1	1 unit	41B
3RT20 2	**RC elements**	24 ... 48 AC, 24 ... 70 DC	►	**3RT29 26-1CB00**		1	1 unit	41B
		127 ... 240 AC, 150 ... 250 DC	►	**3RT29 26-1CD00**		1	1 unit	41B
3RT20 2	**Diode assemblies** for DC operation and short break times	24 DC	►	**3RT29 26-1ER00**		1	1 unit	41B
		30 ... 250 DC	►	**3RT29 26-1ES00**		1	1 unit	41B


3RT29 16-1B.00


3RT29 26-1E.00

[1] Can be used for AC operation for 50/60 Hz. Please inquire about further voltages.

[2] For packs of 10 or 5 units **"-Z"** and order code **"X90"** must be added to the Order No.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Accessories for the customer assembly of fuseless load feeders

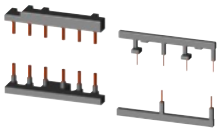
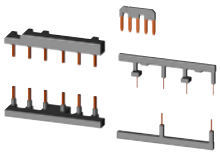
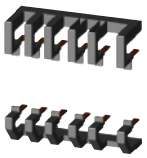
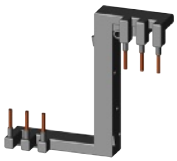
	For motor starter protectors	For contactors	Actuating voltage of contactor	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	Size	Size							
Link modules from motor starter protector to contactor									
	Electrical and mechanical link between motor starter protector and contactor				**Screw terminals**				
	Single-unit packaging								
	S00/S0	S00	AC and DC	▶	**3RA19 21-1DA00**		1	1 unit	41B
	S00/S0	S0	AC	A	**3RA29 21-1AA00**		1	1 unit	41B
	S00/S0	S0	DC	A	**3RA29 21-1BA00**		1	1 unit	41B
3RA29 21-1AA00	**Multi-unit packaging**								
	S00/S0	S00	AC and DC	▶	**3RA19 21-1D**		1	10 units	41B
	S00/S0	S0	AC	A	**3RA29 21-1A**		1	10 units	41B
	S00/S0	S0	DC	A	**3RA29 21-1B**		1	10 units	41B
3RA29 21-1BA00									
	Electrical and mechanical link between motor starter protector and contactor				**Spring-type terminals**				
	Single-unit packaging								
	S00	S00	AC and DC	▶	**3RA29 11-2AA00**		1	1 unit	41B
	S0	S0	AC[1] and DC	▶	**3RA29 21-2AA00**		1	1 unit	41B
	Multi-unit packaging								
	S00	S00	AC and DC	▶	**3RA29 11-2A**		1	10 units	41B
3RA29 11-2AA00	S0	S0	AC[1] and DC	▶	**3RA29 21-2A**		1	10 units	41B
Hybrid link modules from motor starter protector to contactor									
	Mechanical and electrical connection between motor starter protector with screw terminals and contactor with spring-type terminals								
	Single-unit packaging								
	S00	S00	AC and DC	▶	**3RA29 11-2FA00**		1	1 unit	41B
	S0	S0	AC[1] and DC	▶	**3RA29 21-2FA00**		1	1 unit	41B
3RA29 11-2FA00	**Multi-unit packaging**								
	S00	S00	AC and DC	▶	**3RA29 11-2F**		1	10 units	41B
	S0	S0	AC[1] and DC	▶	**3RA29 21-2F**		1	10 units	41B
3RA29 21-2FA00									

[1] A spacer for height compensation on AC contactors with spring-type terminals, size S0, is optionally available, see page 8/39.

	For motor starter protectors	For soft starters	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	Size	Size						
Link modules from motor starter protector to soft starter								
	Electrical and mechanical link between motor starter protector and soft starter			**Screw terminals**				
	Single-unit packaging							
	S00/S0	S00/S0	A	**3RA29 21-1BA00**		1	1 unit	41B
	Multi-unit packaging							
	S00/S0	S00/S0	A	**3RA29 21-1B**		1	10 units	41B
3RA29 21-2GA00	Electrical and mechanical link between motor starter protector and soft starter			**Spring-type terminals**				
	Single-unit packaging							
	S00	S00	▶	**3RA29 11-2GA00**		1	1 unit	41B
	S0	S0	▶	**3RA29 21-2GA00**		1	1 unit	41B
	Multi-unit packaging							
	S00	S00	▶	**3RA29 11-2G**		1	10 units	41B
	S0		▶	**3RA29 21-2G**		1	10 units	41B

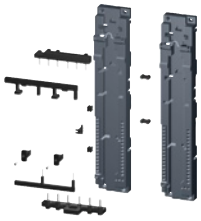
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Accessories

	For contactors Size	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Wiring kits for contactors								
 3RA29 23-2AA1				**Screw terminals**				
		Reversing duty						
	S00	Electrical and mechanical link for reversing contactors, optionally with integrated electrical and mechanical interlock	▶	**3RA29 13-2AA1**		1	1 unit	41B
	S0		▶	**3RA29 23-2AA1**		1	1 unit	41B
 3RA29 23-2BB1		**Wye-delta starting**						
	S00	Electrical and mechanical link for three contactors of same size	▶	**3RA29 13-2BB1**		1	1 unit	41B
	S0		▶	**3RA29 23-2BB1**		1	1 unit	41B
 3RA29 23-2AA2				**Spring-type terminals**				
		Reversing duty						
	S00	Electrical and mechanical link for reversing contactors, optionally with integrated electrical and mechanical interlock	▶	**3RA29 13-2AA2**		1	1 unit	41B
	S0		▶	**3RA29 23-2AA2**		1	1 unit	41B
		Wye-delta starting						
	S00	Electrical and mechanical link for three contactors of same size	▶	**3RA29 13-2BB2**		1	1 unit	41B
	S0		▶	**3RA29 23-2BB2**		1	1 unit	41B
Safety main current connectors for 2 contactors								
 3RA29 16-1A		Switches 2 contactors in series		**Screw terminals**				
	S00		A	**3RA29 16-1A**		1	1 unit	41B
	S0		A	**3RA29 26-1A**		1	1 unit	41B
Mounting rails for mounting contactors for the customer assembly of 3RA21 load feeders with busbar adapters for 60 mm systems								
 8US19 98-7CB45		For the discrete configuration of direct-on-line starters a further mounting rail is needed for the contactor in addition to the mounting rail existing on the busbar adapter.						
	S0	For pushing onto the busbar adapter, including fixing screws	A	**8US19 98-7CB45**		1	10 units	143

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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	For motor starter protectors	For contactors	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	Size	Size							
Standard mounting rail adapters									
 3RA29 22-1AA00			For mechanical fixing of motor starter protector and contactor; for snapping onto standard mounting rail or for screw fixing						
	S00, S0	S00, S0	**Single-unit packaging**	A	**3RA29 22-1AA00**		1	1 unit	41B
	S00, S0	S00, S0	**Multi-unit packaging**	A	**3RA29 22-1A**		1	5 units	41B
Side modules for standard mounting rail adapters									
 3RA19 02-1B	S00/S0	S00/S0	For standard mounting rail adapters 10 mm wide, 96 mm long, for widening standard mounting rail adapters when using lateral auxiliary switches, 2 units required	►	**3RA19 02-1B**		1	10 units	41B
RH assembly kits for reversing duty and standard rail mounting in size S0									
 3RA29 23-1BB1	**RH assembly kits for screw terminals**				**Screw terminals**				
	S0	S0	Consisting of: • wiring kit • 2 standard mounting rail adapters • 2 connecting wedges Link modules must be ordered separately.	A	**3RA29 23-1BB1**		1	1 unit	41B
	RH assembly kits for spring-type terminals				**Spring-type terminals**				
	S0	S0	Consisting of: • wiring kit • 2 standard mounting rail adapters • 2 connecting wedges • Spacers Link modules must be ordered separately.	A	**3RA29 23-1BB2**		1	1 unit	41B
Push-in lugs for screw fixing									
 3RV29 28-0B	S00, S0	--	For screwing the motor starter protector (of the load feeder) onto mounting plates; 2 units are required for each motor starter protector	A	**3RV29 28-0B**		100	10 units	41E

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Accessories

Busbar adapters



8US12 51-5DS10



8US12 51-5DT11



8US12 50-5AS10



8US12 50-5AT10

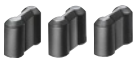
For load feeders	Rated current	Connecting cable	Adapter length	Adapter width	Rated voltage	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Size	A	AWG	mm	mm	V						
Busbar adapters for 60 mm systems											
For flat copper profiles according to DIN 46433 Width: 12 mm and 30 mm Thickness: 5 mm and 10 mm also for T and double-T special profiles											
• For load feeders with screw terminals							**Screw terminals**				
S00/S0	25	12	200	45	690	▶	**8US12 51-5DS10**		1	1 unit	143
S00 (motor starter protector) / S0 (contactor)	25	12	260	45	690	▶	**8US12 51-5DT10**		1	1 unit	143
S0	32	10	260	45	690	▶	**8US12 51-5NT10**		1	1 unit	143
• For load feeders with spring-type terminals							**Spring-type terminals**				
S00/S0	25	12	260	45	690	▶	**8US12 51-5DT11**		1	1 unit	143
S0	32	10	260	45	690	▶	**8US12 51-5NT11**		1	1 unit	143
Accessories[1]											
Device holders for lateral attachment to busbar adapters	--	--	200	45	--	▶	**8US12 50-5AS10**		1	1 unit	143
	--	--	260	45	--	▶	**8US12 50-5AT10**		1	1 unit	143
Side modules for widening busbar adapters	--	--	200	9	--	A	**8US19 98-2BJ10**		1	1 unit	143
Spacers For fixing the load feeder onto the busbar adapter	--	--	--	--	--	▶	**8US19 98-1BA10**		1	10 units	143
Vibration and shock kits For high vibration and shock loads	--	--	--	--	--	▶	**8US19 98-1CA10**		1	2 units	143

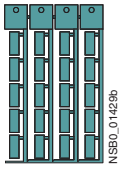
[1] Additional mounting rails for busbar adapter see page 8/36.

For motor starter protectors	For contactors	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Size	Size							
RS assembly kits for reversing duty for 60 mm busbar systems								
RS assembly kits for screw terminals				**Screw terminals**				
S00, S0	S00	Consisting of:	A	**3RA29 13-1DB1**		1	1 unit	41B
S0	S0	• Wiring kit	A	**3RA29 23-1DB1**		1	1 unit	41B
S00	S0	• Busbar adapters	A	**3RA29 23-1EB1**		1	1 unit	41B
		• Device holders						
		• 2 connecting wedges						
		Link modules must be ordered separately.						
RS assembly kits for spring-type terminals				**Spring-type terminals**				
S00	S00	Consisting of:	A	**3RA29 13-1DB2**		1	1 unit	41B
S0	S0	• Wiring kit	A	**3RA29 23-1DB2**		1	1 unit	41B
		• Busbar adapters						
		• Device holders						
		• 2 connecting wedges						
		• Spacers						
		Link modules must be ordered separately.						

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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For motor starter protectors Size	For contactors Size	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Connecting wedges								
 8US19 98-1AA00	For mechanical linking of busbar adapters and device holders or of standard mounting rail adapters (2 units per combination required)		►	**8US19 98-1AA00**		100	100 units	143
Spacers								
 3RA29 11-1CA00	For height compensation on AC contactors size S0 with spring-type terminals			**Spring-type terminals**				
S0	S0	**Single-unit packaging**	A	**3RA29 11-1CA00**		1	1 unit	41B
S0	S0	**Multi-unit packaging**	A	**3RA29 11-1C**		1	5 units	41B

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Tools for opening spring-type terminals						
 3RA29 08-1A **Screwdrivers** For all SIRIUS devices with spring-type terminals		**Spring-type terminals**				
Length approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray/black, partially insulated	A	**3RA29 08-1A**		1	1 unit	41B
Blank labels						
 3RT19 00-1SB20 **Unit labeling plates**[1] for SIRIUS devices						
• 20 mm x 7 mm, titanium gray	D	**3RT29 00-1SB20**		100	340 units	41B
• 20 mm x 7 mm, pastel turquoise	D	**3RT19 00-1SB20**		100	340 units	41B
Documentation						
Configuration manuals for new combinations of load feeders Information and assignment tables for combinations for customer assembly						
• German	C	**3ZX1012-0RA21-1AB0**		1	1 unit	401
• English	C	**3ZX1012-0RA21-1AC0**		1	1 unit	401
System manual for SIRIUS Innovations						
• German	C	**3ZX1012-0RA01-1AB1**		1	1 unit	401
• English	C	**3ZX1012-0RA01-1AC1**		1	1 unit	401
• French	C	**3ZX1012-0RA01-1AD1**		1	1 unit	401
• Spanish	C	**3ZX1012-0RA01-1AE1**		1	1 unit	401

[1] PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH www.murrplastik.de.

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3RV29 infeed system for load feeders

Overview

Types of infeed for 3RA2 fuseless load feeders

On the whole four different power infeed possibilities are available:

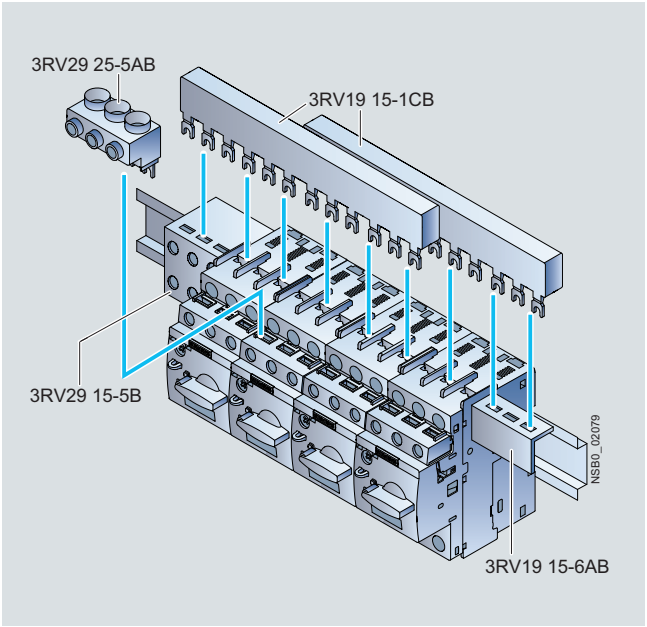
- Parallel wiring
- Use of three-phase busbars (combination with SIRIUS motor starter protectors and contactors possible)
- 8US busbar adapters
- SIRIUS 3RV29 infeed systems

Insulated three-phase busbar system

Three-phase busbar systems provide an easy, time-saving and clearly arranged means of feeding 3RA2 load feeders with screw terminals. Different versions are available for sizes S00 and S0 and can also be used for the various different types of motor starter protectors.

The busbars are suitable for between 2 and 5 feeders. However, any kind of extension is possible by clamping the tags of an additional busbar (rotated by 180°) underneath the terminals of the respective last motor starter protector.

A combination of feeders of different sizes is possible with sizes S00 and S0. Connecting pieces are available for this purpose. The motor starter protectors are supplied by appropriate feeder terminals.



SIRIUS three-phase busbar system size S00/S0

The three-phase busbar systems are finger-safe. They are designed for any short-circuit stress which can occur at the output side of connected motor starter protectors.

The three-phase busbar systems can also be used to construct "Type E Starters" of size S0 or S2 according to UL/CSA. Special feeder terminals must be used for this purpose, see Chapter 7 "Protection Equipment" ➞ "Motor Starter Protectors" ➞ "SIRIUS 3RV2 Motor Starter Protectors up to 40 A" ➞ "Accessories" ➞ "Busbar Accessories".

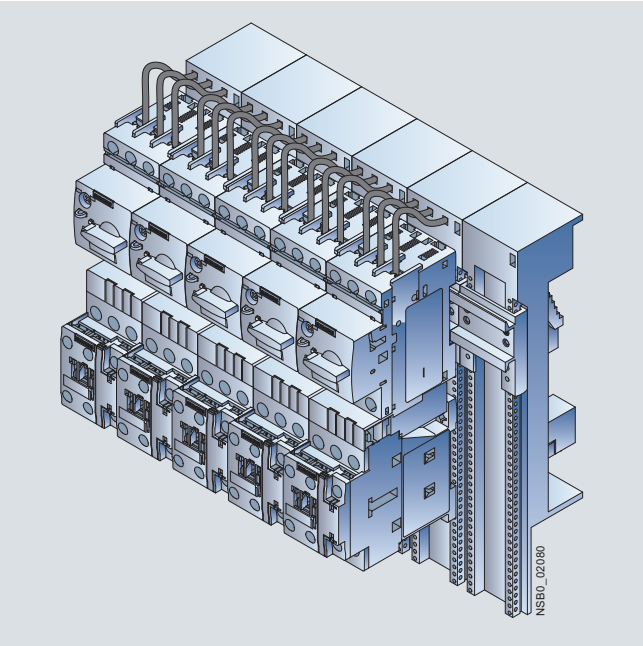
8US busbar adapters for 60 mm systems

The load feeders are mounted directly with the aid of busbar adapters on busbar systems with 60 mm center-to-center clearance in order to save space and to reduce infeed times and costs.

The busbar adapters for busbar systems with 60 mm center-to-center clearance are suitable for copper busbars with a width of 12 to 30 mm. The busbars can be 4 to 5 mm or 10 mm thick.

The feeders are snapped onto the adapter and connected on the line side. This prepared unit is then plugged directly onto the busbar system, and is thus connected both mechanically and electrically at the same time.

"Selection and ordering data" see page 8/38.



SIRIUS load feeders with busbar adapters snapped onto busbars

SIRIUS 3RV29 infeed systems

The 3RV29 infeed system is a convenient means of energy supply and distribution for a group of several motor starter protectors or complete load feeders with a screw or spring-type connection up to size S0.

The system is based on a basic module complete with a lateral incoming unit (three-phase busbar with infeed) which has two slots.

Expansion modules are available for extending the system (three-phase busbars for system expansion).

3RV29 infeed system see Chapter 7 "Protection Equipment" ➞ "Motor Starter Protectors" ➞ "SIRIUS 3RV2 Motor Starter Protectors up to 40 A" ➞ "Accessories".

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Overview

3RA1 fuseless load feeders

Note:

The 3RA1 fuseless load feeders, including sizes S00 and S0, can be found

- in the Catalog Add-On IC 10 AO · 2012 in the CD/DVD box
- in the Catalog Add-On IC 10 AO · 2012 at the Information and Download Center
- in the interactive catalog CA 01
- in the Industry Mall

The 3RA1 fuseless load feeders consist of the 3RV1 motor starter protector and the 3RT1 contactor. Motor starter protectors and contactors are electrically and mechanically connected using pre-assembled assembly kits (link modules, wiring kits and standard mounting rail or busbar adapters).

As the 3RA1 fuseless load feeders are constructed from 3RV1 motor starter protectors and 3RT1 contactors, the same accessories can be used for the 3RA1 fuseless load feeders as for these motor starter protectors and contactors.

Pre-assembled link modules are available as accessories for the power spectrum up to 45 kW. The desired fuseless load feeder can thus be assembled quickly and economically by the customer. A time saving is also achieved in connection with switchgear acceptances, as – unlike with conventional wiring systems – there is no need to rectify possible wiring errors.

The 3RV1 motor starter protector is responsible for overload and short-circuit protection in the fuseless load feeder. Back-up protective devices, such as melting fuses or limiters, are superfluous here, as the circuit breaker is capable of withstanding short circuits of up to 50 or 100 kA at 400 V.

The 3RT1 contactor is particularly suitable for extremely complex switching tasks requiring the greatest endurance.

The permissible ambient temperature is 60 °C with butt-mounting and without derating (70 °C possible subject to certain restrictions).

3RA1 fuseless load feeders are available for motors up to 45 kW at AC-3 and 400 V (grounded network) and setting ranges from 0.14 A to 100 A.

Only sizes S2 and S3 of the 3RA1 fuseless load feeders are covered in IC 10. 3RA2 fuseless load feeders are available for sizes S00 and S0 (see page 8/4).

Size	Width of direct-on-line starter	Max. rated current $I_{n\ max}$	For induction motors up to
	mm	A	kW
S2	55	50	22
S3	70	100	45

3RA1 load feeder sizes S2 and S3 can be ordered preassembled only as direct-on-line starters in size S2. The direct-on-line starter size S3 and the reversing starter sizes S2 and S3 are available only for self-assembly.

The SENTRON 3VL circuit breakers and the SIRIUS 3RT contactors can be used for fuseless load feeders >100 A. The corresponding distances from grounded or live parts, as detailed in the technical specifications, must be observed.

More information and assignment tables for self-assembly combinations for 400 V, 440 V, 480 V, 500 V, 550 V and 690 V see the configuration manual "Configuring SIRIUS: Selection Data for Load Feeders in Fuseless Designs", see page 8/53.

Operating conditions

3RA1 load feeders are climate-proof. They are intended for use in enclosed rooms in which no severe operating conditions (such as dust, caustic vapors, hazardous gases) prevail. Suitable covers must be provided for installation in dusty and damp locations.

Overload tripping times

All 3RA1 fuseless load feeders described here are designed for normal starting, in other words for overload tripping times of less than 10 s (CLASS 10). At rated-load operating temperature the tripping times are shorter, depending on the particular equipment and the setting range. The exact values can be derived from the tripping characteristics of the motor starter protectors.

Types of coordination

EN 60947-4-1 and IEC 60947-4-1 make a distinction between two different types of coordination (types "1" and "2"). Any short circuits that occur are cleared safely by both types of coordination. The only differences concern the extent of the damage caused to the device by a short circuit.

ToC 1 Type of coordination "1"
The fuseless load feeder may be non-operational after a short circuit has been cleared. Damage to the contactor or to the overload release is permissible. For 3RA1 load feeders, the motor starter protector itself always achieves type of coordination "2".

ToC 2 Type of coordination "2"
There must be no damage to the overload release or to any other components after a short circuit has been cleared. The 3RA1 fuseless load feeder can resume operation without needing to be renewed. At most, welding of the contactor contacts is permissible if they can be disconnected easily without any significant deformation.

The types of coordination are indicated in the corresponding tables by the symbols shown on orange backgrounds.

Connection methods

3RA1 load feeders are offered with screw terminals.

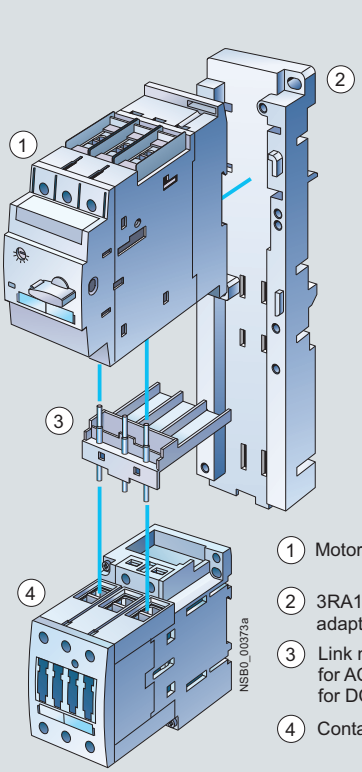
Screw terminals

The terminals are indicated in the corresponding tables by the symbol shown on an orange background.

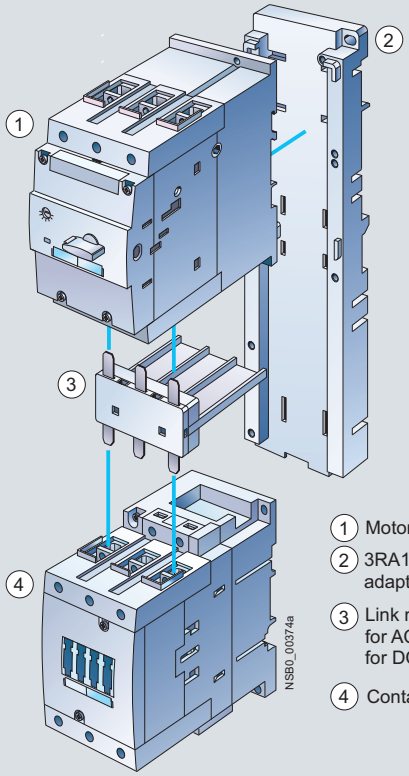
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General data

Direct-on-line start • For standard rail mounting • Size S2 and S3

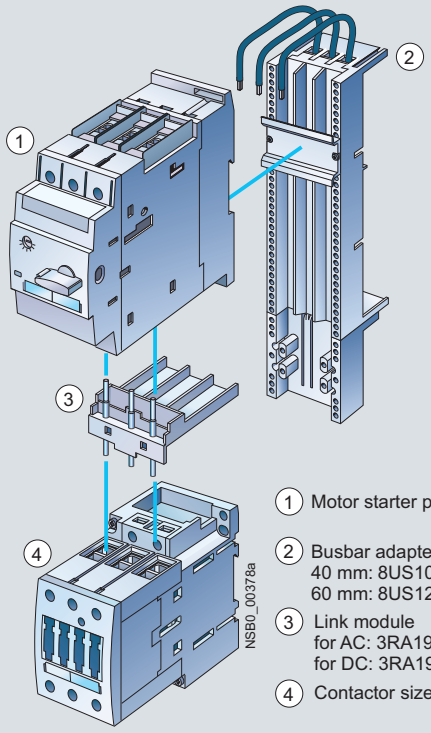


1 Motor starter protector size S2
2 3RA19 32-1AA00 adapter for rail mounting
3 Link module for AC: 3RA19 31-1AA00 for DC: 3RA19 31-1BA00
4 Contactor size S2



1 Motor starter protector size S3
2 3RA19 42-1AA00 adapter for rail mounting
3 Link module for AC: 3RA19 41-1AA00 for DC: 3RA19 41-1BA00
4 Contactor size S3

Direct-on-line starting • For 40 mm and 60 mm busbar systems • Size S2

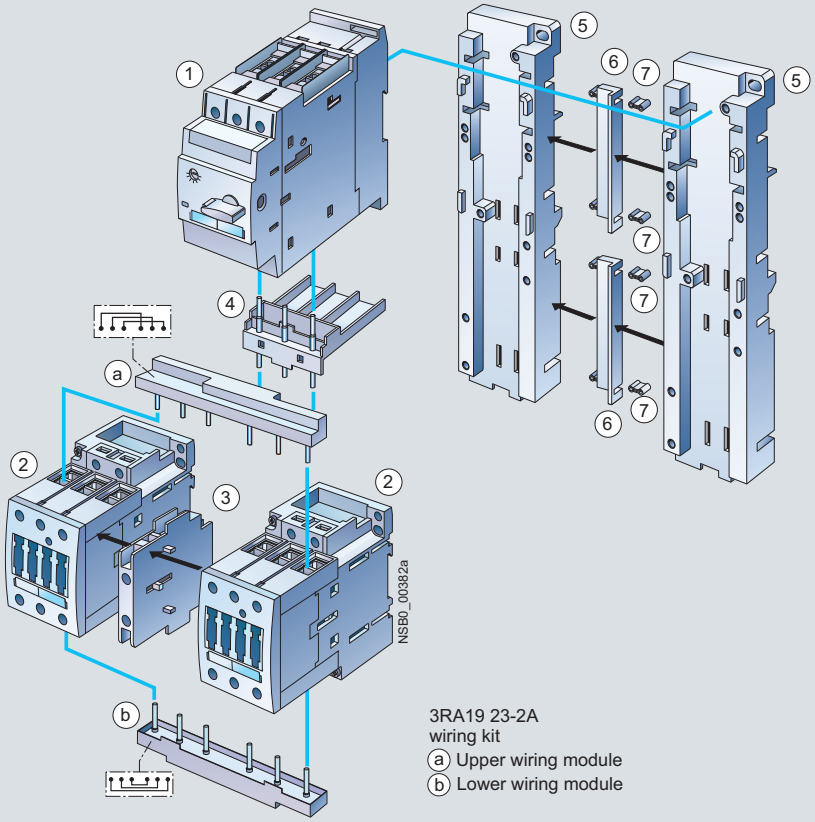


1 Motor starter protector size S2
2 Busbar adapter 40 mm: 8US10 61-5FP08 60 mm: 8US12 61-5FP08
3 Link module for AC: 3RA19 31-1AA00 for DC: 3RA19 31-1BA00
4 Contactor size S2

These graphical overviews are shown without small mounting parts (screws etc.).

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Reversing duty • For standard rail mounting • Size S2

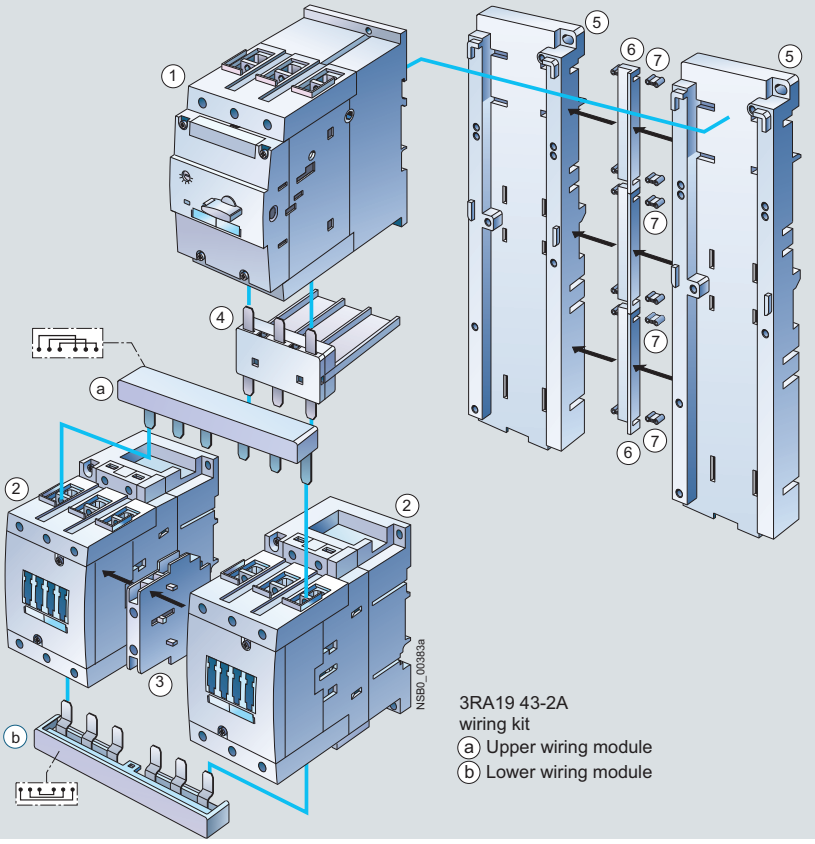


3RA19 33-1B
assembly kit (RH)
for reversing duty
for mounting onto
standard rails
comprising:
1 wiring kit
2 adapters for rail mounting
2 side modules
2 link wedges

3RA19 23-2A
wiring kit
(a) Upper wiring module
(b) Lower wiring module

(1) Motor starter protector size S2
(2) 2 contactors size S2
(3) 3RA19 24-2B
mechanical interlock
(4) Link module
for AC: 3RA19 31-1AA00
for DC: 3RA19 31-1BA00
(5) 3RA19 32-1AA00
adapters for rail mounting
(6) 3RA19 02-1B side modules
for adapter for rail mounting
(1 pack = 10 units)
(7) 8US19 98-1AA00
link wedges
(1 pack = 100 units)

Reversing duty • for standard rail mounting • size S3



3RA19 43-1B
assembly kit (RH)
for reversing duty
for mounting onto
standard rails
comprising:
1 wiring kit
2 adapters for rail mounting
2 side modules
2 link wedges

3RA19 43-2A
wiring kit
(a) Upper wiring module
(b) Lower wiring module

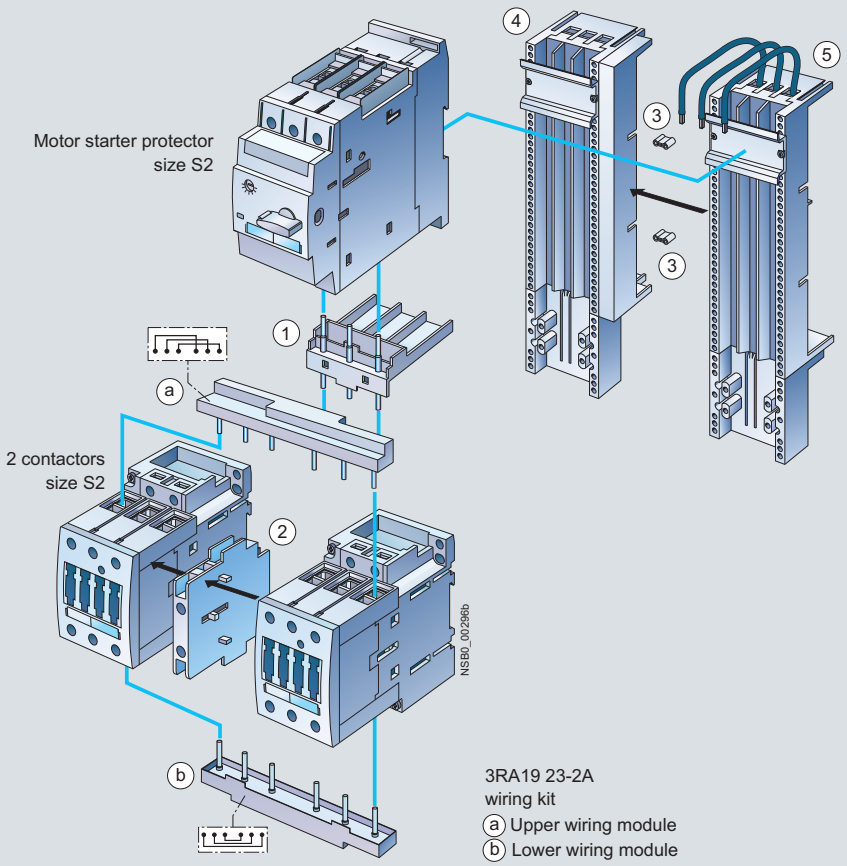
(1) Motor starter protector size S3
(2) 2 contactors size S3
(3) 3RA19 24-2B
mechanical interlock
(4) Link module
for AC: 3RA19 41-1AA00
for DC: 3RA19 41-1BA00
(5) 3RA19 42-1AA00
adapters for rail mounting
(6) 3RA19 02-1B side modules
for adapter for rail mounting
(1 pack = 10 units)
(7) 8US19 98-1AA00
link wedges
(1 pack = 100 units)

These graphical overviews are shown without small mounting parts (screws etc.).

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General data

Reversing duty • for 60 mm busbar systems • size S2



Assembly kit (RS)
for reversing duty
for busbar mounting
60 mm: 3RA19 33-1D
consisting of:
1 wiring kit
1 busbar adapter
1 switching device holder
1 side module
2 link wedges

(1) Link module
for AC: 3RA19 31-1AA00
for DC: 3RA19 31-1BA00

(2) 3RA19 24-2B
mechanical interlock

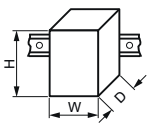
(3) 8US19 98-1AA00
link wedges
(1 pack = 100 units)

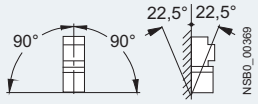
(4) Switching device holder
60 mm: 8US12 60-5AP00
with 8US19 98-2BM00
side module
for busbar adapter

(5) Busbar adapter
60 mm: 8US12 61-5FP08

This graphical overview is shown without small mounting parts (screws etc.).

Technical specifications

Direct-on-line starters/reversing starters	Size	Connection methods	Mounting	Control voltage	Width W	Height H	Depth D
					mm	mm	mm
Mounting dimensions							
3RA11. direct-on-line starters	S2	Screw terminals	Standard mounting rails	AC/DC	55	295	168
	3RA11 3.		Busbar adapters	AC/DC	55	276	176
	S3	Screw terminals	Standard mounting rails	AC/DC	70	330	192
3RA12. reversing starters	S2	Screw terminals	Standard mounting rails	AC/DC	120	295	168
			Busbar adapters	AC/DC	120	276	176
	S3	Screw terminals	Standard mounting rail adapters	AC/DC	150	330	192

Type			**3RA1. 3**	**3RA1. 4**
Size			**S2**	**S3**
Number of poles			**3**	**3**
Mechanics and environment				
Permissible ambient temperature				
• During operation		°C	-20 ... +70 (up to +60 °C without restriction)	
• During storage and transport		°C	-55 ... +80	
Weight of the 3RA11 30. direct-on-line starters		kg	2.1 at 230 V AC 2.7 at 24 V DC	--
Permissible mounting positions			 Important: acc. to DIN 43602 start command "I" at the right or top	
Shock resistance (sine-wave pulse)	According to IEC 60086 Part 2-27	*g*	up to 8	up to 6
Degree of protection	According to IEC 60947-1		IP20	

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Type			**3RA1. 3**	**3RA1. 4**
Size			**S2**	**S3**
Number of poles			**3**	**3**
Electrical specifications				
Standards			IEC 60947-1, EN 60947-1 IEC 60947-2, EN 60947-2 IEC 60947-4-1, EN 60947-4-1	
Max. rated current $I_{n\ max}$ (= max. rated operational current I_e)		A	50	100
Rated operational voltage U_e		V	690	
Rated frequency		Hz	50/60	
Rated insulation voltage U_i (pollution degree 3)		V	690	
Rated impulse withstand voltage U_{imp}		kV	6	
Trip class (CLASS) according to IEC 60947-4-1			10	
Rated short-circuit current I_q at AC 50/60 Hz 400 V according to IEC 60947-4-1		kA	50	
Types of coordination according to IEC 60947-4-1			See "Selection and ordering data"	
Power loss $P_{v\ max}$ of all main current paths Dependent on the rated current I_n (upper setting range)				
	25 ... 32 A	W	19	
	40 A	W	28	
	45 ... 50 A	W	35	
	63 A	W		29
	75 ... 90 A	W		45
	100 A	W		60
Power consumption of the solenoid coils in the case of contactors (for cold coil and U_s, 50 Hz)				
• AC operation	Closing	VA	127	270
	P.f.		0.82	0.68
	Closed	VA	13.5	22
	P.f.		0.34	0.27
• DC operation	Closing = Closed	W	11.5	15
Endurance of the motor starter protector				
• Mechanical endurance	Operating cycles		50 000	
• Electrical endurance	Operating cycles		50 000	
• Max. switching frequency per hour (motor starts)		1/h	15	
Endurance of contactor				
• Mechanical endurance	Operating cycles		10 million	
• Electrical endurance	Operating cycles		See endurance characteristic curves of the contactors → Chapter 3 "Controls – Contactors and Contactor Assemblies"	
Touch protection	According to EN 50274		Finger-safe	
Phase failure sensitivity of the motor starter protector	Acc. to IEC 60947-1		Yes	
Isolating features of the motor starter protector	Acc. to IEC 60947-2		Yes	
Main control and EMERGENCY-STOP switch characteristics of the motor starter protector and accessories	Acc. to IEC 60204-1		Yes, (with overvoltage releases of category 1 under conditions of proper use)	
Protective separation between main and auxiliary circuits	Acc. to IEC 60947-1, Appendix N	V	Up to 400	
Positively-driven operation at contactors			Yes, from main contact to auxiliary NC contact	
Conductor cross-sections of main circuit				
Standards			IEC 60947-1, EN 60947-1 IEC 60947-2, EN 60947-2 IEC 60947-4-1, EN 60947-4-1	
Connection type			Box terminals	Box terminals
Terminal screw			Pozidriv size 2	Allen screw
Conductor cross-sections (min. ... max.)				
• Finely stranded with end sleeve				
- 1 conductor		mm^2	0.75 ... 25	2.5 ... 50
- 2 conductor		mm^2	2 x (0.75 ... 16)	2 x (2.5 ... 35)
• Solid				
- 1 conductor		mm^2	0.7 ... 35	2.5 ... 16
- 2 conductor		mm^2	2 x (0.75 ... 16)	2 x (2.5 ... 16)
• Stranded				
- 1 conductor		mm^2	0.7 ... 35	2.5 ... 70
- 2 conductor		mm^2	2 x (0.75 ... 25)	2 x (2.5 ... 50)
Connection, main contacts, ribbon cable conductors			Yes	Yes
Busbar connections				Yes
• Solid or stranded		AWG	2 x (30 ... 2)	--
• Stranded		AWG	--	2 x (10 ... 1/0)

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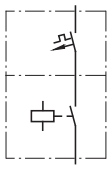
3RA11 direct-on-line starters for snapping onto standard mounting rails or for screw fixing

Selection and ordering data



3RA11 30

Direct-on-line start



Rated control supply voltage 50 Hz 230 V AC or 24 V DC for 35 mm standard mounting rail or for screw fixing

- The motor starter protector and contactor are mechanically and electrically connected by means of the link module
- As from size S2 with standard mounting rail adapter[1] for mechanical reinforcement
- Auxiliary switches[2] on the motor starter protector and the contactor can be easily fitted due to the modular system.

Size	Standard induction motor 4-pole at 400 V AC[3]		Setting range for thermal overload release	Consisting of the following single devices			DT	Fuseless load feeders	PU (UNIT, SET, M)	PS*	PG
	Standard output P	Motor current I (guide value)		Motor starter protectors	+ Contactor	+ Link module + Standard mounting rail adapter		Screw terminals / Configurator / Order No. / Price per PU			
	kW	A	A								
Type of coordination "2" at I_q = 50 kA/100 kA at 400 V (also compatible with type of coordination "1")				**3RV10**	**3RT10**	**3RA19**		ToC 2			
Rated control supply voltage 50 Hz 230 V AC											
S2	11	22	18 ... 25	31-4DA10	34-1AP00	31-1AA00	A	**3RA11 30-4DB34-0AP0**	1	1 unit	41D
	15	29	22 ... 32	31-4EA10		+	A	**3RA11 30-4EB34-0AP0**	1	1 unit	41D
	18.5	35	28 ... 40	31-4FA10	35-1AP00	32-1AA00	A	**3RA11 30-4FB35-0AP0**	1	1 unit	41D
	22	41	36 ... 45	31-4GA10	36-1AP00		A	**3RA11 30-4GB36-0AP0**	1	1 unit	41D
	22	41	40 ... 50	31-4HA10			A	**3RA11 30-4HB36-0AP0**	1	1 unit	41D
S3	30	55	45 ... 63	41-4JA10	44-1AP00	41-1AA00		Size S3 is only available for self-assembly.			
	37	66	57 ... 75	41-4KA10	45-1AP00	+					
	45	80	70 ... 90	41-4LA10	46-1AP00	42-1AA00					
	45	80	80 ... 100	41-4MA10							
Rated control supply voltage 24 V DC											
S2	11	22	18 ... 25	31-4DA10	34-1BB40	31-1BA00	A	**3RA11 30-4DB34-0BB4**	1	1 unit	41D
	15	29	22 ... 32	31-4EA10		+	A	**3RA11 30-4EB34-0BB4**	1	1 unit	41D
	18.5	35	28 ... 40	31-4FA10	35-1BB40	32-1AA00	A	**3RA11 30-4FB35-0BB4**	1	1 unit	41D
	22	41	36 ... 45	31-4GA10	36-1BB40		A	**3RA11 30-4GB36-0BB4**	1	1 unit	41D
	22	41	40 ... 50	31-4HA10			A	**3RA11 30-4HB36-0BB4**	1	1 unit	41D
S3	30	55	45 ... 63	41-4JA10	44-1BB40	41-1BA00		Size S3 is only available for self-assembly.			
	37	66	57 ... 75	41-4KA10	45-1BB40	+					
	45	80	70 ... 90	41-4LA10	46-1BB40	42-1AA00					
	45	80	80 ... 100	41-4MA10							

For online configurator see www.siemens.com/sirius/configurators.

1) Standard mounting rail adapter is also suitable for screw fixing.

2) Auxiliary switches see "Accessories" for direct-on-line and reversing starters on page 8/50.

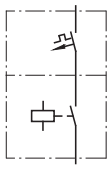
3) Selection depends on the concrete startup and rated data of the protected motor.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

Direct-on-line start



Rated control supply voltage 50 Hz 230 V AC or 24 V DC for 40 and 60 mm busbar systems

- The motor starter protector and contactor are mechanically and electrically connected by means of the link module
- Auxiliary switches[1] on the motor starter protector and the contactor can be easily fitted due to the modular system.

Size	Standard induction motor 4-pole at 400 V AC[2]		Setting range for thermal overload release	Consisting of the following single devices			DT	Fuseless load feeders	PU (UNIT, SET, M)	PS*	PG
	Standard output P	Motor current I (guide value)		Motor starter protectors	+ Contactor	+ Link module + Busbar adapter		Screw terminals / Configurator / Order No.[3]	Price per PU		
	kW	A	A								
Type of coordination "2" at I_q = 50 kA at 400 V (compatible with type of coordination "1")											
				3RV10	**3RT10**						
Rated control supply voltage 50 Hz 230 V AC											
S2	11	22	18 ... 25	31-4DA10	34-1AP00	3RA19 31-1AA00 + 40 mm 8US10 61-5FP08 or 60 mm 8US12 61-5FP08		Size S2 is only available for self-assembly.			
	15	29	22 ... 32	31-4EA10							
	18.5	35	28 ... 40	31-4FA10	35-1AP00						
	22	41	36 ... 45	31-4GA10	36-1AP00						
	22	41	40 ... 50	31-4HA10							
S3	30	55	45 ... 63	41-4JA10	44-1AP00	3RA19 41-1AA00		Size S3 is only available for self-assembly. For size S3, a busbar adapter is not necessary.			
	37	66	57 ... 75	41-4KA10	45-1AP00						
	45	80	70 ... 90	41-4LA10	46-1AP00						
	45	80	80 ... 100	41-4MA10							
Rated control supply voltage 24 V DC											
S2	11	22	18 ... 25	31-4DA10	34-1BB40	3RA19 31-1BA00 + 40 mm 8US10 61-5FP08 or 60 mm 8US12 61-5FP08		Size S2 is only available for self-assembly.			
	15	29	22 ... 32	31-4EA10							
	18.5	35	28 ... 40	31-4FA10	35-1BB40						
	22	41	36 ... 45	31-4GA10	36-1BB40						
	22	41	40 ... 50	31-4HA10							
S3	30	55	45 ... 63	41-4JA10	44-1BB40	3RA19 41-1BA00 + not available		Size S3 is only available for self-assembly. For size S3, a busbar adapter is not necessary.			
	37	66	57 ... 75	41-4KA10	45-1BB40						
	45	80	70 ... 90	41-4LA10	46-1BB40						
	45	80	80 ... 100	41-4MA10							

For online configurator see www.siemens.com/sirius/configurators.

1) Auxiliary switches see "Accessories" for direct-on-line and reversing starters on page 8/50.

2) Selection depends on the concrete startup and rated data of the protected motor.

3) For order numbers see single devices:
SIRIUS 3RV10 motor starter protectors see Chapter 7 "Protection Equipment" → "Motor Starter Protectors" → "SIRIUS 3RV1 Motor Starter Protectors up to 100 A".
SIRIUS 3RT10 contactors see Chapter 3 "Controls – Contactors and Contactor Assemblies" → "Power Contactors for Switching Motors" → "SIRIUS 3RT10 Contactors, 3-pole, 15 ... 250 kW".

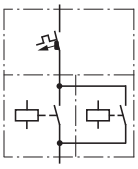
8

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3RA12 reversing starters for snapping onto standard mounting rails or for screw fixing

Selection and ordering data

Reversing duty



Rated control supply voltage 50 Hz 230 V AC or 24 V DC for 35 mm standard mounting rail or for screw fixing

- The motor starter protector and contactor are mechanically and electrically connected by means of the link module
- With standard mounting rail adapter[1] for mechanical reinforcement
- Auxiliary switches[2] on the motor starter protector and the contactor can be easily fitted due to the modular system.
- Complete unit always with electrical and mechanical interlock

Size	Standard induction motor 4-pole at 400 V AC[3]		Setting range for thermal overload release	Consisting of the following single devices			DT	Fuseless load feeders		PU (UNIT, SET, M)	PS*	PG
	Standard output P	Motor current I (guide value)		Motor starter protectors	+ 2 contactors	+ Link module + Assembly kit RH[1][4]		Screw terminals				
								Configurator				
	kW	A	A					Order No.[6]	Price per PU			
Type of coordination "2" at I_q = 50 kA/100 kA at 400 V (also compatible with type of coordination "1")				**3RV10**	**3RT10**	**3RA19**						
Rated control supply voltage 50 Hz 230 V AC												
S2	11	22	18 ... 25	31-4DA10	34-1AP00	31-1AA00 + 33-1B[5]		Size S2 is only available for self-assembly.				
	15	29	22 ... 32	31-4EA10								
	18.5	35	28 ... 40	31-4FA10	35-1AP00							
	22	41	36 ... 45	31-4GA10	36-1AP00							
	22	41	40 ... 50	31-4HA10								
S3	30	55	45 ... 63	41-4JA10	44-1AP00	41-1AA00 + 43-1B[5]		Size S3 is only available for self-assembly.				
	37	66	57 ... 75	41-4KA10	45-1AP00							
	45	80	70 ... 90	41-4LA10	46-1AP00							
	45	80	80 ... 100	41-4MA10								
Rated control supply voltage 24 V DC												
S2	11	22	18 ... 25	31-4DA10	34-1BB40	31-1BA00 + 33-1B[5]		Size S2 is only available for self-assembly.				
	15	29	22 ... 32	31-4EA10								
	18.5	35	28 ... 40	31-4FA10	35-1BB40							
	22	41	36 ... 45	31-4GA10	36-1BB40							
	22	41	40 ... 50	31-4HA10								
S3	30	55	45 ... 63	41-4JA10	44-1BB40	41-1BA00 + 43-1B[5]		Size S3 is only available for self-assembly.				
	37	66	57 ... 75	41-4KA10	45-1BB40							
	45	80	70 ... 90	41-4LA10	46-1BB40							
	45	80	80 ... 100	41-4MA10								

For online configurator see www.siemens.com/sirius/configurators.

1) Assembly kit for standard mounting rail adapter also suitable for screw fixing.

2) Auxiliary switches see "Accessories" for direct-on-line and reversing starters on page 8/50.

3) Selection depends on the concrete startup and rated data of the protected motor.

4) RH = Reversing duty for standard rail mounting.

5) Mechanical locking device must be ordered separately, see "Accessories" for direct-on-line and reversing starters on page 8/51.

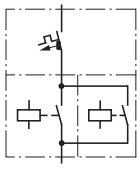
6) For order numbers see single devices:
SIRIUS 3RV10 motor starter protectors see Chapter 7 "Protection Equipment" → "Motor Starter Protectors" → "SIRIUS 3RV1 Motor Starter Protectors up to 100 A".
SIRIUS 3RT10 contactors see Chapter 3 "Controls – Contactors and Contactor Assemblies" → "Power Contactors for Switching Motors" → "SIRIUS 3RT10 Contactors, 3-pole, 15 ... 250 kW".

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

Reversing duty



Rated control supply voltage 50 Hz 230 V AC or 24 V DC for 40 and 60 mm busbar systems

- The motor starter protector and contactor are mechanically and electrically connected by means of the link module
- Auxiliary switches[1] on the motor starter protector and the contactor can be easily fitted due to the modular system.
- Complete unit always with electrical and mechanical interlock

Size	Standard induction motor 4-pole at 400 V AC[2]		Setting range for thermal overload release	Consisting of the following single devices			DT	Fuseless load feeders	PU (UNIT, SET, M)	PS*	PG
	Standard output *P*	Motor current *I* (guide value)		Motor starter protectors	+ 2 contactors	+ Link module + Assembly kit RS[3]		Screw terminals			
								Configurator			
	kW	A	A					Order No.[4]	Price per PU		
Type of coordination "2" at I_q = 50 kA at 400 V (compatible with type of coordination "1")											
				3RV10	**3RT10**	**3RA19**		ToC 2			
Rated control supply voltage 50 Hz 230 V AC											
S2	11	22	18 ... 25	31-4DA10	34-1AP00	31-1AA00		Size S2 is only available for self-assembly.			
	15	29	22 ... 32	31-4EA10		+					
	18.5	35	28 ... 40	31-4FA10	35-1AP00	40 mm					
	22	41	36 ... 45	31-4GA10	36-1AP00	33-1C[4]					
	22	41	40 ... 50	31-4HA10		or 60 mm					
						33-1D[4]					
S3	30	55	45 ... 63	41-4JA10	44-1AP00	41-1AA00		For size S3, a busbar adapter is not necessary.			
	37	66	57 ... 75	41-4KA10	45-1AP00	+					
	45	80	70 ... 90	41-4LA10	46-1AP00	not available					
	45	80	80 ... 100	41-4MA10							
Rated control supply voltage 24 V DC											
S2	11	22	18 ... 25	31-4DA10	34-1BB40	31-1BA00		Size S2 is only available for self-assembly.			
	15	29	22 ... 32	31-4EA10		+					
	18.5	35	28 ... 40	31-4FA10	35-1BB40	40 mm					
	22	41	36 ... 45	31-4GA10	36-1BB40	33-1C[4]					
	22	41	40 ... 50	31-4HA10		or 60 mm					
						33-1D[4]					
S3	30	55	45 ... 63	41-4JA10	44-1BB40	41-1BA00		For size S3, a busbar adapter is not necessary.			
	37	66	57 ... 75	41-4KA10	45-1BB40	+					
	45	80	70 ... 90	41-4LA10	46-1BB40	not available					
	45	80	80 ... 100	41-4MA10							

For online configurator see www.siemens.com/sirius/configurators.

1) Auxiliary switches see "Accessories" for direct-on-line and reversing starters on page 8/50.

2) Selection depends on the concrete startup and rated data of the protected motor.

3) RS = Reversing duty for busbar systems.

4) For order numbers see single devices.
SIRIUS 3RV10 motor starter protectors see Chapter 7 "Protection Equipment" → "Motor Starter Protectors" → "SIRIUS 3RV1 Motor Starter Protectors up to 100 A".
SIRIUS 3RT10 contactors see Chapter 3 "Controls – Contactors and Contactor Assemblies" → "Power Contactors for Switching Motors" → "SIRIUS 3RT10 Contactors, 3-pole, 15 ... 250 kW".

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Selection and ordering data

	For motor starter protectors Size	For contactors Size	Version		DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Motor starter protectors[1]										
			Auxiliary switches							
 3RV19 01-1E	S2 ... S3	--	Transverse	1 CO	▶	**3RV19 01-1D**		1	1 unit	41E
				1 NO + 1 NC	▶	**3RV19 01-1E**		1	1 unit	41E
 3RV19 01-1A	S2 ... S3	--	Laterally mountable	1 NO + 1 NC	▶	**3RV19 01-1A**		1	1 unit	41E
 3RV19 02-1...	S2 ... S3	--	**Undervoltage releases** 50 Hz 230 V AC		▶	**3RV19 02-1AP0**		1	1 unit	41E
	S2 ... S3	--	**Shunt releases** 50 Hz 230 V AC		▶	**3RV19 02-1DP0**		1	1 unit	41E
Contactors[2]										
			Snap-on auxiliary switch blocks							
			Connection from below							
	--	S2 ... S3	2-pole	1 NO + 1 NC	▶	**3RH19 21-1MA11**		1	1 unit	41B
				2 NO	▶	**3RH19 21-1MA20**		1	1 unit	41B
				2 NC	▶	**3RH19 21-1MA02**		1	1 unit	41B
			Connection from 2 sides							
	--	S2 ... S3	1-pole	1 NO	▶	**3RH19 21-1CA10**		1	1 unit	41B
				1 NC	▶	**3RH19 21-1CA01**		1	1 unit	41B
	--	S2 ... S3	4-pole	2 NO + 2 NC	▶	**3RH19 21-1FA22**		1	1 unit	41B

1) See also Chapter 7 "Protection Equipment" → "Motor Starter Protectors" → "SIRIUS 3RV1 Motor Starter Protectors up to 100 A".

2) See also Chapter 3 "Controls – Contactors and Contactor Assemblies".

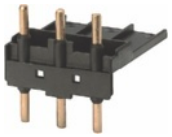
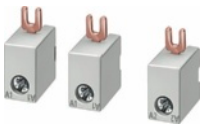
	For contactors Type	Version	Rated control supply voltage U_s[1]	DT	Order No.[2]	Price per PU	PU (UNIT, SET, M)	PS*	PG
Surge suppressors without LED									
	Sizes S2 and S3								
		For fitting onto the coil terminals at top or bottom							
	3RT10 3, 3RT10 4	**Varistor**	24 ... 48 V AC 24 ... 70 V DC	▶	**3RT19 26-1BB00**		1	1 unit	41B
			127 ... 240 V AC 150 ... 250 V DC	▶	**3RT19 26-1BD00**		1	1 unit	41B
 3RT19 36-1C.00	3RT10 3, 3RT10 4	**RC elements**	24 ... 48 V AC 24 ... 70 V DC	▶	**3RT19 36-1CB00**		1	1 unit	41B
			127 ... 240 V AC 150 ... 250 V DC	▶	**3RT19 36-1CD00**		1	1 unit	41B
	3RT10 3, 3RT10 4	**Diode assemblies** For DC operation and short break times							
		• Can be plugged in at bottom	24 V DC	▶	**3RT19 36-1TR00**		1	1 unit	41B
			30 ... 250 V DC	B	**3RT19 36-1TS00**		1	1 unit	41B

1) Can be used for AC operation for 50/60 Hz. Please inquire about further voltages.

2) For packs of 10 or 5 units **"-Z"** and order code **"X90"** must be added to the Order No.

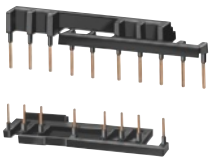
* You can order this quantity or a multiple thereof.
Illustrations are approximate

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	For motor starter protectors Size	For contactors Size	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Link modules									
			Electrical and mechanical link between motor starter protector and contactor.						
 3RA19 31-1AA00	***Single-unit packaging***								
			Actuating voltage of contactor						
	S2	S2	AC	▶	**3RA19 31-1AA00**		1	1 unit	41B
	S3	S3		▶	**3RA19 41-1AA00**		1	1 unit	41B
	S2	S2	DC	▶	**3RA19 31-1BA00**		1	1 unit	41B
	S3	S3		▶	**3RA19 41-1BA00**		1	1 unit	41B
	Multi-unit packaging								
			Actuating voltage of contactor						
	S2	S2	AC	▶	**3RA19 31-1A**		1	5 units	41B
	S3	S3		▶	**3RA19 41-1A**		1	5 units	41B
	S2	S2	DC	▶	**3RA19 31-1B**		1	5 units	41B
	S3	S3		▶	**3RA19 41-1B**		1	5 units	41B
Wiring kits									
			Reversing duty						
	--	S2	Electrical and mechanical link for reversing contactors. Can be combined with link module. For sizes S2 and S3: mechanical locking device must be ordered separately.	▶	**3RA19 33-2A**		1	1 unit	41B
	--	S3		▶	**3RA19 43-2A**		1	1 unit	41B
			Wye-delta starting						
	--	S2	Electrical and mechanical link for three contactors of same size	▶	**3RA19 33-2B**		1	1 unit	41B
	--	S3		▶	**3RA19 43-2B**		1	1 unit	41B
Mechanical interlocks									
 3RA19 24-2B	--	S2, S3	For reversing contactors, laterally mountable with 1 auxiliary contact (1 NC) each per contactor.	▶	**3RA19 24-2B**		1	1 unit	41B
Coil repeat terminals									
 3RA19 23-3B	--	S2, S3	For A1 and A2 of the reversing contactors (one set contains 10 x A1 and 5 x A2)	B	**3RA19 23-3B**		1	1 unit	41B

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Accessories for 3RA1 direct-on-line and reversing starters

	For motor starter protectors Size	For contactors Size	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Standard mounting rail adapters									
 3RA19 32 3RA19 22	***Single-unit packaging***								
	S2	S2	For mechanical fixing of motor	▶	**3RA19 32-1AA00**		1	1 unit	41B
	S3	S3	starter protector and contactor; for snapping onto standard mounting rail or for screw fixing	▶	**3RA19 42-1AA00**		1	1 unit	41B
	Multi-unit packaging								
	S2	S2	For mechanical fixing of motor	▶	**3RA19 32-1A**		1	5 units	41B
	S3	S3	starter protector and contactor; for snapping onto standard mounting rail or for screw fixing	▶	**3RA19 42-1A**		1	5 units	41B
Side modules									
 3RA19 02	S2 ... S3	S2 ... S3	For standard mounting rail adapter 10 mm wide, 96 mm long, for widening standard mounting rail adapters. For size S2: 2 units required. For size S3: 3 units required.	▶	**3RA19 02-1B**		1	10 units	41B
Assembly kits (RH) for reversing duty for standard mounting rails									
 3RA19 33-1B	S2	S2	Also suitable for screw fixing. Consisting of:	A	**3RA19 33-1B**		1	1 unit	41B
	S3	S3	Wiring kit, standard mounting rail adapters, side modules. Link modules to be ordered separately. Mechanical locking device also to be ordered separately.	A	**3RA19 43-1B**		1	1 unit	41B
									

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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	For motor starter protectors Size	For contactors Size	Version	Busbar center-to-center clearance mm	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Busbar adapters										
	S2	S2	55 mm wide, 242 mm long including screw and spacer	40	▶	**8US10 61-5FP08**		1	1 unit	143
				60	▶	**8US12 61-5FP08**		1	1 unit	143
Device holders										
	S2	S2	55 mm wide, 242 mm long including screw and spacer	60	▶	**8US12 60-5AP00**		1	1 unit	143
Assembly kits (RS) for reversing duty for 40 mm and 60 mm busbar systems										
	S2	S2	Consisting of wiring kit, busbar adapter, device holder, and side module. Link modules and mechanical locking devices to be ordered separately.	60	A	**3RA19 33-1D**		1	1 unit	41B
Connecting wedges										
 8US19 98-1AA00	--	--	For mechanical linking of busbar adapters and device holders or of standard mounting rail adapters (2 units per combination required) (1 pack = 100 units)		▶	**8US19 98-1AA00**		100	100 units	143

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Documentation							
	Configuration manual "SIRIUS Configuration: Selection Data for Load Feeders in Fuseless Designs" More information and assignment tables for self-assembly combinations for 400 V, 440 V, 480 V, 500 V, 550 V and 690 V	C	**3ZX1012-0RA21-0AB0**		1	1 unit	401

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SENTRON 8US busbar systems

Overview

Insulated three-phase busbar system

Three-phase busbar systems provide an easy, time-saving and clearly arranged means of feeding 3RA1 load feeders with screw terminals. Different versions are available for size S2 and can also be used for the various different types of motor starter protectors.

The busbars are suitable for between 2 and 5 feeders. However, any kind of extension is possible by clamping the tags of an additional busbar (rotated by 180°) underneath the terminals of the respective last motor starter protector.

The three-phase busbar systems are finger-safe. They are designed for any short-circuit stress which can occur at the output side of connected motor starter protectors.

The three-phase busbar systems can also be used to construct "Type E Starters" size S2 according to UL/CSA. Special feeder terminals must be used for this purpose, see Chapter 7 "Protection Equipment" ➞ "Motor Starter Protectors" ➞ "SIRIUS 3RV1 Motor Starter Protectors up to 100 A" ➞ "Accessories" ➞ "Busbar Accessories".

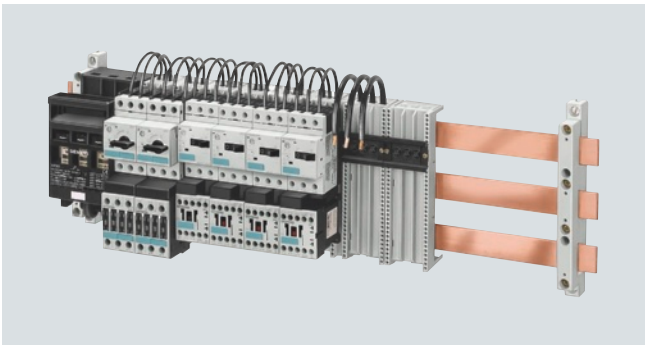
Busbar adapters for 40 mm and 60 mm systems

The load feeders are mounted directly with the aid of busbar adapters on busbar systems with 40 mm and 60 mm center-to-center clearance in order to save space and to reduce infeed times and costs.

Busbar adapters for busbar systems with 40 mm center-to-center clearance are suitable for copper busbars with a width of 12 mm to 15 mm, while those with 60 mm center-to-center clearance are suitable for copper busbars with a width of 12 mm to 30 mm. The busbars can be 4 to 5 mm or 10 mm thick.

The feeders are snapped onto the adapter and connected on the line side. This prepared unit is then plugged directly onto the busbar system, and is thus connected both mechanically and electrically at the same time.

"Selection and ordering data" see Chapter 7 "Protection Equipment" ➞ "Motor Starter Protectors" ➞ "SIRIUS 3RV1 Motor Starter Protectors up to 100 A" ➞ "Accessories" ➞ "Busbar Accessories".



SIRIUS motor starter protectors and load feeders with busbar adapters snapped onto busbars

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Overview

3RA6 fuseless compact feeders and infeed system for 3RA6



3RA62 reversing starters

Integrated functionality

The SIRIUS 3RA6 compact feeders are a generation of innovative load feeders with the integrated functionality of a motor starter protector, contactor and solid-state overload relay.
In addition, various functions of optional mountable accessories (e.g. auxiliary switches, surge suppressors) are already integrated in the SIRIUS compact feeder.

Applications

The SIRIUS compact feeders can be used wherever standard induction motors up to 32 A (approx. 15 kW/400 V) are directly started.

The compact feeders are not suitable for the protection of DC loads.

Approvals according to IEC, UL, CSA and CCC standards have been issued for the compact feeders.

Low variance of devices

Thanks to wide setting ranges for the rated current and wide voltage ranges, the equipment variance is greatly reduced compared to conventional load feeders.

Very high operational reliability

Through the high short-circuit breaking capacity and defined shut-down when the end of service life is reached means that the SIRIUS compact feeder achieves a very high level of operational reliability that would otherwise have only been possible with considerable additional outlay. This sets it apart from devices with similar functionality.

Safe disconnection

The auxiliary switches (NC contacts) of the 3RA6 compact feeders are designed as mirror contacts. It is thus possible to use the devices for safe disconnection, e.g. EMERGENCY-STOP, up to Category 2 (EN 954-1) and together with other redundancy switching devices up to Category 3 or 4.

Communications integration through AS-Interface

To enable communications integration through AS-Interface there is an AS-i add-on module available in several versions for mounting instead of the control circuit terminals on the SIRIUS compact feeder.

The design of the AS-i add-on module permits a group of up to 62 feeders with a total of four cables to be connected to the control system. This reduces wiring work considerably compared to the parallel wiring method.

Communications integration using IO-Link

Up to 4 compact feeders in IO-Link version (reversing and direct-on-line starters) can be connected together and conveniently linked to the IO-Link master through a standardized IO-Link connection. The SIRIUS 4SI electronic modules are used e.g. as IO-Link masters for connection to the SIMATIC ET 200S distributed I/O system.

The IO-Link connection enables a high density of information in the local range.

Details of the communications integration using IO-Link see Chapter 2 "Industrial Communication" ➞ "IO-Link".

The diagnostics data of the process collected by the 3RA6 compact feeder, e.g. short circuit, end of service life, limit position etc., are not only indicated on the compact feeder itself but also transmitted to the higher-level control system through IO-Link.

Thanks to the optionally available operator panel, which can be installed in the control cabinet door, it is easy to control the 3RA6 compact feeder with IO-Link from the control cabinet door.

Permanent wiring/easy replacement

Using the SIRIUS infeed system for 3RA6 (see page 8/76) it is possible to carry out the wiring in advance without a compact feeder needing to be connected.

A compact feeder is very easily replaced simply by pulling it out of the device without disconnecting the wiring.

Even with screw connections or mounting on a standard mounting rail there is no need to disconnect any wiring (on account of the removable main and control circuit terminals) in order to replace a compact feeder.

Consistent solution from the infeed to the motor feeder

The SIRIUS infeed system for 3RA6 with integrated PE bar is offered as a user-friendly possibility of feeding in summation currents up to 100 A with a maximum conductor cross-section of 70 mm² and connecting the motor cable directly without additional intermediate terminals.

Screw and spring-type connections

The SIRIUS compact feeders and the infeed system for 3RA6 are available with screw and spring-type terminals.

	Screw terminals
	Spring-type terminals
	The terminals are indicated in the corresponding tables by the symbols shown on orange backgrounds.

System configurator for engineering

A free system configurator is available to reduce further the amount of engineering work for selecting the required compact feeders and matching infeed.

Types of infeed for the 3RA6 fuseless compact feeders

On the whole, four different infeed possibilities are available:

- Parallel wiring
- Use of three-phase busbars (combination with SIRIUS motor starter protectors and SIRIUS contactors possible)
- 8US busbar adapters
- SIRIUS infeed system for 3RA6 (see page 8/76)

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General data

To comply with the clearance and creepage distances demanded according to UL 508 there are the following infeed possibilities:

Type of infeed	Feeder terminal (acc. to UL 508, type E)	Type
Parallel wiring	Terminal block for "Self-Protected Combination Motor Controller (Type E)"	**3RV29 28-1H**
Three-phase busbars	Three-phase infeed terminal for constructing "Type E Starters", UL 508	**3RV29 25-5EB**
Infeed systems for 3RA6	Infeed on left, 50/70 mm^2, screw terminal with 3 sockets, outgoing terminal with screw/spring-type connections, including PE bar	**3RA68 13-8AB** (screw terminals), **3RA68 13-8AC** (spring-type terminals)

SIRIUS 3RA6 compact feeders

The SIRIUS 3RA6 compact feeders are universal motor feeders according to IEC 60947-6-2. As control and protective switching devices (CPS) they can connect, convey and disconnect the thermal, dynamic and electrical loads from short-circuit currents up to I_q = 53 kA, i.e. they are practically weld-free. They combine the functions of a motor starter protector, a contactor and a solid-state overload relay in one enclosure. Direct-on-line starters with 45 mm width and reversing starters with 90 mm width are available as versions.

The reversing starter version comes with not only an internal electrical interlock but also with a mechanical interlock to prevent simultaneous actuation of both directions of rotation.

The compact feeders have isolating features in accordance with IEC 60947-2 and can be used as disconnector units (main control switch according to IEC 60204). Isolation is effected by moving the handle into the "OFF" position; disconnection by means of the control contacts is not sufficient.

3RA6 fuseless compact feeders are supplied for 5 different current setting ranges. The 3RA61 and 3RA62 have 3 control voltage ranges (AC/DC), the 3RA64 and 3RA65 have one control voltage range (DC):

Current setting range	At 400 V AC for induction motors Standard output *P*	Rated control supply voltage for 3RA61, 3RA62 compact feeders	3RA64, 3RA65 compact feeders for IO-Link
A	kW	V AC/DC	V DC
0.1 ... 0.4	0.09	24	24
0.32 ... 1.25	0.37	42 ... 70	
1 ... 4	1.5	110 ... 240	
3 ... 12	5.5		
8 ... 32	15		

Note:

The 3RA1 load feeders can be used for fuseless load feeders > 32 A up to 100 A.

The SENTRON 3VL circuit breakers and the SIRIUS 3RT contactors can be used for fuseless load feeders >100 A.

Operating conditions

The SIRIUS 3RA6 compact feeders are suitable for use in any climate. They are intended for use in enclosed rooms in which no severe operating conditions (such as dust, caustic vapors, hazardous gases) prevail. Suitable covers must be provided for installation in dusty and damp locations.

The SIRIUS compact feeders are generally designed to degree of protection IP20. The permissible ambient temperature during operation is -20 to +60 °C.

The rated short-circuit current I_{CS} according to IEC 60947-6-2 is 53 kA at 400 V.

Note:

The maximum permissible short-circuit currents of the device versions for the various forms of power supply and voltages are available on request from Technical Assistance:
Tel.: +49 (911) 8 95-5900
E-mail: technical-assistance@siemens.com.

Overload tripping times

The tripping time in the event of overload can be set on the device to normal starting conditions (CLASS 10) and to heavy starting conditions (CLASS 20). As the breaker mechanism still remains closed after an overload, resetting is possible by either local manual reset or auto reset after 3 minutes cooling time.

With autoreset there is no need to open the control cabinet.

Diagnostics options

The compact feeder provides the following diagnostics options:

- With LEDs
  - Connection to the control voltage
  - Position of the main contacts
- With mechanical display
  - Tripping due to overload
  - Tripping due to short circuit
  - Tripping due to malfunction (end of service life reached because of worn switching contacts or a worn switching mechanism or faults in the control electronics)

These states can also be evaluated in the higher-level control system:

- With parallel wiring using the integrated auxiliary and signaling switches of the compact starter
- With AS-Interface or IO-Link in even greater detail using the respective communication interface

Four complement versions for 3RA6 compact feeders

- For standard mounting rail or screw fixing:
  basic version including 1 pair of main circuit terminals and 1 pair of control circuit terminals
- For standard mounting rail or screw fixing when using the AS-i add-on module:
  without control circuit terminals because the AS-i add-on module is plugged on instead
- For use with the infeed system for 3RA6:
  without main circuit terminals because they are supplied with the infeed system and the expansion modules
- For use with the infeed system for 3RA6 and the AS-i add-on module: without terminal complement (also for reordering when replacing the compact starter)
- The control circuit terminals are always required by the compact starters for IO-Link; the main circuit terminals depend on the use of the infeed system.

More components of the 3RA6

Apart from the control supply voltage, "Overload" (1 CO) and "Short circuit / Function fault" (1 NO) signaling contacts are already integrated into the 3RA61/3RA62 – and lockable via two 6-pole removable control circuit terminals. The 3RA61 has two auxiliary contacts (1 NO + 1 NC) for displaying the position of the main contacts. Unlike the 3RA61 direct-on-line starter, the 3RA62 reversing starter has one auxiliary contact (1 NO) per direction of rotation per main contact.

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Available for the 3RA61 and 3RA64 direct-on-line starters is a slot for an optional auxiliary switch block (optionally 2 NO, 2 NC or 1 NO + 1 NC) and for the 3RA62 and 3RA65 reversing starters there are two slots (for auxiliary switch blocks see "Accessories" on page 8/69).

Unlike the direct-on-line starter, the 3RA62 reversing starter has one auxiliary contact (1 NO) per direction of rotation per main contact.

Positively-driven operation of the auxiliary contacts

Positively-driven operation between individual auxiliary circuits exists for the compact feeder in the version as a direct-on-line starter for parallel wiring (3RA61) between the auxiliary circuits of the NC contacts (NC 21-22) and the NO contacts (NO 13-14) in the basic unit.

In addition, the optional auxiliary switch block offers positively driven contacts in the version 3RA69 13-1A, each with one NC contact and one NO contact.

Order No. scheme

Digit of the Order No.	1st - 4th	5th	6th	7th		8th	9th	10th	11th	12th
	□□□□	□	□	□	–	□	□	□	□	□
SIRIUS 3RA6 compact feeders	**3 R A 6**									
Version (direct-on-line starter = 1, reversing starter = 2, direct-on-line starter for IO-Link = 4, reversing starter for IO-Link = 5, infeed system = 8, accessories = 9)		□								
Details of accessories			□	□						
Connection method (0 = without terminals, 1 = screw terminals, 2 = spring-type terminals)						□				
Setting range							□			
Rated control supply voltage								□	□	
Terminals complement version										□
Special versions										
Example	**3 R A 6**	**1**	**2**	**0**	**–**	**0**	**A**	**B**	**3**	**0**

Note:

The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

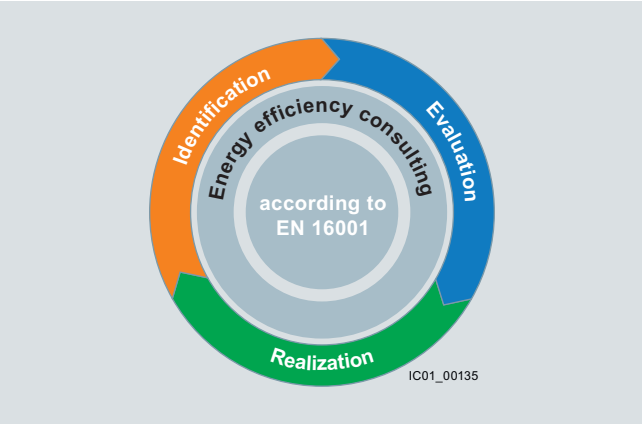
For your orders, please use the order numbers quoted in the catalog in the Selection and ordering data.

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General data

Benefits

Advantages through energy efficiency



Overview of the energy management process

We offer you a unique portfolio for efficient industrial energy management, using an energy management system that helps to optimally define your energy needs. We split up our industrial energy management into three phases – Identification, Evaluation and Realization – and we support you with the appropriate hardware and software solutions in every process phase.

The innovative products of the SIRIUS industrial controls portfolio can also make a substantial contribution to a plant's energy efficiency (see www.siemens.com/sirius/energysaving).

With the 3RA6 compact feeders, control cabinets heat up less because power losses have been minimized by operation:

- Lower intrinsic power loss (than comparable motor feeders with thermal overload trips) thanks to electronic current analysis
- Lower power losses (than conventional load feeders) because there is only one switching point for short circuit and operational switching
- Lower control circuit power losses (compared with conventional switching devices) as a result of electronic control of switching points
- Thanks to the above advantages, additional energy savings are possible because less cooling is required (and a more compact design is possible)

Product advantages

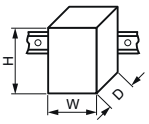
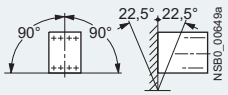
The SIRIUS 3RA6 compact feeders offer a number of benefits:

- Compact design saves space in the control cabinet
- Little planning and assembly work and far less wiring thanks to a single complete unit with one order number
- Little variance through 3 wide voltage ranges and 5 wide setting ranges for the rated current mean low stock levels
- High plant availability through integrated functionalities such as prevention of main contact welding and disconnection at end of service life
- Greater productivity through automatic device reset in case of overload and differentiated detection of overload and short circuit
- Easy checking of the wiring and testing of the motor direction prior to start-up thanks to optional "control kits"
- Speedy replacement of devices thanks to removable terminals with spring-type and screw connections in the main and control circuit
- Efficient power distribution through the related SIRIUS infeed system for 3RA6
- Direct connection of the motor feeder cable to the SIRIUS infeed system for 3RA6 thanks to integrated PE bar
- Connecting and looping through incoming feeders up to a cross-section of 70 mm^2
- When using the infeed system for 3RA6, possibility of directly connecting the motor cable without intermediate terminals
- Integration in Totally Integrated Automation thanks to the optional connection to AS-Interface or IO-Link

The SIRIUS 3RA6 compact feeders create the basis for high-availability and future-proof machine concepts.

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Technical specifications

			3RA61	3RA62	3RA64	3RA65
Type			**3RA61**	**3RA62**	**3RA64**	**3RA65**
Size			**S0**			
Number of poles			**3**			
Mechanics and environment						
Mounting dimensions (WxHxD)						
• Screw terminals		mm	45 x 170 x 165	90 x 170 x 165	45 x 170 x 165	90 x 170 x 165
• Spring-type terminals		mm	45 x 191 x 165	90 x 191 x 165	45 x 191 x 165	90 x 191 x 165
Depth from standard mounting rail		mm	160			
Permissible ambient temperature						
• For operation (permissible operational current see the following section "Electrical Specifications")		°C	-20 ... +60, With restriction up to +70			
• During storage		°C	-55 ... +80			
• During transport		°C	-55 ... +80			
Weight		kg	1.4	2.3 ... 2.4	1.3	2.3
Permissible mounting positions						
Shock resistance (sine-wave pulse)			a = 60 m/s² = 6 g with 10 ms; for every 3 shocks in all axes			
Vibratory load			f = 4 ... 5.8 Hz; d =15 mm; f = 5.8 ... 500 Hz; a = 20 m/s²;10 cycles			
Degree of protection	According to IEC 60947-1		IP20			
Installation altitude		m	Up to 2000 above sea level without restriction			
Relative air humidity		%	10 ... 90			
Pollution degree			3			
Electrical specifications						
Device standard			IEC 60947-6-2			
Maximum rated operational voltage U_e		V V	690 400 at 3RA62 50-.E... and 3RA65 00-.E... (reversing starter 32 A versions)			
Rated frequency		Hz	50/60			
Rated insulation voltage U_i (pollution degree 3)		V	690			
Rated impulse withstand voltage U_{imp}		kV	6			
Rated current I_e and setting range for overload release	0.1 ... 0.4 A 0.32 ...1.25 A 1 ... 4 A 3 ... 12 A 8 ... 32 A	A A A A A	0.4 1.25 4 12 32			
Permissible operational current of the compact feeder when several compact feeders are mounted side-by-side on a vertical standard mounting rail or in the infeed system for 3RA6						
• For a control cabinet inside temperature of	+40 °C	%	100			
• For a control cabinet inside temperature of	+60 °C	%	80			
Trip class (CLASS)	Acc. to IEC 60947-4-1		10/20			
Overload function Ratio of lower to upper current mark			1:4			
Rated service short-circuit breaking capacity I_{CS} at 50/60 Hz 400 V AC		kA	53			
Rated service short-circuit breaking capacity I_{CSIT} at 50/60 Hz 400/690 V AC in IT systems		kA	1.5			
Power loss $P_{v\ max}$ of all main current paths dependent on the rated current I_n (upper setting range)	0.4 A 1.25 A 4 A 12 A 32 A	mW mW W W W	10 100 1 1.8 5.4			
Max. switching frequency	AC-41 AC-43 AC-44	1/h 1/h 1/h	750 250 15			
No-load switching frequency		1/h	3 600		3 600, depending on the IO-Link communication time	
Touch protection	Acc. to IEC 61140		Finger-safe			
Isolating features of the compact feeder	Acc. to IEC 60947-3		Yes: Isolation is assured only by moving the handle into the "OFF" position.			
Main and EMERGENCY-STOP switch characteristics of the compact feeder and accessories	Acc. to IEC 60204		Yes			

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General data

Type Size Number of poles			3RA61 S0 3	3RA62	3RA64	3RA65
Electrical specifications (continued)						
Protective separation	According to IEC 60947-2					
Control circuit to auxiliary circuit						
• Horizontal standard mounting rail		V	Up to 400			
• Other mounting position		V	Up to 250			
Auxiliary circuit to auxiliary circuit						
• Horizontal standard mounting rail		V	Up to 400			
• Other mounting position		V	Up to 250			
Main circuit to auxiliary circuit						
• Any mounting position		V	Up to 400			
EMC interference immunity	According to IEC 60947-1		Corresponds to degree of severity 3			
Conductor-related interference	BURST acc. to IEC 61000-4-4					
• In the main circuit		kV	4		4	
• In the auxiliary circuit		kV	3		2	
Conductor-related interference	SURGE acc. to IEC 61000-4-5					
• In the main circuit						
- Conductor - Ground		kV	4		2	
- Conductor - Conductor		kV	2		1	
• In the auxiliary circuit						
- Conductor - Ground		kV	2		0.5[1]	
- Conductor - Conductor		kV	1		0.5[1]	
Auxiliary switches						
• Integrated						
- Position of the main contacts			1 NO + 1 NC	2 NO	1 NO + 1 NC	2 NO
- Overload/short circuit and malfunction signal			1 CO/1 NO			
• Expandable						
- Position of the main contacts			2 NO, 2 NC, 1 NO, 1 NC			
Surge suppressors			Integrated (Varistor)			
Electromagnetic operating mechanisms						
Control voltage		V	24 AC/DC		24 DC	
		V	42 ... 70 AC/DC		--	
		V	110 ... 240 AC/DC		--	
Frequency	At AC	Hz	50/60 (±5 %)			
Operating range			0.7 ... 1.25 U_s		0.85 ... 1.2 U_s	
No-load switching frequency		1/h	3 600			
Line protection	At 10 kA	mm^2	2.5	See let-through energy characteristic curves of the voltage versions on the Internet at www.siemens.com/industrial-controls/technical-assistance		
	At 50 kA	mm^2	4			
Shock resistance						
• Breaker mechanism OFF		g	25			
• Breaker mechanism ON		g	15			
Normal switching duty						
Making capacity			12 x I_n			
Breaking capacity			10 x I_n			
Switching capacity dependent on rated current	Up to 12 A	kW	5.5			
	Up to 32 A	kW	15			
Endurance in operating cycles						
• Electrical endurance	At I_e = 0.9 x I_n and 400 V		3 ... 10 000 000	2 x 3 ... 10 000 000	3 000 000	2 x 1500000

[1] To maintain maximum interference immunity in a harsh electromagnetic environment, additional overvoltage protection should be provided in the control circuit. A suitable answer is for example the Dehn Blitzductor BVT AD 24 V, Art. No. 918 402 or an equivalent protection element.
Manufacturer:
DEHN+SÖHNE GmbH+Co. KG
Hans-Dehn-Straße 1
Postfach 1640
D-92306 Neumarkt.

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Type		3RA61 20-.☐B3., 3RA62 50-.☐B3. ☐ = A, B, C or D Rated operational current ≤ 12 A				3RA61 20-.EB3., 3RA62 50-.EB3. Rated operational current 32 A			
Rated control supply voltage	**V**	**24 AC**		**24 DC**		**24 AC**		**24 DC**	
Inrush peak current	A	0.59		0.47		0.59		0.47	
Hold current	A	0.13		0.12		0.17		0.14	
Closed	W	2.8		2.9		3.5		3.1	
Operating times, typical									
• On	ms	<160		<140		<160		<140	
• Off	ms	<35		<35		<30		<30	
Type		3RA61 20-.☐E3., 3RA62 50-.☐E3. ☐ = A, B, C or D Rated operational current ≤ 12 A				3RA61 20-.EE3., 3RA62 50-.EE3. Rated operational current 32 A			
Rated control supply voltage	**V**	**42 AC**	**70 AC**	**42 DC**	**70 DC**	**42 AC**	**70 AC**	**42 DC**	**70 DC**
Inrush peak current	A	0.44	0.50	0.32	0.53	0.47	0.63	0.34	0.56
Hold current	A	0.08	0.08	0.06	0.04	0.09	0.08	0.09	0.07
Closed	W	2.6	3.1	2.2	2.2	2.7	3.2	3.6	4.2
Operating times, typical									
• On	ms	<160	<140	<160	<140	<150	<140	<150	<140
• Off	ms	<35	<50	<35	<40	<30	<40	<30	<40
Type		3RA61 20-.☐P3., 3RA62 50-.☐P3. ☐ = A, B, C or D Rated operational current ≤ 12 A				3RA61 20-.EP3., 3RA62 50-.EP3. Rated operational current 32 A			
Rated control supply voltage	**V**	**110 AC**	**240 AC**	**110 DC**	**240 DC**	**110 AC**	**240 AC**	**110 DC**	**240 DC**
Inrush peak current	A	0.24	0.40	0.17	0.29	0.24	0.40	0.17	0.29
Hold current	A	0.06	0.08	0.03	0.02	0.06	0.07	0.04	0.03
Closed	W	3.8	6	3.1	5.1	3.7	5.2	3.4	5.8
Operating times, typical									
• On	ms	<160	<140	<150	<140	<160	<140	<150	<140
• Off	ms	<50	<80	<50	<70	<40	<60	<40	<60
Type		3RA64 00-.☐B4., 3RA65 00-.☐B4. ☐ = A, B, C or D Rated operational current ≤ 12A				3RA64 00-.EB4., 3RA65 00-.EB4. Rated operational current 32 A			
Rated control supply voltage	**V**	**24 DC**				**24 DC**			
Inrush peak current	A	0.39				0.53			
Hold current	A	0.13				0.15			
Closed	W	2.9				3.4			
Operating times, typical[1)]									
• On	ms	<140				<140			
• Off	ms	<35				<30			

1) Plus IO-Link communication

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General data

Type			**3RA61**	**3RA62**	**3RA64**	**3RA65**
Size			**S0**			
Number of poles			**3**			
Control circuit						
Rated operational voltage						
• External auxiliary switch block		V	400/690			
• Internal auxiliary switch		V	400/690			
• Short-circuit signaling switch		V	400			
• Overload signaling switch		V	400			
Switching capacity						
• External auxiliary switch block	**AC-15**					
	• Up to U_e = 230 V	A	6			
	• Up to U_e = 400 V	A	3			
	• Up to U_e = 289/500 V	A	2			
	• Up to U_e = 400/690 V	A	1			
	DC-13					
	• Up to U_e = 24 V	A	6			
	• Up to U_e = 60 V	A	0.9			
	• Up to U_e = 125 V	A	0.55			
	• Up to U_e = 250 V	A	0.27			
• Internal auxiliary switch	**AC-15**					
	• Up to U_e = 230 V	A	6			
	• Up to U_e = 400 V	A	3			
	• Up to U_e = 289/500 V	A	2			
	• Up to U_e = 400/690 V	A	1			
	DC-13					
	• Up to U_e = 24 V	A	10			
	• Up to U_e = 60 V	A	2			
	• Up to U_e = 125 V	A	1			
	• Up to U_e = 250 V	A	0.27			
	• Up to U_e = 480 V	A	0.1			
• Signaling switches	**AC-15**					
	• Up to U_e = 230 V	A	3			
	• Up to U_e = 400 V	A	1			
	DC-13					
	• Up to U_e = 24 V	A	2			
	• Up to U_e = 250 V	A	0.11			
External auxiliary switch blocks, internal auxiliary switches						
Endurance in operating cycles						
• Mechanical endurance			10 000 000		3 000 000	
• Electrical endurance	**AC-15, 230 V**					
	• Up to 6 A		200 000			
	• Up to 3 A		500 000			
	• Up to 1 A		2 000 000			
	• Up to 0.3 A		10 000 000			
	DC-13, 24 V					
	• Up to 6 A		30 000			
	• Up to 3 A		100 000			
	• Up to 0.5 A		2 000 000			
	• Up to 0.2 A		10 000 000			
	DC-13, 110 V					
	• Up to 1 A		40 000			
	• Up to 0.55 A		100 000			
	• Up to 0.3 A		300 000			
	• Up to 0.1 A		2 000 000			
	• Up to 0.04 A		10 000 000			
	DC-13, 220 V					
	• Up to 0.3 A		110 000			
	• Up to 0.1 A		650 000			
	• Up to 0.05 A		2 000 000			
	• Up to 0.018 A		10 000 000			
Contact reliability	At 17 V and 5 mA	Operating cycles	1 incorrect switching operation per 100 000 000			
Short-circuit protection						
• Short-circuit current $I_K \leq$ 1.1 kA	Fuse links, gG operational class - NEOZED Type 5SE - DIAZED Type 5SB - LV HRC Type 3NA	A	10			
• Short-circuit current $I_K <$ 400 A	Miniature circuit breaker up to 230 V with C characteristic	A	10			

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Type			**3RA61**	**3RA62**	**3RA64**	**3RA65**
Size			**S0**			
Number of poles			**3**			
Signaling switches						
Endurance in operating cycles						
• Mechanical endurance			20 000			
• Electrical endurance AC-15	At 230 V and 3 A		6 050			
Contact reliability	At 17 V and 5 mA	Operating cycles	1 incorrect switching operation per 100 000 000			
Short-circuit protection						
• Short-circuit current $I_K \leq 1.1$ kA	Fuse links, gG operational class - NEOZED Type 5SE - DIAZED Type 5SB - LV HRC Type 3NA	A	6			
• Short-circuit current $I_K < 400$ A	Miniature circuit breaker up to 230 V with C characteristic	A	6			
Overload (short-circuit current $I_K \leq 1.1$ kA)	Fuse links, gG operational class - NEOZED Type 5SE - DIAZED Type 5SB - LV HRC Type 3NA	A	4			

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Selection and ordering data

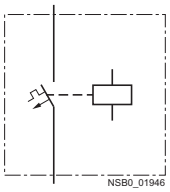


3RA61 20-1CB32



3RA61 20-2EB32

Direct-on-line start



Width 45 mm

Rated short-circuit current I_{CS} = 53 kA at 400 V

A set of 3RA69 40-0A adapters is required for screw fixing.

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 42F

Standard induction motor 4-pole at 400 V AC[1] Standard output *P*	Setting range for solid-state overload release	Instantaneous overcurrent release	DT[2]	Order No. Price per PU Configurator	DT[2]	Order No. Price per PU Configurator
kW	A	A				
For use with the infeed system for 3RA6 and with the AS-i add-on module or as a replacement device, without main and control circuit terminals						
0.09	0.1 ... 0.4	56	C	**3RA61 20-0A□30**		**--**
0.37	0.32 ... 1.25	56	C	**3RA61 20-0B□30**		**--**
1.5	1 ... 4	56	A	**3RA61 20-0C□30**		**--**
5.5	3 ... 12	168	A	**3RA61 20-0D□30**		**--**
15	8 ... 32	448	A	**3RA61 20-0E□30**		**--**
				Screw terminals		**Spring-type terminals**
For standard mounting rail or screw fixing, including 1 pair of main circuit terminals and 1 pair of control circuit terminals						
0.09	0.1 ... 0.4	56	A	**3RA61 20-1A□32**	A	**3RA61 20-2A□32**
0.37	0.32 ... 1.25	56	A	**3RA61 20-1B□32**	A	**3RA61 20-2B□32**
1.5	1 ... 4	56	A	**3RA61 20-1C□32**	A	**3RA61 20-2C□32**
5.5	3 ... 12	168	A	**3RA61 20-1D□32**	A	**3RA61 20-2D□32**
15	8 ... 32	448	A	**3RA61 20-1E□32**	A	**3RA61 20-2E□32**
For use in the infeed system for 3RA6, without main circuit terminals with 1 pair of control circuit terminals						
0.09	0.1 ... 0.4	56	C	**3RA61 20-1A□33**	C	**3RA61 20-2A□33**
0.37	0.32 ... 1.25	56	A	**3RA61 20-1B□33**	C	**3RA61 20-2B□33**
1.5	1 ... 4	56	A	**3RA61 20-1C□33**	A	**3RA61 20-2C□33**
5.5	3 ... 12	168	A	**3RA61 20-1D□33**	A	**3RA61 20-2D□33**
15	8 ... 32	448	A	**3RA61 20-1E□33**	A	**3RA61 20-2E□33**
Order No. supplements for rated control supply voltage						
• 24 V AC/DC				**B**		**B**
• 42 ... 70 V AC/DC				**E**		**E**
• 110 ... 240 V AC/DC				**P**		**P**
For standard mounting rail or screw fixing when using the AS-i add-on module with 1 pair of main circuit terminals without control circuit terminals Rated control supply voltage 24 V AC/DC						
0.09	0.1 ... 0.4	56	C	**3RA61 20-1AB34**	C	**3RA61 20-2AB34**
0.37	0.32 ... 1.25	56	C	**3RA61 20-1BB34**	C	**3RA61 20-2BB34**
1.5	1 ... 4	56	C	**3RA61 20-1CB34**	C	**3RA61 20-2CB34**
5.5	3 ... 12	168	A	**3RA61 20-1DB34**	C	**3RA61 20-2DB34**
15	8 ... 32	448	C	**3RA61 20-1EB34**	C	**3RA61 20-2EB34**

For online configurator see www.siemens.com/sirius/configurators.

1) Selection depends on the concrete startup and rated data of the protected motor.

2) The delivery time classes apply for a rated control supply voltage of 24 V AC/DC. For the other rated control supply voltages, longer delivery times are possible.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Selection and ordering data

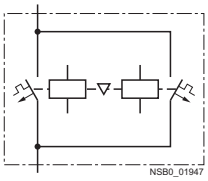


3RA62 50-1CP32



3RA62 50-2DP32

Reversing duty



Width 90 mm

Rated short-circuit current I_{CS} = 53 kA at 400 V

Two sets of 3RA69 40-0A adapters are required for screw fixing.

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 42F

Standard induction motor 4-pole at 400 V AC[1] Standard output *P*	Setting range for electronic overload release	Instantaneous overcurrent release	DT[2]	Order No. Configurator	Price per PU	DT[2]	Order No. Configurator	Price per PU
kW	A	A						
For use with the infeed system for 3RA6 and with the AS-i add-on module or as a replacement device, without main and control circuit terminals								
0.09	0.1 ... 0.4	56	C	**3RA62 50-0A□30**			**--**	
0.37	0.32 ... 1.25	56	C	**3RA62 50-0B□30**			**--**	
1.5	1 ... 4	56	C	**3RA62 50-0C□30**			**--**	
5.5	3 ... 12	168	C	**3RA62 50-0D□30**			**--**	
15	8 ... 32	448	C	**3RA62 50-0E□30**			**--**	
				Screw terminals			**Spring-type terminals**	
For standard mounting rail or screw fixing, including 1 pair of main circuit terminals and 1 pair of control circuit terminals								
0.09	0.1 ... 0.4	56	C	**3RA62 50-1A□32**		C	**3RA62 50-2A□32**	
0.37	0.32 ... 1.25	56	A	**3RA62 50-1B□32**		A	**3RA62 50-2B□32**	
1.5	1 ... 4	56	C	**3RA62 50-1C□32**		A	**3RA62 50-2C□32**	
5.5	3 ... 12	168	A	**3RA62 50-1D□32**		A	**3RA62 50-2D□32**	
15	8 ... 32	448	C	**3RA62 50-1E□32**		C	**3RA62 50-2E□32**	
For use in the infeed system for 3RA6, without main circuit terminals with 1 pair of control circuit terminals								
0.09	0.1 ... 0.4	56	C	**3RA62 50-1A□33**		C	**3RA62 50-2A□33**	
0.37	0.32 ... 1.25	56	C	**3RA62 50-1B□33**		C	**3RA62 50-2B□33**	
1.5	1 ... 4	56	C	**3RA62 50-1C□33**		C	**3RA62 50-2C□33**	
5.5	3 ... 12	168	C	**3RA62 50-1D□33**		C	**3RA62 50-2D□33**	
15	8 ... 32	448	C	**3RA62 50-1E□33**		C	**3RA62 50-2E□33**	
Order No. supplements for rated control supply voltage								
• 24 V AC/DC				**B**			**B**	
• 42 ... 70 V AC/DC				**E**			**E**	
• 110 ... 240 V AC/DC				**P**			**P**	
For standard mounting rail or screw fixing when using the AS-i add-on module with 1 pair of main circuit terminals without control circuit terminals Rated control supply voltage 24 V AC/DC								
0.09	0.1 ... 0.4	56	C	**3RA62 50-1AB34**		C	**3RA62 50-2AB34**	
0.37	0.32 ... 1.25	56	C	**3RA62 50-1BB34**		C	**3RA62 50-2BB34**	
1.5	1 ... 4	56	A	**3RA62 50-1CB34**		C	**3RA62 50-2CB34**	
5.5	3 ... 12	168	C	**3RA62 50-1DB34**		C	**3RA62 50-2DB34**	
15	8 ... 32	448	C	**3RA62 50-1EB34**		C	**3RA62 50-2EB34**	

For online configurator see www.siemens.com/sirius/configurators.

1) Selection depends on the concrete startup and rated data of the protected motor.

2) The delivery time classes apply for a rated control supply voltage of 24 V AC/DC. For the other rated control supply voltages, longer delivery times are possible.

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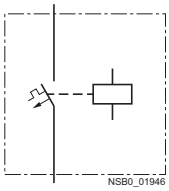
3RA64, 3RA65 compact feeders for IO-Link
3RA64 direct-on-line starters

Selection and ordering data



3RA64 with 3RA69 11-1A auxiliary switch block

Direct-on-line start



Rated control supply voltage 24 V DC

Width 45 mm

Rated short-circuit current I_{CS} = 53 kA at 400 V

A set of 3RA69 40-0A adapters is required for screw fixing.

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 42F

Standard induction motor 4-pole at 400 V AC[1] Standard output *P*	Setting range for electronic overload release	Instantaneous overcurrent release	DT	Order No. Price per PU	DT	Order No. Price per PU
				Configurator		**Configurator**
kW	A	A		**Screw terminals**		**Spring-type terminals**
For standard mounting rail or screw fixing, including 1 pair of main circuit terminals and 1 pair of control circuit terminals						
0.09	0.1 ... 0.4	56	C	**3RA64 00-1AB42**	C	**3RA64 00-2AB42**
0.37	0.32 ... 1.25	56	A	**3RA64 00-1BB42**	A	**3RA64 00-2BB42**
1.5	1 ... 4	56	A	**3RA64 00-1CB42**	A	**3RA64 00-2CB42**
5.5	3 ... 12	168	A	**3RA64 00-1DB42**	A	**3RA64 00-2DB42**
15	8 ... 32	448	C	**3RA64 00-1EB42**	C	**3RA64 00-2EB42**
For use in the infeed system for 3RA6, without main circuit terminals with 1 pair of control circuit terminals						
0.09	0.1 ... 0.4	56	C	**3RA64 00-1AB43**	C	**3RA64 00-2AB43**
0.37	0.32 ... 1.25	56	A	**3RA64 00-1BB43**	A	**3RA64 00-2BB43**
1.5	1 ... 4	56	A	**3RA64 00-1CB43**	A	**3RA64 00-2CB43**
5.5	3 ... 12	168	A	**3RA64 00-1DB43**	A	**3RA64 00-2DB43**
15	8 ... 32	448	C	**3RA64 00-1EB43**	C	**3RA64 00-2EB43**

For online configurator see www.siemens.com/sirius/configurators.

1) Selection depends on the concrete startup and rated data of the protected motor.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

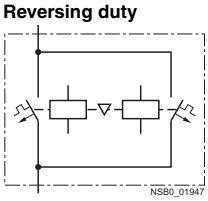
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Selection and ordering data



3RA65.with 3RA69 11-1A auxiliary switch blocks

Reversing duty



Rated control supply voltage 24 V DC

Width 90 mm

Rated short-circuit current I_{CS} = 53 kA at 400 V

Two sets of 3RA69 40-0A adapters are required for screw fixing.

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 42F

Standard induction motor 4-pole at 400 V AC[1] Standard output *P*	Setting range for electronic overload release	Instantaneous overcurrent release	DT	Order No. Price per PU	DT	Order No. Price per PU
				Configurator		**Configurator**
				Screw terminals		**Spring-type terminals**
kW	A	A				
For standard mounting rail or screw fixing, including 1 pair of main circuit terminals and 1 pair of control circuit terminals						
0.09	0.1 ... 0.4	56	C	**3RA65 00-1AB42**	C	**3RA65 00-2AB42**
0.37	0.32 ... 1.25	56	A	**3RA65 00-1BB42**	A	**3RA65 00-2BB42**
1.5	1 ... 4	56	A	**3RA65 00-1CB42**	A	**3RA65 00-2CB42**
5.5	3 ... 12	168	A	**3RA65 00-1DB42**	A	**3RA65 00-2DB42**
15	8 ... 32	448	C	**3RA65 00-1EB42**	C	**3RA65 00-2EB42**
For use in the infeed system for 3RA6, without main circuit terminals with 1 pair of control circuit terminals						
0.09	0.1 ... 0.4	56	C	**3RA65 00-1AB43**	C	**3RA65 00-2AB43**
0.37	0.32 ... 1.25	56	A	**3RA65 00-1BB43**	A	**3RA65 00-2BB43**
1.5	1 ... 4	56	A	**3RA65 00-1CB43**	A	**3RA65 00-2CB43**
5.5	3 ... 12	168	A	**3RA65 00-1DB43**	A	**3RA65 00-2DB43**
15	8 ... 32	448	C	**3RA65 00-1EB43**	C	**3RA65 00-2EB43**

For online configurator see www.siemens.com/sirius/configurators.

1) Selection depends on the concrete startup and rated data of the protected motor.

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Accessories

Overview

Accessories for SIRIUS 3RA6 compact feeders

The following accessories are available specially for the 3RA6 compact feeders:

- AS-i add-on module: see page 8/74 onwards "AS-interface add-on modules"
- External auxiliary switch blocks: Snap-on auxiliary switch as versions 2 NO, 2 NC and 1 NO + 1 NC with screw or spring-type connections; the contacts of the auxiliary switch block open and close jointly with the main contacts of the compact feeder. The NC contacts are designed as mirror contacts.
- Control kit: aid for manually closing the main contacts in order to check the wiring and motor direction under conditions of short-circuit protection
- Adapter for screw fixing the compact feeder, including push-in lugs
- Main circuit terminals: Available with screw and spring-type terminals
- Main circuit terminals for mixed connection method:
  With the main circuit terminals mixed connection method it is also possible in the main circuit to switch from screw terminals on the line side to spring-type terminals on the outgoing side. This enables for example the side-by-side mounting of several compact feeders and their cost-efficient connection using three-phase busbars on the infeed side. The motors are then connected directly by the quick and reliably contacting spring-type connection method.

Accessories for UL applications

The terminal block for "Self-Protected Combination Motor Controller", type E is available for complying with the clearance and creepage distances demanded according to UL 508.

Accessories for infeed using three-phase busbar systems

The three-phase busbars can be used as an easy, time-saving and clearly arranged means of feeding SIRIUS 3RA6 compact feeders with screw connection. Motor starter protector sizes S00 and S0 can also be integrated.

The busbars are suitable for between 2 and 5 devices. However, any kind of extension up to a maximum summation current of 63 A is possible by clamping the tags of an additional busbar (rotated by 180°) underneath the terminals of the respective last motor starter protector.

A connecting piece is required for the combination with 3RV1 motor starter protector size S00. Motor starter protectors S00 and S0 of the 3RV2 series can be combined in any way (without a special connecting piece). The motor starter protectors are supplied by appropriate feeder terminals. Special feeder terminals are required for constructing "Type E Starters" according to UL/CSA.

The three-phase busbar systems are finger-safe but empty connection tags must be fitted with covers. They are designed for any short-circuit stress which can occur at the output side of connected SIRIUS 3RA6 compact feeders or motor starter protectors.

Busbar adapters for 60 mm systems

The compact starters are mounted directly with the aid of busbar adapters on busbar systems with 60 mm center-to-center clearance in order to save space and to reduce infeed times and costs. These feeders are suitable for copper busbars with a width from 12 to 30 mm. The busbars can be 4 to 5 mm or 10 mm thick.

The 8US busbar system can be loaded with a maximum summation current of 630 A.

The "reversing starter" version requires a device holder along side the busbar adapter for lateral mounting.

The compact feeders are snapped onto the adapter and connected on the line side. This prepared unit is then plugged directly onto the busbar system, and is thus connected both mechanically and electrically at the same time.

For more accessories such as incoming and outgoing terminals, flat copper profiles etc., see Catalog LV 10.1.

Accessories for operation with closed control cabinet doors

Door-coupling rotary operating mechanisms for standard and emergency-stop applications are available for operating the compact feeder with closed control cabinet doors.

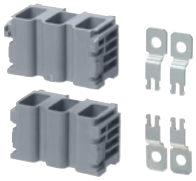
Accessories for SIRIUS 3RA6 compact feeders in IO-Link version

The following accessories are available specially for the 3RA64, 3RA65 compact feeders:

- The 4SI SIRIUS electronic module as IO-Link master allows for the simple and economical connection of SIRIUS controls with IO-Link (e.g. up to four groups of 4 compact starters) to the multifunctional SIMATIC ET 200S distributed I/O system.
- Additional connection cables for side-by-side mounting of up to 4 compact feeders
- Operator panel for on-site control and diagnostics of up to 4 compact feeders coupled to each other

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Selection and ordering data

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories specially for 3RA6 compact feeders							
 3RA69 50-0A	**Control kit** For mechanical actuation of the compact feeder	A	**3RA69 50-0A**		1	1 unit	42F
 3RA69 40-0A	**Adapters for screw fixing the compact feeder** (set including push-in lugs) Direct-on-line starters require one set, reversing starters two sets.	A	**3RA69 40-0A**		1	1 unit	42F
	Screw terminals						
 3RA69 11-1A	**Auxiliary switch blocks for compact feeders**						
	• 2 NO	A	**3RA69 11-1A**		1	1 unit	42F
	• 2 NC	A	**3RA69 12-1A**		1	1 unit	42F
	• 1 NO +1 NC (these auxiliary contacts are positively driven.)	A	**3RA69 13-1A**		1	1 unit	42F
 3RA69 20-1A	**Main circuit terminals** (incoming and outgoing side)	A	**3RA69 20-1A**		1	1 unit	42F
	Control circuit terminals						
 3RA69 20-1B	• For 3RA61	A	**3RA69 20-1B**		1	1 unit	42F
	• For 3RA62	A	**3RA69 20-1C**		1	1 unit	42F
	Spring-type terminals						
 3RA69 11-2A	**Auxiliary switch blocks for compact feeders**						
	• 2 NO	A	**3RA69 11-2A**		1	1 unit	42F
	• 2 NC	A	**3RA69 12-2A**		1	1 unit	42F
	• 1 NO +1 NC (these auxiliary contacts are positively driven.)	A	**3RA69 13-2A**		1	1 unit	42F
 3RA69 20-2A	**Main circuit terminals** (incoming and outgoing side)	A	**3RA69 20-2A**		1	1 unit	42F
	Control circuit terminals						
 3RA69 20-2B	• For 3RA61	A	**3RA69 20-2B**		1	1 unit	42F
	• For 3RA62	A	**3RA69 20-2C**		1	1 unit	42F

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Accessories

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories specially for 3RA6 compact feeders (continued)						
 3RA69 20-3A **Main circuit terminals mixed connection method** 1 set comprises: • 1 joint block on the line side with screw terminals • 1 joint block on the outgoing side with spring-type terminals	C	**3RA69 20-3A**		1	1 unit	42F

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories especially for 3RA64, 3RA65 Compact Feeders for IO-Link						
 3RA69 31-0A **Additional connection cables (flat) for side-by-side mounting of up to 4 compact starters**						
• 10-pole						
- 8 mm[1]	A	**3RA69 32-0A**		1	5 units	42F
- 200 mm[1]	A	**3RA69 33-0B**		1	5 units	42F
• 14-pole						
- 8 mm[2]	A	**3RA69 31-0A**		1	5 units	42F
- 200 mm	A	**3RA69 33-0C**		1	5 units	42F
 3RA69 35-0A **Operator panels (set)** • 1 operator panel • 1 enabling module • 1 interface cover • 1 fixing terminal	A	**3RA69 35-0A**		1	1 unit	42F
Enabling modules (replacement)	A	**3RA69 36-0A**		1	1 unit	42F
Interface covers (replacement)	A	**3RA69 36-0B**		1	5 units	42F
Connection cable (round) for connecting the operator panel 10-pole, 2 000 mm	A	**3RA69 33-0A**		1	1 unit	42F

[1] 10-pole connection cables are required for EMERGENCY-STOP group concepts.

[2] Is included in the scope of supply of the SIRIUS 3RA6 compact starter in IO-Link version.

Matching IO-Link masters see Chapter 2 "Industrial Communication" → "IO-Link" → "Masters".

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Terminals for "Self-Protected Combination Motor Controllers (Type E)" acc. to UL 508 for infeed through parallel wiring with compact feeders						
 3RV29 28-1H Note: UL 508 demands 1-inch clearance and 2-inch creepage distance at line side for "Combination Motor Controller Type E". Terminal blocks are not required for use according to CSA. These terminal blocks cannot be used in combination with 3RV19 .5 three-phase busbars. **Terminal blocks type E** For extended clearance and creepage distances (1 and 2 inch)	►	**3RV29 28-1H**		1	1 unit	41E

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Number of compact feeders and motor starter protectors that can be connected Without lateral accessories	Modular spacing	Rated current I_n at 690 V	For motor starter protectors	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	mm	A	Size						
Three-phase busbars for infeed with 3RA6									
For feeding several compact feeders and/or motor starter protectors with screw terminals, mounted side by side on standard mounting rails, insulated, with touch protection.									
2	45	63	S00, S0[1]	▶	**3RV19 15-1AB**		1	1 unit	41E
3	45	63	S00, S0[1]	▶	**3RV19 15-1BB**		1	1 unit	41E
4	45	63	S00, S0[1]	▶	**3RV19 15-1CB**		1	1 unit	41E
5	45	63	S00, S0[1]	▶	**3RV19 15-1DB**		1	1 unit	41E


3RV19 15-1AB


3RV19 15-1BB


3RV19 15-1CB


3RV19 15-1DB

[1] Not suitable for 3RV11/3RV21 motor starter protectors for motor protection with overload relay function and for 3RV17/3RV27 and 3RV18/3RV28 circuit breakers according to UL 489 / CSA C22.2 No.5-02. Joint clamping of 3RV1 motor starter protector sizes S00 and S0 is not possible on account of the different modular spacings and the different height of the terminals. The 3RV19 15-5DB connecting piece is available for connecting the compact feeders to the 3RV1 motor starter protector size S00. Motor starter protectors S00/S0 of the 3RV2 series can be jointly clamped; no connecting piece has to be used.

Version	Modular spacing	For motor starter protectors	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	mm	Size						
Covers for connection tags of the three-phase busbars								
Touch protection for empty positions	--	S00, S0	▶	**3RV19 15-6AB**		1	10 units	41E


3RV19 15-6AB

Conductor cross-section: Solid or stranded	Conductor cross-section: Finely stranded with end sleeve	Conductor cross-section: AWG cables, solid or stranded	Tightening torque	For compact feeders and motor starter protectors	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
mm²	mm²	AWG	Nm	Size						
Three-phase feeder terminals for three-phase busbars[1]										
Connection from top										
2.5 ... 25	4 ... 16	10-4	4	S0	▶	**3RV19 25-5AB**		1	1 unit	41E
Connection from below[2]										
2.5 ... 25	4 ... 16	10-4	Input: 4; Output: 2 ... 2.5	S00, S0	▶	**3RV29 15-5B**		1	1 unit	41E
Three-phase feeder terminals for constructing "Type E Starters" according to UL 508 for three-phase busbars										
Connection from top										
2.5 ... 25	4 ... 16	10-4	--	S0	A	**3RV29 25-5EB**		1	1 unit	41E


3RV19 25-5AB


3RV29 15-5B

[1] The 3RV29 25-5AB three-phase feeder terminals cannot be used with the 3RA6.

[2] This terminal is connected in place of a switch, please take the space requirement into account.

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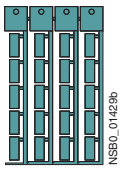
Accessories

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Busbar adapters for 60 mm systems						
 8US12 11-1NS10 For flat copper profiles according to DIN 46433 Width: 12 ... 30 mm Thickness: 4 ... 5 mm or 10 mm	►	**8US12 11-1NS10**		1	1 unit	143
Device holders for lateral mounting along side the busbar adapter for 60 mm systems						
 8US12 50-1AA10 Required in addition to the busbar adapter for mounting a reversing starter	►	**8US12 50-1AA10**		1	1 unit	143

Version	Color of handle	Version of extension shaft	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		mm						
Door-coupling rotary operating mechanisms for operating the compact feeder with closed control cabinet doors								
 3RV29 26-0B The door-coupling rotary operating mechanisms consist of a knob, a coupling driver and a 130/330 mm long extension shaft (6 mm x 6 mm). The door-coupling rotary operating mechanisms are designed to degree of protection IP65. The door interlocking prevents accidental opening of the control cabinet door in the ON position of the motor starter protector. The OFF position can be locked with up to 3 padlocks.								
Door-coupling rotary operating mechanisms	Black	130	►	**3RV29 26-0B**		1	1 unit	41E
EMERGENCY-STOP door-coupling rotary operating mechanisms	Red/yellow	130	►	**3RV29 26-0C**		1	1 unit	41E

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Tools for opening spring-type terminals							
 3RA29 08-1A	**Screwdrivers** For all SIRIUS devices with spring-type terminals		**Spring-type terminals**				
	Length approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray/black, partially insulated	A	**3RA29 08-1A**		1	1 unit	41B
Blank labels							
 3RT19 00-1SB20	**Unit labeling plates**[1] for SIRIUS devices 20 mm x 7 mm, pastel turquoise	D	**3RT19 00-1SB20**		100	340 units	41B
Documentation[2]							
	System manual SIRIUS Compact Feeders and Accessories German	X	**3RA69 91-0A**		1	1 unit	401

1) PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH www.murrplastik.de.

2) This manual and other language versions are currently available from the download center of the Service & Support portal at https://support.automation.siemens.com/WW/view/en/27136554/133300.

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Add-on modules for AS-Interface

Overview

Various AS-i add-on modules are available for communication of the 3RA6 compact feeder with the control system using AS-Interface:

- Standard version
- With two local inputs
- With two free external inputs
- With one free external input and one free external output
- With two free external outputs
- For local control

The AS-i add-on modules can be combined only in connection with compact feeders with a rated control supply voltage of 24 V AC/DC.

AS-i add-on module for on-site controller

With this new module it is also possible for the connected compact feeder to be operated directly using simple switches, i.e. without recourse to AS-i Communication, if required.

"Automatic" mode

NC contacts can be connected to the inputs Y2 and Y4 through the local terminals on the AS-i add-on module. If the "+" connections are connected simultaneously to both local inputs, the AS-i add-on module will be in "Automatic" mode, i.e. it will communicate with the control system through AS-Interface.

On-site control

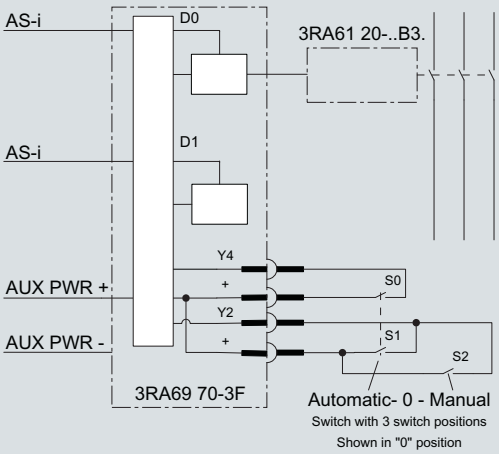
Opening the two inputs Y2 and Y4 will result in the direct disconnection of the compact feeder. Operation through AS-i Communication is ended and the compact feeder can now be switched on and off directly using NO contacts (one NO contact per direction of rotation on the reversing starter).

"LED AUX Power" must light up green, the 24 V DC supply must be assured and the AS-i control supply voltage must no longer be applied.

Resetting to "Automatic" mode

Simultaneous application of a "1" signal at the local inputs. The availability bit DI 0 is switched to a "1" signal.

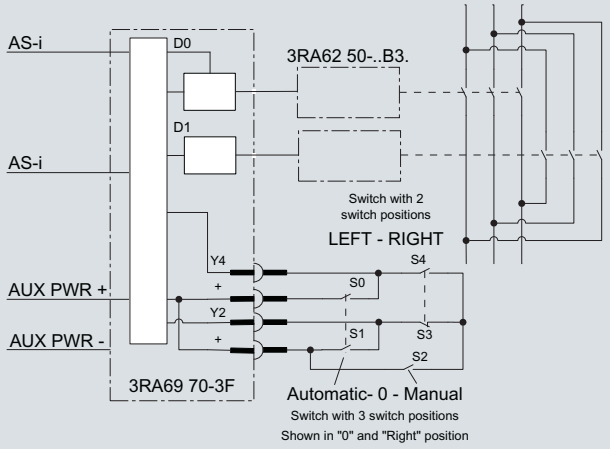
If AS-i Communication is reset, the motor is first switched off and then on again when requested by the control system.



Switch with 3 switch positions			
Switch	Automatic	0	Manual
S0	Closed	Open	Open
S1	Closed	Open	Open
S2	Open	Open	Closed

NSB0_02096

Circuit example for controlling a 3RA61 20 direct-on-line starter using an AS-i add-on module for on-site control



Switch with 3 switch positions			
Switch	Automatic	0	Manual
S0	Closed	Open	Open
S1	Closed	Open	Open
S2	Open	Open	Closed

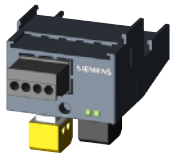
Switch with 2 switch positions		
Switch	Left	Right
S3	Open	Closed
S4	Closed	Open

NSB0_02097

Circuit example for controlling a 3RA62 50 reversing line starter using an AS-i add-on module for on-site control

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Selection and ordering data

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
AS-i add-on modules							
 3RA69 70-3A	**Standard version** For communication of the compact feeder with the control system using AS-Interface	A	**3RA69 70-3A**		1	1 unit	42F
	With two local inputs For safe disconnection through local safety relays, e.g. cable-operated switches	A	**3RA69 70-3B**		1	1 unit	42F
 3RA69 70-3B to -3F	**With two free external inputs** Replaces the digital standard inputs "Motor On" and "Group warning"	A	**3RA69 70-3C**		1	1 unit	42F
	With one free external input and one free external output Replaces the digital standard input "Group warning"	A	**3RA69 70-3D**		1	1 unit	42F
	With two free external outputs Only for direct-on-line starters, replaces the digital standard output "Motor left"	A	**3RA69 70-3E**		1	1 unit	42F
	For local control Control of the compact feeder optionally using AS-Interface or local switches	A	**3RA69 70-3F**		1	1 unit	42F
Spare parts for AS-i add-on modules							
 	**Connectors for data and auxiliary supply cable** with 2 insulation piercing connecting devices for standard litz wires 2 x 0.5 ... 0.75 mm^2						
	• Flat, yellow, extender	C	**3RK19 01-0NA00**		1	5 units	42C
	• Flat, black, extender	C	**3RK19 01-0PA00**		1	5 units	42C
Accessories for AS-i add-on modules							
 3RK19 04-2AB02	**AS-Interface addressing unit V 3.0** • For AS-Interface modules and sensors and actuators with integrated AS-Interface in accordance with AS-i Specification V3.0 • For setting the AS-i address of standard slaves, and slaves with extended addressing mode (A/B slaves) • With input/output test function and many other commissioning functions • Battery operation with 4 batteries type AA (IEC LR6, NEDA 15) • Scope of supply: - Addressing unit with 4 batteries - Addressing cable, with M12 plug to addressing plug (hollow plug), length 1.5m	►	**3RK19 04-2AB02**		1	1 unit	42C

Matching AS-Interface masters, routers and power supply units
see Chapter 2 "Industrial Communication" ➞ "AS-Interface".

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Infeed systems for 3RA6

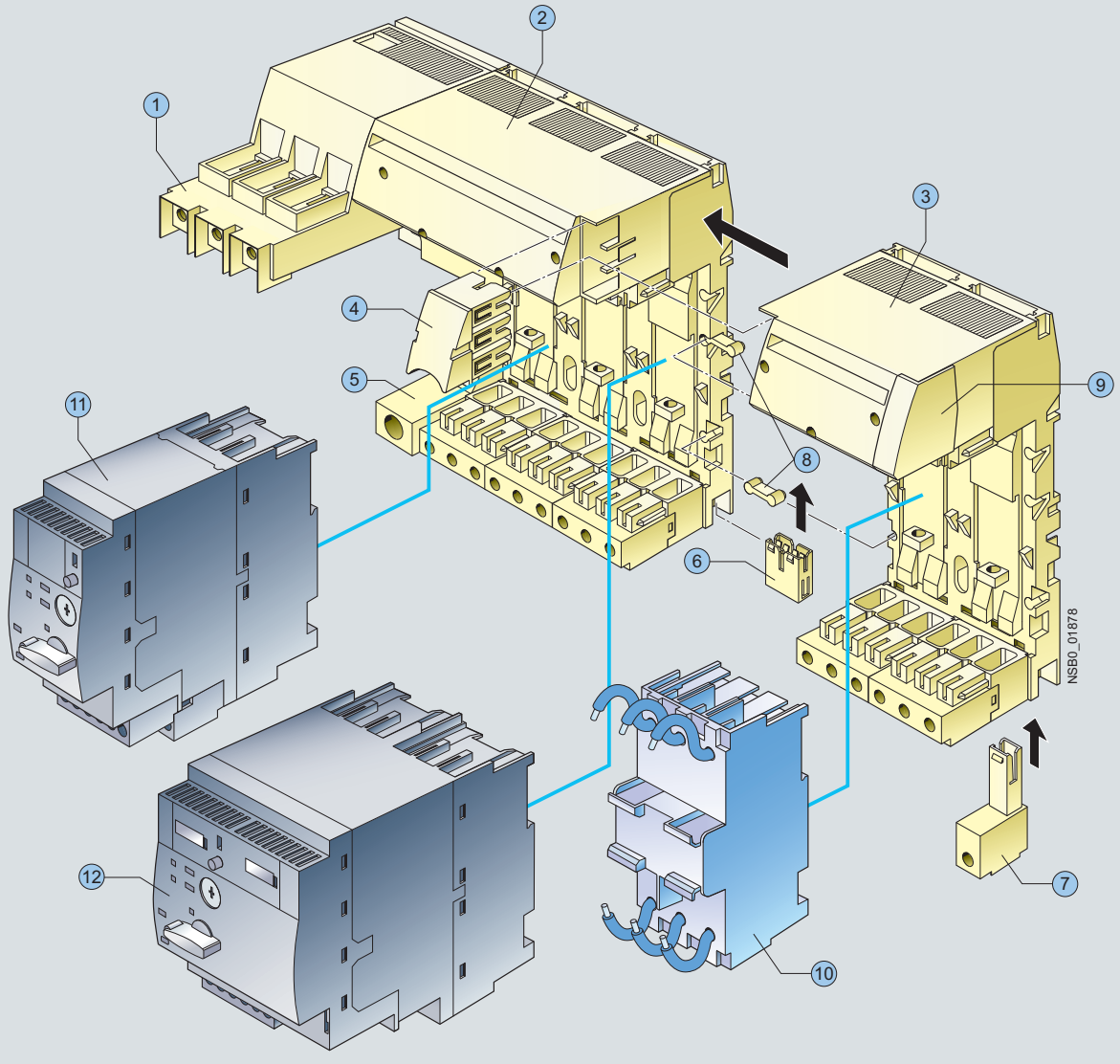
Overview

The infeed system for 3RA6 compact feeders enables far less wiring in the main circuit and, thanks to the easy exchangeability of the compact feeders, reduces the usual downtimes for maintenance work during the plant's operating phase.

The infeed system provides the possibility of completely prewiring the main circuit without a compact feeder needing to be connected at the same time. As the result of the removable terminals in the main circuit, compact feeders can be integrated in an infeed system in easy manner (without the use of tools).

In addition, the integrated PE bar means it is optionally possible to connect the motor cable directly to the infeed system without additional intermediate terminals. The infeed system for 3RA6 compact feeders is designed for summation currents up to 100 A with a maximum conductor cross-section of up to 70 mm^2 on the feeder terminal block.

The infeed system can be mounted on a standard mounting rail or flat surfaces.



1 Feeder terminal
2 Three-socket expansion module
3 Two-socket expansion module
4 Expansion plug
5 PE infeed
6 PE expansion plug
7 PE pick-off
8 Connecting wedges
9 End cover
10 45 mm adapter for SIRIUS motor starter protector size S0
11 3RA61 direct-on-line starter
12 3RA62 reversing starter

Infeed system for 3RA6 compact feeders

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① *Infeed*

The 3-phase infeed is available with screw connection (25/35 mm^2 up to 63 A or 50/70 mm^2 up to 100 A) and spring-type connection (25/35 mm^2 up to 63 A).

The infeed with spring-type terminal can be fitted on the left as well on as the right to an expansion module.

The infeed with screw terminal is supplied only with a 3-socket expansion module and permanently fitted on the left side.

The infeeds with screw connection enable connection of the main conductors (L1, L2, L3) either from above or from below.

The infeed with screw connection is supplied complete with 1 end cover, the infeed with spring-type connection complete with 2 end covers.

② *Three-socket expansion modules*

The expansion module with 3 sockets for compact feeders is available with screw connection and with spring-type connection.

Expansion modules enable the infeed system to be expanded and can be fitted to each other in any number.

Two expansion modules are held together with the help of 2 connecting wedges and 1 expansion plug. These assembly parts are included in the scope of supply of the respective expansion module.

When the infeed system for 3RA6 is used, the compact feeders (plug-in modules) are easily assembled and disassembled even when live.

Optional possibilities:
- PE connection on motor outgoing side
- Outfeed for external auxiliary devices
- Connection to 3RV29 infeed system
- Integration of SIRIUS 3RV1 motor starter protectors size S0 (using 3RA68 90-0BA adapter)

③ *Two-socket expansion modules*

If only 2 instead of 3 additional sockets are required, then the 2-socket expansion module is the right choice. It has the same functionality as the 3-socket expansion module.

④ *Expansion plug*

Two expansion modules can be connected together using the expansion plug. Flexible expansion of the infeed system is thus possible.

⑤ *PE infeeds*

This module enables a PE cable to be connected.

The PE infeed can be ordered with screw connection and spring-type connection (35 mm^2) and can be fitted on the right or left to the expansion block.

⑥ *PE expansion plug*

The PE expansion plug is inserted from below and enables two PE bars to be connected.

⑦ *PE pick-off*

The PE pick-off is available with screw connection and spring-type connection (6/10 mm^2). It is snapped into the infeed system from below.

⑧ *Connecting wedges*

Two connecting wedges are used to hold together 2 expansion modules.

⑨ *End covers*

On the last expansion module of a row, the socket provided for the expansion plug can be covered by inserting the end cover.

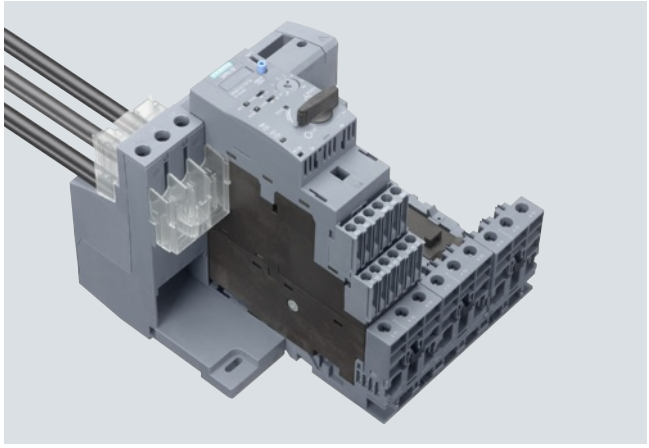
⑩ *45 mm adapters for SIRIUS 3RV1 motor starter protectors*

SIRIUS 3RV1 motor starter protectors size S0 with screw connection can be fitted to the adapter, enabling them to be plugged into the infeed system.

IP20 terminal covers for increasing finger-safety

Universally configured terminal covers are available for the 3-phase infeeds with screw connection 25/35 mm^2 and 50/70 mm^2:
- 3RA68 80-2AB terminal covers for infeeds with screw connection 25/35 mm^2 (3RA68 12-8AB/AC)
- 3RA68 80-3AB terminal covers for infeed with screw connections 50/70 mm^2 (3RA68 13-8AB/AC)

The terminal covers can be used in two ways on the feeder terminals of the infeeds with screw connection 25/35 mm^2 and 50/70 mm^2 (see illustration):
- If the terminals are connected, the cables are also covered:
  - by approx. 14 mm with the 3RA68 80-2AB
  - by approx. 18 mm with the 3RA68 80-3AB
- On clamping points without connected cables, the covers can be turned once and then pushed over the clamping points for finger-safe covering of the metal parts.



Use of the 3RA68 80-2AB terminal cover on the infeed with screw connection 25/35 mm^2 (3RA68 12-8AB/AC). The upper cover increases the finger-safety for the connected conductors. The identical lower cover is turned for use and prevents touching of the voltage-carrying metal parts of the feeder terminal. For better recognition, the covers are shown as transparent in this illustration and not in their original color.

Terminal blocks

Using the terminal block the 3 phases can be fed out of the system; this means that single-phase, two-phase and three-phase components can also be integrated in the system.

After the end cover is pulled out, the terminal block can be plugged onto an expansion module.

Expansion plugs for SIRIUS 3RV29 infeed systems

After the end cover is pulled out, the expansion plug for the SIRIUS 3RV29 infeed system can be plugged onto an expansion module. It connects the infeed system for 3RA6 compact feeders with the SIRIUS 3RV29 infeed system.

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Infeed systems for 3RA6

Maximum rated operational current

The following maximum rated operational currents apply for the components of the infeed system for 3RA6:

Component	Maximum rated operational current A
Infeed with screw connection 50/70 mm²	100
Infeed with screw connection 25/35 mm²	63
Infeed with spring-type connection 25/35 mm²	63
Expansion plug	63

With side-by-side mounting of several expansion modules, the maximum rated operational current from the second expansion module to the end of the row is 63 A.

Proposal for upstream short-circuit protection devices

The following short-circuit data apply for the components of the infeed system for 3RA6 compact feeders:

Conductor cross-section mm²	Inscriptions	Proposal for upstream short-circuit protection device
Short-circuit protection for infeed block (25/35 mm²) with screw connection		
2.5 ... 35	$I_{d,\,max}$ = 19 kA, I^2t = 440 kA²s	**3RV10 41-4JA10**
Short-circuit protection for infeed block (50/70 mm²) with screw connection		
2.5 ... 70	$I_{d,\,max}$ = approx. 22 kA	**3RV10 41-4MA10**
Short-circuit protection for infeed block with spring-type connection		
4	$I_{d,\,max}$ = 9.5 kA, I^2t = 85 kA²s	**3RV10 21-4DA10**
6	$I_{d,\,max}$ = 12.5 kA, I^2t = 140 kA²s	**3RV10 31-4EA10**
10	$I_{d,\,max}$ = 15 kA, I^2t = 180 kA²s	**3RV10 31-4HA10**
16/25	$I_{d,\,max}$ = 19 kA, I^2t = 440 kA²s	**3RV10 41-4JA10**
Short-circuit protection for terminal block		
1.5	$I_{d,\,max}$ = 7.5 kA	**5SY...** [1]
2.5	$I_{d,\,max}$ = 9.5 kA	
4	$I_{d,\,max}$ = 9.5 kA	
6	$I_{d,\,max}$ = 12.5 kA	

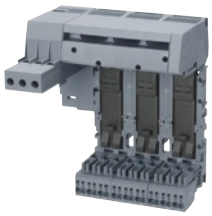
[1] To prevent the possibility of short circuits, the cables on the terminal block must be installed so that they are short-circuit proof according to IEC 60439-1 Section 7.5.5.1.2.

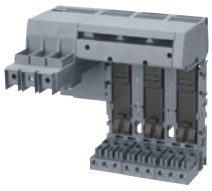
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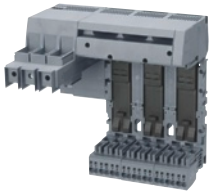
Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		Configurator				
Three-phase infeeds and expansion modules						
Infeeds with screw connection 25/35 mm² left						
Infeed with screw connection at line side with a permanently fitted **3-socket expansion module with screw or spring-type connection on the outgoing side and integrated PE bar** **Expansion module** with 3 sockets for 3 direct-on-line starters or 1 direct-on-line starter and 1 reversing starter		**Screw terminals**				
• Screw terminals on the outgoing side	A	**3RA68 12-8AB**		1	1 unit	42F
• Spring-type terminals on the outgoing side	A	**3RA68 12-8AC**		1	1 unit	42F
Infeeds with screw connection 50/70 mm² left						
Infeed with screw connection at line side with a permanently fitted **3-socket expansion module with screw or spring-type connection on the outgoing side and integrated PE bar** **Expansion module** with 3 sockets for 3 direct-on-line starters or 1 direct-on-line starter and 1 reversing starter, suitable for UL operation according to UL 508 Type E		**Screw terminals**				
• Screw terminals on the outgoing side	A	**3RA68 13-8AB**		1	1 unit	42F
• Spring-type terminals on the outgoing side	A	**3RA68 13-8AC**		1	1 unit	42F
Infeeds with spring-type connection 25/35 mm² left or right						
		Spring-type terminals				
Up to 63 A	A	**3RA68 30-5AC**		1	1 unit	42F


3RA68 12-8AB


3RA68 12-8AC


3RA68 13-8AB

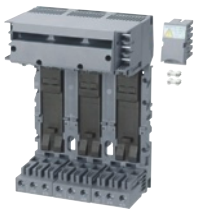

3RA68 13-8AC


3RA68 30-5AC

For online configurator see www.siemens.com/sirius/configurators.

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Infeed systems for 3RA6

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		Configurator				
Expansion modules						
Two-socket expansion modules						
with screw or spring-type connection and integrated PE bar with 2 sockets for 2 direct-on-line starters or 1 reversing starter Expansion plug and 2 connecting wedges are included in the scope of supply.						
		Screw terminals				
 3RA68 22-0AB						
• Screw terminals	A	**3RA68 22-0AB**		1	1 unit	42F
		Spring-type terminals				
 3RA68 22-0AC						
• Spring-type terminals	A	**3RA68 22-0AC**		1	1 unit	42F
Three-socket expansion modules						
with screw or spring-type connection and integrated PE bar with 3 sockets for 3 direct-on-line starters or 1 direct-on-line starter and 1 reversing starter Expansion plug and 2 connecting wedges are included in the scope of supply.						
		Screw terminals				
 3RA68 23-0AB						
• Screw terminals	A	**3RA68 23-0AB**		1	1 unit	42F
		Spring-type terminals				
 3RA68 23-0AC						
• Spring-type terminals	A	**3RA68 23-0AC**		1	1 unit	42F

For online configurator see www.siemens.com/sirius/configurators.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

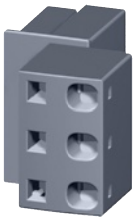
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Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories for infeed systems for 3RA6						
PE infeeds 25/35 mm²						
 3RA68 60-6AB		**Screw terminals**				
• Screw terminals	A	**3RA68 60-6AB**		1	1 unit	42F
 3RA68 60-5AC		**Spring-type terminals**				
• Spring-type terminals	A	**3RA68 60-5AC**		1	1 unit	42F
PE pick-offs 6/10 mm²						
 3RA68 70-4AB		**Screw terminals**				
• Screw terminals	A	**3RA68 70-4AB**		1	1 unit	42F
 3RA68 70-3AC		**Spring-type terminals**				
• Spring-type terminals	A	**3RA68 70-3AC**		1	1 unit	42F
Expansion plug						
 3RA68 90-0EA						
PE expansion plugs	A	**3RA68 90-0EA**		1	1 unit	42F
 3RA68 90-1AB						
Expansion plugs between 2 expansion modules Is included in the scope of supply of the expansion modules.	A	**3RA68 90-1AB**		1	1 unit	42F
 3RA68 90-1AA						
Expansion plugs for SIRIUS 3RV29 infeed system Connects infeed system for 3RA6 to 3RV29 infeed system	A	**3RA68 90-1AA**		1	1 unit	42F

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Infeed systems for 3RA6

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories for infeed systems for 3RA6 (Continued)							
	45 mm adapters						
 3RA68 90-0BA	for SIRIUS 3RV1 motor starter protectors size S0		**Screw terminals**				
	• Screw terminals (conductor cross-section AWG 10)	A	**3RA68 90-0BA**		1	1 unit	42F
	Terminal covers for infeeds with screw connection						
 3RA68 80-2AB	**IP 20 terminal covers for infeeds with screw connection 25/35 mm² (3RA68 12-8AB/AC)** (2 units per pack)	A	**3RA68 80-2AB**		1	1 unit	42F
 3RA68 80-3AB	**IP 20 terminal covers for infeeds with screw connection 50/70 mm² (3RA68 13-8AB/AC)** (2 units per pack)	A	**3RA68 80-3AB**		1	1 unit	42F
	Terminal blocks						
 3RV29 17-5D	for integration of single-phase, 2-phase and 3-phase external components		**Spring-type terminals**				
	• Spring-type terminals	A	**3RV29 17-5D**		1	1 unit	41E
Tools for opening spring-type terminals							
	Screwdriver						
 3RA29 08-1A	For all SIRIUS devices with spring-type terminals		**Spring-type terminals**				
	Length approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray/black, partially insulated	A	**3RA29 08-1A**		1	1 unit	41B

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

ET 200S motor starters in the ET 200S I/O system

The SIMATIC ET 200S is the multifunctional and finely modular I/O system in degree of protection IP20 for exact adaptation to the automation task.

Interface modules (IM) are used for connecting the ET 200S to PROFIBUS DP or PROFINET. If interface modules with integrated S7-CPU are used, the ET 200S can act as a small control system.

The ET 200S is designed for combining with a large range of digital and analog input or output modules, technology modules, IO-Link master modules, pneumatic connections, or motor starters and frequency converters for the control of drives.

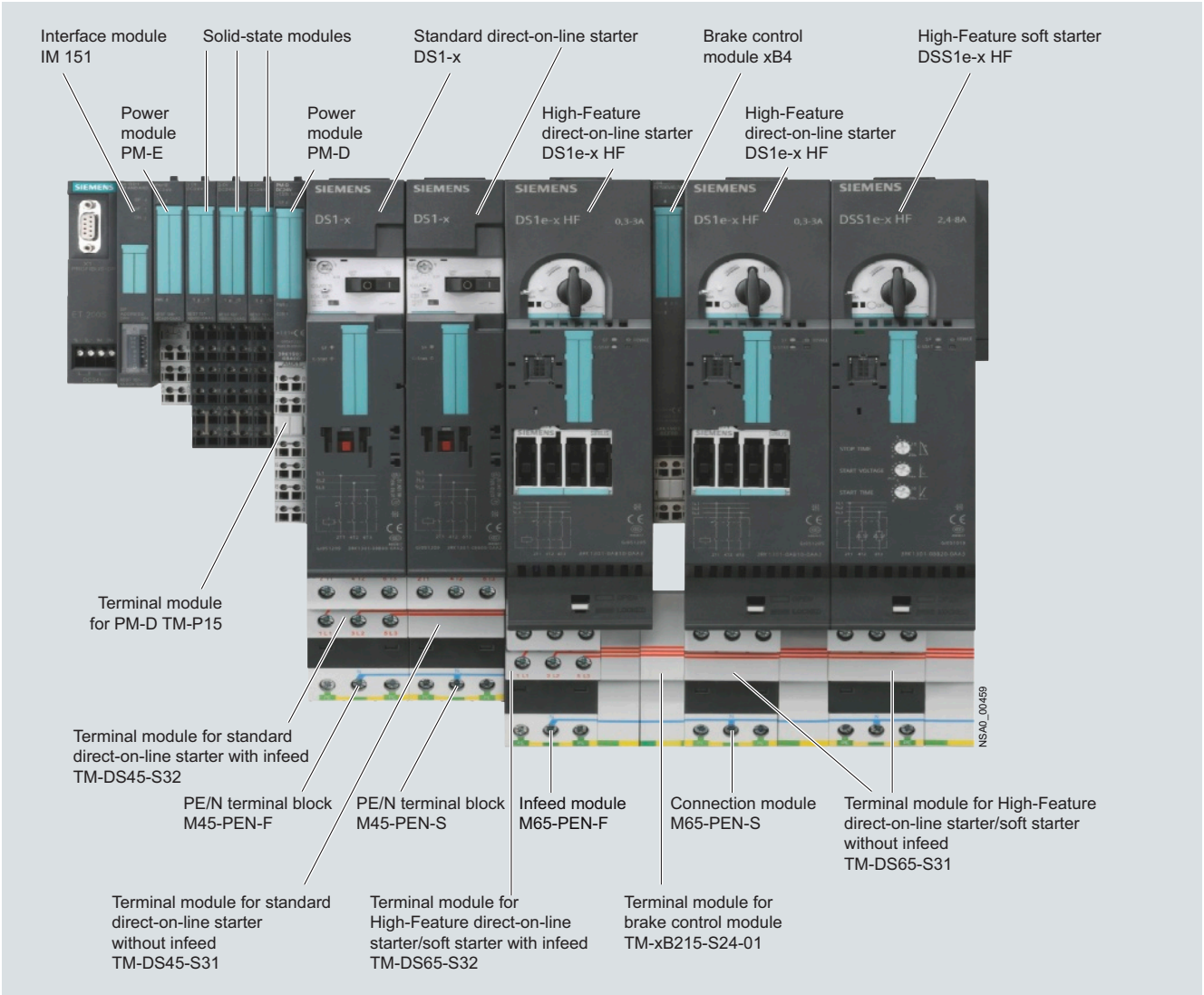
Device replacement is easy and quick thanks to permanent wiring and automatic re-parameterization.

Hot swapping, i. e. the disconnection and connection of modules without prior isolation, guarantees high availability of the automation system along with extensive diagnostics information.

The ET 200S motor starters are connected to the control system and parameterized through the field bus using either PROFIBUS or PROFINET via IM modules which are also available with CPU functionality.

For detailed information about SIMATIC ET 200S see Catalog ST 70 · 2011.

With the ET 200S motor starters, any AC loads can be protected and switched. The communication interface makes them ideal for use in distributed control cabinets or control enclosures.



Interplay of ET 200S motor starter components in the ET 200S I/O system

Motor starter types

The ET 200S motor starters are available as direct-on-line, reversing (reversing) or soft starter versions:

- **Standard motor starters** up to 5.5 kW
  (direct-on-line and reversing starters)
- **High-Feature motor starters** up to 7.5 kW
  (direct-on-line, reversing and direct-on-line soft starters)
- **Failsafe motor starters** up to 7.5 kW
  (direct-on-line and reversing starters)
  - Properties of the High-Feature motor starter
  - Failsafe functionality

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General data

Innovation of the ET 200S High-Feature motor starters

The ET 200S High-Feature motor starters have undergone radical innovation and now support the acyclic services on PROFIBUS and PROFINET as well as PROFIenergy on PROFINET.

They are now:

- Even more flexible – flexible assignment of parameters
- Even better integrated in TIA (Totally Integrated Automation)
- Even more transparent – through comprehensive diagnostic data records
- Even more anticipatory – through maintenance functions
- Energy-efficient – through PROFIenergy

Basic functionality of the ET 200S motor starters

All versions of the ET 200S motor starters have the following functionality. The further specific functionality is described for the respective versions.

- Fully pre-wired motor starters for switching and protecting any AC loads up to 7.5 kW at 400 V AC and 500 V AC
- With self-assembling 40/50 A power bus, i. e. the load voltage is only fed once for a group of motor starters
- All control supply voltages connected only once, i.e. when modules are added they are automatically connected to the next module
- Hot swapping is permissible
- Inputs and outputs for activating and signaling the status have been integrated
- Control of the motor starter from the control system and extensive diagnostics status via the cyclic process image
- Diagnostics capability for active monitoring of the switching and protection functions
- The signal states in the process image of the motor starter provide information about protective devices (short circuit or overload), the switching states of contactor(s) or soft starters, and system faults.
- Interface for controlling an expansion module, e. g. brake control module xB1...xB4 for controlling mechanical brakes in three-phase motors for 24 V DC and 500 V DC.
- Brake control module xB5 and xB6 for 400 V AC
- Can be combined with safety technology for use in safety-related system components (IEC 62061 and ISO 13849-1).

Mounting

As the motor starters are fully pre-wired, up to 80 % of the wiring outlay can be saved. The control cabinets can be assembled far more quickly and compactly.

Expansions are easily possible through the subsequent adding of terminal modules. With their modular terminal design (10 mm^2) the latter also do away with the distribution wiring otherwise required. Through the permanent wiring and the "hot swapping" function (disconnection and connection during operation) a motor starter can be replaced within seconds if necessary. The motor starters are therefore recommendable in particular for applications with special demands on availability.

Parameterization and configuration

Configuration is made easier by the fine modular structure.

When using the ET 200S motor starters, the list of parts per load feeder is reduced to two main items: The passive terminal module and the motor starter. This makes the ET 200S ideal for modular machine concepts as well.

All ET 200S motor starters are set up without fuses. Contactors and soft starters are activated through the integrated outputs. The inputs of the motor starters evaluate the signal states of the protective devices (short circuit or overload), the switching states of contactor(s) or soft starters, and system faults.

The motor starter protector signaling is freely programmable with regard to group fault signals (group fault at motor starter protector "Off"/group fault signal at motor starter protector "Off" only in case of "On" command from the motor starter).

Brake control modules and optional digital inputs and outputs

With one of the optional brake control modules (xB1-xB6), which is butt-mounted to the right of a motor starter, it is possible to control a mechanical holding brake on a three-phase motor from the process image of the motor starter.

Motors with 24 V DC brakes (xB1, xB3) as well as motors with 500 V DC brakes (xB2, xB4) can be controlled using the brake control modules xB1-xB4.

The modules xB5 (without digital input) and xB6 (with two digital inputs) have been added to the range in order to control a mechanical holding brake with a rated operational voltage of 400 V AC. A further motor brake voltage commonly found on the market is thus supported.

The 24 V DC brakes have an external supply and can be vented independently of the switching state of the motor starter. By contrast, the 500 V DC brakes and the 400 V AC brakes usually have a direct supply from the terminal board of the motor through a rectifier module and therefore cannot be vented when the motor starter is switched off. These brakes cannot be used in combination with the DSS1e-x motor starter (soft starter).

The outputs of the brake control modules can be used alternatively for other purposes, e.g. for controlling DC valves.

With two digital inputs available on the brake control modules (xB3, xB4, xB6) and another two digital inputs available on the optional control module it is possible to realize autonomous special functions which work independently of the bus and the higher-level control system, e.g. as a quick stop on gate valve controls. The signals of these digital inputs are in the process image and are reported to the control system.

Power supply through terminal module

Power is supplied through the terminal modules for motor starters:

- the auxiliary voltages are fed in only once via the PM-D or PM-DFx power module which must be connected to the left of the first motor starter.
- The load voltage is fed in at the first (left) TM-xxxxS32 terminal module of a motor starter. The other TM-xxxxS31 terminal modules are automatically supplied with power through the integrated power bus when they are mounted side by side. If the power bus is utilized to its full capacity of 40 A for Standard motor starters or 50 A for High-Feature motor starters, a new supply must be fed in through an additional TM-xxxxS32 terminal module.

TM-DS and TM-RS terminal modules for motor starters

- Mechanical modules in which the motor starter and expansion modules are inserted
- For constructing the permanent wiring and self-assembling voltage bus
- For connecting the motor connection cables
- Positive-locking connection to ensure enhanced vibration resistance

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Terminal modules are purely mechanical components for accommodating the ET 200S I/O modules. The self-assembling voltage buses integrated into the terminal modules reduce wiring outlay to the single infeed (both of auxiliary and load voltage). All modules following on the right are automatically supplied upon plugging the terminal modules together. The robust design and keyed connection technology enables use in harsh industrial conditions.

The TM-DS and TM-RS terminal modules are available in various versions for the Standard motor starters and the High-Feature motor starters.

Terminal modules with the suffix "-S32"

- The terminal modules with the suffix "-S32" have connection terminals for feeding into the integrated 40A/50A power bus and connection terminals for the motor connection cable. They are mounted at the beginning (left) of a power bus segment.
- To configure a new load group, another "-S32" terminal module is plugged in.
- The "-S32" terminal modules are supplied with three caps for closing the power bus contacts on the final terminal module of a segment.
- Optionally expandable with PE/N modules

Terminal modules with the suffix "-S31"

- The terminal modules with the suffix "-S31" have only connection terminals for the motor connection cable. These terminal modules follow on the right after a "-S32" terminal module.
- Optionally expandable with PE/N modules

All connection terminals of the terminal modules for motor starters are equipped with strong 10 mm^2 screw terminals.

Power modules (page 8/97***)***

PM-D power modules are used for monitoring the two 24 V DC auxiliary voltages for the group of motor starters following on the right or for supplying power to the group of frequency converters following on the right.

TM-P terminal modules for PM-D power module (page 8/98***)***

- Connection by means of screw terminals
- Light colored enclosure for visual distinction
- Always before the first TM-DS/TM-RS

ET 200S Safety motor starters with integrated safety technology

The safety-related, communication-capable ET 200S motor starters offer the right solution for every safety application. The range extends from the simple local safety solution through to the user-friendly version with PROFIsafe, which can be used in conjunction with a safe control system (see "Safety Modules local and PROFIsafe", page 8/102).

The safety engineering is an integral part and is therefore prewired at the factory.

The ET 200S Safety Motor Starter Solutions comprise:

- Safety modules (page 8/103)
- Standard motor starters (page 8/90)
- High-Feature motor starters (page 8/93)
- Failsafe motor starters (page 8/99)

System configuration with ET 200S motor starters

When constructing an ET 200S station with motor starters a distinction can be made between the following configurations:

- Conventional ET 200S motor starter solution consisting of:
  - PM-D module
  - Standard motor starter or High-Feature motor starter
- ET 200S Safety Motor Starter Solution local (see page 8/102)
- ET 200S Safety Motor Starter Solutions PROFIsafe (see page 8/106)

SIRIUS motor starter block library for SIMATIC PCS 7

With the SIRIUS motor starter PCS 7 block library, SIRIUS ET 200S motor starters (direct and reversing starters, direct-online soft starters) can be easily and simply integrated into the SIMATIC PCS 7 process control system. The SIRIUS motor starter PCS 7 block library contains the diagnostics and driver concept of SIMATIC PCS 7 corresponding diagnostics and driver blocks as well as the elements required for operation and monitoring (symbols and faceplates), see Chapter 14 "Parametrization, Configuration and Visualization with SIRIUS".

Configuration tool for ET 200S station

The "SIMATIC Selection Tool" enables the fast and accurate selection of SIMATIC hardware. It is available as a configurator in the Siemens Industry Mall free of charge. Set your stations (e.g. S7-1200, S7-300, S7-400, S7-400H) together and select the desired distributed I/O (for B. ET 200S, ET 200pro). You can transfer the Parts Lists you received to the Industry Mall shopping cart and place your order quickly, conveniently and with no problems.

You can find detailed information about the ET 200S system at:

www.siemens.com/ET200S

Here, you will find a link to the SIMATIC Selection Tool.

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General data





	SIMATIC ET 200S Standard motor starters	SIMATIC ET 200S High-Feature motor starters [1]
Device functions (firmware features)		
Slave on the bus		
Fieldbus	✓ Dependent on the interface module	
Parameterization		
PROFIBUS / PROFINET data records	--	✓
Parameterization using data record start	--	✓
Diagnostics		
Acyclic through data records	--	✓
Support of diagnostics alarm	✓	
Diagnostics using PROFIBUS/PROFINET	--	✓ See manual
Process image		
Process image	✓ 3I/3O	✓ 16I/7O
Address area required per module	✓ 4 bits	✓ 2 byte
Data channels		
Operator terminal interface	--	✓ Through module
Motor Starter ES through local interface	--	✓ Starting end of 2011
Motor Starter ES through bus	--	✓ Starting end of 2011
Data records (acyclic)		
Parameterization	--	✓
Support for PROFIenergy profile	--	✓ Measuring the motor current and disconnection in dead times
Diagnostics	--	✓
Measured values	--	✓
Statistics	--	✓
Commands	--	✓
Slave pointer	--	✓
Logbook	--	✓
Device identification	--	✓
I&M data	--	✓
Inputs		
Number	✓ Maximum 2, via xB3, xB4, xB6	✓ Maximum 4, 2 via xB3, xB4, xB6 and 2 via module 2DI 24 V DC COM
• Of these in the process image	--	✓ 4
Input action	✓ End position on left, right	✓ Parameterizable: Flexible
Quick-Stop	--	✓ Parameterizable
Outputs		
Number	✓ Internal, for controlling the brake module	
Output action	✓ Brake	
Brake output with additional module		
Motor brake voltage: brake module	✓ 24 V DC: xB1/xB3, 500 V DC: xB2/xB4, 400 V AC: xB5/xB6	
Motor protection		
Overload protection	✓ Thermal, range 1:1.3	✓ Electronic, wide range 1:10
Overload warning	-- Only tripping	✓
Short-circuit protection	✓ Circuit breaker	✓
Full motor protection	--	
Motor protection response in case of overload Thermal motor model reaction	--	✓ Parameterizable: disconnection without restart, disconnection with restart, warning
Auto reset	--	
Temperature sensor	--	
Emergency start function	-- (✓ with 3RK1 903-0CG00 control unit)	✓

✓ Function is available
-- Function not available

[1] The device functions mentioned apply in full only to the new .-.AB4 starters.

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	SIMATIC ET 200S Standard motor starters	SIMATIC ET 200S High-Feature motor starters [1]
Device functions (firmware features)		
Device functions		
Repair switch	✓ Rocker switch	✓ Motor Starter Protectors
Motor starter protector signaling	✓	✓ Parameterizable
Current limit monitoring bottom	--	✓ Parameterizable, increment 3.125 %, 18.75 ... 100 %
Current limit monitoring top	--	✓ Parameterizable, increment 3.125 %, 50 ... 150 % (400 % with the new .-.AB4 starters)
Zero current detection	--	✓ Parameterizable: warning, disconnection
Stall protection/disconnecting the blocking current	--	✓ Parameterizable
Unbalance	✓	✓ Parameterizable: warning, disconnection
Load type	--	✓ Parameterizable: 1- and 3-phase
Shutdown class	✓ CLASS 10	✓ Parameterizable (through ES, DS motor starter) For DS1e-x, RS1e-x: CLASS 5 (10A), 10, 15, 20 for DSS1e-x: CLASS 5 (10A), 10
Protection against voltage failure	✓	✓ Parameterizable: Activated/deactivated
Local diagnostics function using LEDs		
Switching state "C-STAT"	✓ Red/green/yellow LEDs	
Group fault "SF"	✓ Red LEDs	
Device state "DEVICE"	--	✓ Red/green/yellow LEDs
Auxiliary switches for enabling circuit of the ET 200S – safety technology already integrated (for use up to SIL 3 (IEC 61508) or up to category 4 (ISO 13849-1))	-- Failsafe kit needed	✓ Except DSS1e-x (max. category 1 possible)

✓ Function is available

-- Function not available

[1] The device functions mentioned apply in full only to the new .-.AB4 starters.

	ET 200S Standard motor starters	ET 200S High-Feature motor starters	
	DS1-x, RS1-x	DS1e-x, RS1e-x	DSS1e-x
Device functions (firmware features)			
Soft starter control function			
Soft start function	--		✓
Bypass function	--		
Starting time	--		✓ Locally adjustable, not through bus 0 ... 20 s
Ramp-down time	--		✓ Locally adjustable, not through bus 0 ... 20 s
Ramp-down mode	--		✓ Locally adjustable, not through bus
Starting voltage	--		✓ Locally adjustable, not through bus 30 ... 100 % of U_e
Stopping voltage	--		✓ Locally adjustable, not through bus
Trace	--		

✓ Function is available

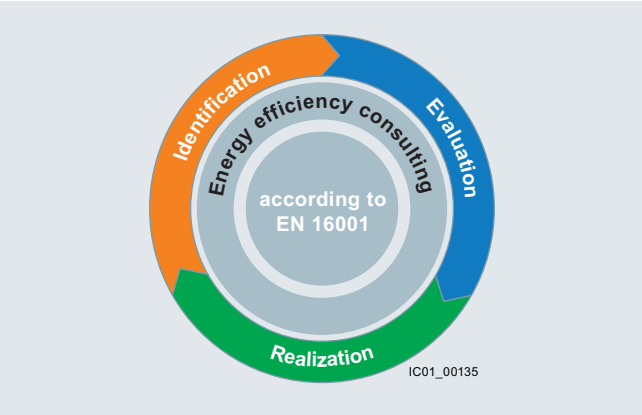
-- Function not available

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General data

Benefits

Advantages through energy efficiency



Overview of the energy management process

We offer you a unique portfolio for industrial energy management, using an energy management system that helps to optimally define your energy needs. We split up our industrial energy management into three phases – Identification, Evaluation and Realization – and we support you with the appropriate hardware and software solutions in every process phase.

The innovative products of the SIRIUS industrial controls portfolio can also make a substantial contribution to a plant's energy efficiency (see www.siemens.com/sirius/energysaving).

SIMATIC ET 200S motor starters contribute to energy efficiency as follows:

- Energy management
  Provision of energy data (current) by bus to higher-level systems using PROFIenergy (see "High-Feature Motor Starters", page 8/93)
- Elimination of energy consumption in dead times through disconnection using PROFIenergy (see "High-Feature Motor Starters", page 8/93)
- Current management
  Avoidance of current peaks, thus reducing the load on the grid and the mechanical system
- Reduced heating of the control cabinet
  Technology-reduced inherent power loss as speed-controlled drive systems, enabling also lower cooling costs (and a more compact design)

Application

The SIMATIC ET 200S motor starters are ideal for the use of several spatially concentrated distributed drive solutions in which several motors, digital or analog sensors and actuators are addressed by a distributed control cabinet or control box. They are perfectly suited for protecting and switching any AC loads.

Application areas

The SIMATIC ET 200S motor starters are suitable for numerous sectors of industry, e. g. machinery and plant engineering or conveying applications.

The ET 200S High-Feature motor starters are an excellent choice for the operation of ventilation systems, pump drives or winches.

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Technical specifications

		ET 200S Standard motor starters	ET 200S High-Feature motor starters	
		DS1-x, RS1-x	DS1e-x, RS1e-x	DSS1e-x
Mechanics and environment				
Motor starters for connection to ET 200S, max.[1]		42	17	
Mounting dimensions (W x H x D)				
• Direct-on-line starters	mm	45 x (265 + 45) x (120 + 27); (45: PE/N module; 27: Auxiliary switch contactor from F-Kit)	65 x (290 + 45) x (150 + 23); (45: PE/N module; 23: Control module)	
• Reversing starters	mm	90 x (265 + 45) x (120 + 27); (45: PE/N module; 27: Auxiliary switch contactor from F-Kit)	130 x (290 + 45) x (150 + 23); (45: PE/N module; 23: Control module)	
Permissible ambient temperature				
• During operation	°C	0 ... +60, From +40 with derating	0 ... +60 With horizontal mounting up to +40	
• During storage	°C	-40 ... +70	-40 ... +70	
• Permissible mounting positions	°C	Vertical, horizontal With derating	Vertical, horizontal	
Weight				
• Direct-on-line/reversing starters incl. terminal module	kg	1.0/1.6	1.6/2.2	1
• Direct-on-line/reversing starters incl. terminal module PE/N		1.1/1.8	1.7/2.3	1.1
Vibration resistance acc. to IEC 60068-2-6	g	2		
Shock resistance acc. to IEC 60068-2-27	g/ms	Square 5/11		
Conductor cross-section				
• Solid	mm^2	2 x (1 ... 2.5)[2]; 2 x (2.5 ... 6)[2], according to IEC 60947: max. 1 x 10		
• Finely stranded with end sleeve	mm^2	2 x (1 ... 2.5)[2]; 2 x (2.5 ... 6)[2]		
• AWG cables, solid or stranded	AWG	2 x (14 ... 10)		
Degree of protection		IP20, finger-safe (this also applies to terminal modules on a dismounted motor starter)		
Mechanical endurance				
• Motor Starter Protectors	Operating cycles	100 000		
• Contactors		30 million	10 million	--
• Contactor with safety functionality (F-Kit)		10 million	--	--
Electrical specifications				
Power consumption				
• From auxiliary circuit L+/M (U_1)	mA	Approx. 20	Approx. 40	
• From auxiliary circuit A1/A2 (U_2)	mA	Approx. 100	Approx. 1 700 (80 ms long), approx. 350 (after 80 ms)	Approx. 30
Rated operational current for TM-D terminal modules I_e	A	40	50	
Rated operational voltage U_e	V	400		
Approval to DIN VDE 0106 Part 101	V	Yes, up to 500		Yes, up to 480
Approval to CSA and U_L	V	Yes, up to 600		Yes, up to 480
Rated operational current I_e for motor starters				
• AC-1/2/3 at 60 °C				
- At 400 V	A	12	16	3 / 8 / 16
- At 500 V	A	9	11	--
• AC-4 at 60 °C				
- At 400 V	A	4.1	9	--
Rated short-circuit breaking capacity	kA	50 at 400 V		
Power of induction motors at 500 V	kW	5.5	7.5	
Utilization categories		AC-1, AC-2, AC-3, AC-4		
Protective separation between main and auxiliary circuits	V	400, acc. to DIN VDE 0106, Part 101		
Positively-driven operation of contactor relay (NC)		Yes		--
Trip class		CLASS 10	Parameterizable CLASS 5 (10A), 10, 15, 20	0.3 ... 3 A: CLASS 10/10A, parameterizable; 2.4 ... 8 A: CLASS 10A 2.4 ... 16 A: CLASS 10A
Type of coordination		Up to 1.6 A: 2 Up to 12 A: 1	Up to 16 A: 2	Up to 16 A: 1
Electrical endurance				
• Motor Starter Protectors	h	100 000		
• Contactors		See manual		--
Permissible switching frequency with a starting time t_A = 0.1 s and a relative ON period t_{OP} = 50 %	1/h	< 80	See manual	
Induction protection		Already installed		

[1] Additional limits: Process image, max. design width 2 m.

[2] If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in the range specified. If identical cross-sections are used, this restriction does not apply.

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Standard motor starters

Overview

Functionality of the Standard motor starters

- Basic functionality see "General Data" → "Overview" on page 8/84.
- Direct-on-line and reversing starters up to 5.5 kW
- Power bus up to 40 A
- With circuit breaker and contactor assembly
- Integrated isolating function of the circuit breaker
- Can be combined with local safety technology for use in safety-related system components with F-Kit and PM-D F modules (see "Accessories" on page 8/113)

Device functions (firmware features)

See page 8/86 and 8/87.

Technical specifications

See page 8/89.

Selection and ordering data

Induction motor 4-pole at 400 V AC, standard output *P*	Setting range of the electronic release	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
kW	A						
Standard motor starters, with diagnostics, electromechanical, fuseless, expandable with brake control module							
DS1-x direct-on-line starters							
< 0.06	0.14 ... 0.20	A	**3RK1 301-0BB00-0AA2**		1	1 unit	42D
0.06	0.18 ... 0.25	A	**3RK1 301-0CB00-0AA2**		1	1 unit	42D
0.09	0.22 ... 0.32	A	**3RK1 301-0DB00-0AA2**		1	1 unit	42D
0.10	0.28 ... 0.40	A	**3RK1 301-0EB00-0AA2**		1	1 unit	42D
0.12	0.35 ... 0.50	A	**3RK1 301-0FB00-0AA2**		1	1 unit	42D
0.18	0.45 ... 0.63	A	**3RK1 301-0GB00-0AA2**		1	1 unit	42D
0.21	0.55 ... 0.80	A	**3RK1 301-0HB00-0AA2**		1	1 unit	42D
0.25	0.70 ... 1.00	A	**3RK1 301-0JB00-0AA2**		1	1 unit	42D
0.37	0.90 ... 1.25	A	**3RK1 301-0KB00-0AA2**		1	1 unit	42D
0.55	1.1 ... 1.6	A	**3RK1 301-1AB00-0AA2**		1	1 unit	42D
0.75	1.4 ... 2.0	A	**3RK1 301-1BB00-0AA2**		1	1 unit	42D
0.90	1.8 ... 2.5	A	**3RK1 301-1CB00-0AA2**		1	1 unit	42D
1.1	2.2 ... 3.2	A	**3RK1 301-1DB00-0AA2**		1	1 unit	42D
1.5	2.8 ... 4.0	A	**3RK1 301-1EB00-0AA2**		1	1 unit	42D
1.9	3.5 ... 5.0	A	**3RK1 301-1FB00-0AA2**		1	1 unit	42D
2.2	4.5 ... 6.3	A	**3RK1 301-1GB00-0AA2**		1	1 unit	42D
3.0	5.5 ... 8.0	A	**3RK1 301-1HB00-0AA2**		1	1 unit	42D
4.0	7 ... 10	A	**3RK1 301-1JB00-0AA2**		1	1 unit	42D
5.5	9 ... 12	A	**3RK1 301-1KB00-0AA2**		1	1 unit	42D
Reversing starter RS1-x							
< 0.06	0.14 ... 0.20	A	**3RK1 301-0BB00-1AA2**		1	1 unit	42D
0.06	0.18 ... 0.25	A	**3RK1 301-0CB00-1AA2**		1	1 unit	42D
0.09	0.22 ... 0.32	A	**3RK1 301-0DB00-1AA2**		1	1 unit	42D
0.10	0.28 ... 0.40	A	**3RK1 301-0EB00-1AA2**		1	1 unit	42D
0.12	0.35 ... 0.50	A	**3RK1 301-0FB00-1AA2**		1	1 unit	42D
0.18	0.45 ... 0.63	A	**3RK1 301-0GB00-1AA2**		1	1 unit	42D
0.21	0.55 ... 0.80	A	**3RK1 301-0HB00-1AA2**		1	1 unit	42D
0.25	0.70 ... 1.00	A	**3RK1 301-0JB00-1AA2**		1	1 unit	42D
0.37	0.90 ... 1.25	A	**3RK1 301-0KB00-1AA2**		1	1 unit	42D
0.55	1.1 ... 1.6	A	**3RK1 301-1AB00-1AA2**		1	1 unit	42D
0.75	1.4 ... 2.0	A	**3RK1 301-1BB00-1AA2**		1	1 unit	42D
0.90	1.8 ... 2.5	A	**3RK1 301-1CB00-1AA2**		1	1 unit	42D
1.1	2.2 ... 3.2	A	**3RK1 301-1DB00-1AA2**		1	1 unit	42D
1.5	2.8 ... 4.0	A	**3RK1 301-1EB00-1AA2**		1	1 unit	42D
1.9	3.5 ... 5.0	A	**3RK1 301-1FB00-1AA2**		1	1 unit	42D
2.2	4.5 ... 6.3	A	**3RK1 301-1GB00-1AA2**		1	1 unit	42D
3.0	5.5 ... 8.0	A	**3RK1 301-1HB00-1AA2**		1	1 unit	42D
4.0	7 ... 10	A	**3RK1 301-1JB00-1AA2**		1	1 unit	42D
5.5	9 ... 12	A	**3RK1 301-1KB00-1AA2**		1	1 unit	42D



DS1-x



RS1-x

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Terminal module TM-DS, TM-RS

More information see also "General Data" → "Overview" → section "Power Supply through Terminal Modules" on page 8/84 onwards.

- "–S32" version with supply terminals: 2 x 3 x 10 mm² screw terminals for power bus and motor feeder
- "–S31" version without supply terminals: 1 x 3 x 10 mm² screw terminals for motor feeder
- Optionally expandable with PE/N modules (see "Accessories" of page 8/115)
- Applies only to Standard motor starters: For applications with high motor currents (> 6.3 A) or high ambient temperatures (> 40 °C) it is recommended to use the DM-V15 distance module (see "Accessories" on page 8/114) between two DS1-x motor starters.

Technical specifications

TM-DS45 and TM-DS65/TM-FDS65 terminal module

		TM-DS45	TM-DS65/TM-FDS65
Dimensions			
• Mounting dimensions (W x H x D)	mm	45 x 264 x 100	65 x 290 x 100
• Height with PE/N terminal block	mm	306	332
• Depth with motor starter	mm	127	150
• Depth with motor starter and F-Kit (safety technology)	mm	152	--
• Depth with motor starter and 2DI control module	mm	--	173
Rated voltages, currents and frequencies for the power bus			
• Rated insulation voltage U_i	V	690	
• Rated operational voltage U_e	V AC	500	
• Rated impulse withstand voltage U_{imp}	kV	6	
• Rated operational current I_e	A	40	50
• Rated frequency	Hz	50/60	
Conductor cross-sections			
• Solid	mm²	2 x (1 ... 2.5)[1] or 2 x (2.5 ... 6)[1]	
• Finely stranded with end sleeve	mm²	1 x 10 or 2 x (1 ... 2.5)[1] or 2 x (2.5 ... 6)[1] according to IEC 60947	
• AWG cables, solid or stranded	AWG	2 x (14 ... 10)	
• With additional three-phase feeder terminal if required			
- Solid or stranded	mm²	1 x 2.5 ... 25	
- Finely stranded with end sleeve	mm²	1 x 2.5 ... 25	
- AWG cables, solid or stranded	AWG	1 x 12 ... 4	
Wiring			
• Required tool		Standard screwdriver size 2 and Pozidriv 2	
• Tightening torque	Nm	2.0 ... 2.5	

[1] If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in the range specified. If identical cross-sections are used, this restriction does not apply.

TM-RS90 and TM-RS130/TM-FRS130 terminal module

		TM-RS90	TM-RS130/TM-FRS130
Dimensions			
• Mounting dimensions (W x H x D)	mm	90 x 264 x 100	130 x 290 x 100
• Height with PE/N	mm	306	332
• Depth with motor starter	mm	127	150
• Depth with motor starter and F-Kit (safety technology)	mm	152	--
• Depth with motor starter and 2DI control module	mm	--	173
Rated voltages, currents and frequencies for the power bus			
• Rated insulation voltage U_i	V	690	
• Rated operational voltage U_e	V AC	500	
• Rated impulse withstand voltage U_{imp}	kV	6	
• Rated operational current I_e	A	40	50
• Rated frequency	Hz	50/60	

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Standard terminal modules

		TM-RS90	TM-RS130/TM-FRS130
Conductor cross-sections			
• Solid	mm^2	2 x (1 ... 2.5)[1] or 2 x (2.5 ... 6)[1]	
• Finely stranded with end sleeve	mm^2	1 x 10 or 2 x (1 ... 2.5)[1] or 2 x (2.5 ... 6)[1] according to IEC 60947	
• AWG cables, solid or stranded	AWG	2 x (14 ... 10)	
• With additional three-phase feeder terminal if required			
- Solid or stranded	mm^2	1 x 2.5 ... 25	
- Finely stranded with end sleeve	mm^2	1 x 2.5 ... 25	
- AWG cables, solid or stranded	AWG	1 x 12 ... 4	
Wiring			
• Required tool		Standard screwdriver size 2 and Pozidriv 2	
• Tightening torque	Nm	2.0 ... 2.5	

[1] If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in the range specified. If identical cross-sections are used, this restriction does not apply.

Selection and ordering data

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Terminal modules for Standard motor starters							
 3RK1 903-0AB00	**TM-DS45-S32** **for DS1-x direct-on-line starters** with incoming power for bus connection including three caps for terminating the power bus	A	**3RK1 903-0AB00**		1	1 unit	42D
 3RK1 903-0AB10	**TM-DS45-S31** **for DS1-x direct-on-line starters** without incoming power bus connection	A	**3RK1 903-0AB10**		1	1 unit	42D
 3RK1 903-0AC00	**TM-RS90-S32** **for RS1-x reversing starters** with incoming power bus connection including three caps for terminating the power bus	A	**3RK1 903-0AC00**		1	1 unit	42D
	TM-RS90-S31 **for RS1-x reversing starters** without incoming power bus connection	A	**3RK1 903-0AC10**		1	1 unit	42D

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Functionality of the High-Feature motor starters

- Basic functionality see "General Data" → "Overview" on page 8/84.
- Direct-on-line, reversing or soft starter up to 7.5 kW
- With wide range in 3 setting ranges, with 0.3 to 3 A, 2.4 up to 8 A, 2.4 to 16 A available
- With combination of starter circuit breaker, electronic overload protection (parameterizable), and contactor or soft starter
- Power bus up to 50 A
- Upper and lower current limits for plant and process monitoring
- Motor stall protection, zero current detection and asymmetry detection integrated
- The actual motor current is measured and transmitted for diagnostics in the cyclic process image
- Control of the motor starter from the control system and extensive diagnostics status via the cyclic process image
- Optional digital inputs available in the cyclic process image and flexibly assignable with functions for adaptation to all applications
- Detection of the switching state of the starter circuit breaker via aux. switches and of the contactor via current evaluation
- Integrated isolating function using starter circuit breakers
- Local safety engineering possible (without failsafe kit in the case of the HF starter, because the function of the failsafe kit is already integrated)
- Front-mounting 2DI LC COM control module for 2 more parameterizable digital inputs
- Optional "Motor Starter ES" software for easy commissioning and diagnostics - from 11/2011 also for the new .-.AB4 -Starter available (see Chapter 14 "Parametrization, Configuration and Visualization with SIRIUS")
- PROFIenergy capable (only with the new .-.AB4 -starters)
- Supplying the motor current in PROFIenergy format
  - Switching off during dead times
- All acyclic services DPV1 supported by PROFIBUS and PROFINET (only with the new .-.AB4 -starters)
  - Changing of parameters during operation, e.g. the rated operational current
  - Reading and writing acyclic data for exact diagnostics of the unit or process and for analysis of the plant status

Selective protection concept for ET 200S High-Feature motor starters

As a result of the selective protection concept (separate tripping of short circuit and overload) with solid-state overload evaluation, additional advantages are realized on the High-Feature motor starters – advantages which soon make themselves positively felt particularly in manufacturing processes with high plant stoppage costs:

- Only two versions up to 7.5 kW – hence little order variance and stock keeping
- All settings can be parameterized by bus – hence full TIA capability
- Separate signaling of overload and short circuit – enables selective diagnostics
- Overload can be acknowledged by remote reset – ideal for highly automated plants
- Current asymmetry monitoring – complete monitoring of the motor
- Stall protection – complete monitoring of the motor
- Emergency start function in case of overload – operation is possible in an emergency
- Current value transmission via bus – monitoring of the application
- Current limit monitoring
- Trip class can be parameterized – overload trip can be adapted to the application
- Type of coordination "2" – still functional after short circuit with magnitude of 50 kA
- Very high contact endurance



ET 200S High-Feature motor starter: DS1e-x direct-on-line starter (innovated .-.AB4 starters)



ET 200S High-Feature motor starter: DS1e-x direct-on-line soft starter (innovated .-.AB4 starter)



ET 200S High-Feature motor starter: Reversing starter (reversing starter) RS1e-x (innovated .-.AB4 -Starter)

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High-Feature motor starters

PROFIenergy for ET 200S High-Feature motor starters[1)]

Increasing energy prices, far-reaching ecological problems worldwide and the threat of climate change make it necessary for you to be more conscious about your use of energy.

Active and effective energy management is possible with PROFIenergy.

PROFIenergy is a manufacturer-independent profile on PROFINET, which can be used by all manufacturers, has been standardized by PNO[1)] and supports the shut-down of electrical devices during dead times and the read-out of measured values.

The ET 200S HF motor starter supplies the motor current in PROFIenergy format and switches off during dead times.

All acyclic services DPV1 supported by PROFIBUS and PROFINET (only with the new .-.AB4 -starters)

Thanks to the acyclic services, the ET 200S HF motor starters now offer plenty of diagnostics data via data records. There are extensive new options for reading out data from the motor starter for device, system or process monitoring. The motor starter is equipped internally with three logbooks for device faults, motor starter trips and events, which are issued with a time stamp. These logbooks can be read out of the motor starter on demand at any time and provide the plant operator with plenty of information about the state of his plant and process which he can use to carry out improvements.

With the slave pointer and statistical data functions it is possible to read out, for example, the maximum internal current values or the number of motor starter connection operations. This enables process deviations to be monitored or commissioning to be optimized.

Statistical data or measured values make plant monitoring easy for the user.

The device diagnostics data record contains details of all the states of the motor starter, the device configuration and the communication as a basis for central device and plant monitoring.

The Installation and Maintenance Functions (I&M) store, firstly, information (I&M) about the modules used in the motor starter and, secondly, data (I&M) that can be defined during configuration, e.g. location designations. I&M functions are used for for troubleshooting faults and localizing changes in hardware at a plant or checking the system configuration.

Supported data records:

- DS 0 S7-V1 system diagnostics (S7 diagnostics alarm)
- DS 72, 73, 75 logbooks, device faults, trips, events
- DS 92 device diagnostics
- DS 93 command
- DS 94 measured values
- DS 95 statistics
- DS 96 slave pointer
- DS 100 device identification
- DS 131 device parameters
- DS 134 maintenance
- DS 165 comment
- DS 226 PROFIenergy technology function
- DS 231 I&M 0 (= device identification)
- DS 232 I&M 1 (= equipment identifier)
- DS 233 I&M 2 (= installation)
- DS 234 I&M 3 (= description)

Device functions (firmware features)

See page 8/86 and 8/87.

1) In the PNO (PROFIBUS Nutzerorganisation e. V. - PROFIBUS User Organization), manufacturers and users have come together to agree on the standardized communication technologies PROFIBUS and PROFINET.

Technical specifications

See page 8/89.

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Selection and ordering data

High-Feature motor starters in previous design (".-.AA4 starters")

Setting range of the electronic release A	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
High-Feature motor starters, with diagnostics, solid-state overload protection, fuseless, expandable with brake control module						
DS1e-x direct-on-line starters						
0.3 ... 3	A	**3RK1 301-0AB10-0AA4**		1	1 unit	42D
2.4 ... 8	A	**3RK1 301-0BB10-0AA4**		1	1 unit	42D
2.4 ... 16	A	**3RK1 301-0CB10-0AA4**		1	1 unit	42D
RS1e-x reversing starters						
0.3 ... 3	A	**3RK1 301-0AB10-1AA4**		1	1 unit	42D
2.4 ... 8	A	**3RK1 301-0BB10-1AA4**		1	1 unit	42D
2.4 ... 16	A	**3RK1 301-0CB10-1AA4**		1	1 unit	42D
Direct-on-line soft starter DSS1e-x						
0.3 ... 3	A	**3RK1 301-0AB20-0AA4**		1	1 unit	42D
2.4 ... 8	A	**3RK1 301-0BB20-0AA4**		1	1 unit	42D
2.4 ... 16	A	**3RK1 301-0CB20-0AA4**		1	1 unit	42D



DS1e-x

High-Feature motor starters in fully innovated design (".-.AB4 starters") [1)]

Setting range of the electronic release A	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
High-Feature motor starters, with diagnostics, solid-state overload protection, fuseless, expandable with brake control module						
DS1e-x direct-on-line starters						
0.3 ... 3	A	**3RK1 301-0AB10-0AB4**		1	1 unit	42D
2.4 ... 8	A	**3RK1 301-0BB10-0AB4**		1	1 unit	42D
2.4 ... 16	A	**3RK1 301-0CB10-0AB4**		1	1 unit	42D
RS1e-x reversing starters						
0.3 ... 3	A	**3RK1 301-0AB10-1AB4**		1	1 unit	42D
2.4 ... 8	A	**3RK1 301-0BB10-1AB4**		1	1 unit	42D
2.4 ... 16	A	**3RK1 301-0CB10-1AB4**		1	1 unit	42D
Direct-on-line soft starter DSS1e-x						
0.3 ... 3	A	**3RK1 301-0AB20-0AB4**		1	1 unit	42D
2.4 ... 8	A	**3RK1 301-0BB20-0AB4**		1	1 unit	42D
2.4 ... 16	A	**3RK1 301-0CB20-0AB4**		1	1 unit	42D



DS1e-x

[1)] When a device is replaced, the innovated motor starter will behave like the previous motor starter, i.e. it will run in DPV0 mode.

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High-Feature terminal modules

Overview

Terminal module TM-DS, TM-RS

More information see also "General Data" → "Overview" → section "Power Supply through Terminal Modules" on page 8/84 onwards.

- "–S32" version with incoming connection: 2 x 3 x 10 mm² screw terminals for power bus and motor feeder
- "–S31" version without incoming connection: 1 x 3 x 10 mm² screw terminals for motor feeder
- Optionally expandable with PE/N modules (see "Accessories")

Technical specifications

See page 8/91.

Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Terminal modules for High-Feature motor starters						
 3RK1 903-0AK00						
TM-DS65-S32 **for DS1e-x and DSS1e-x direct-on-line starters** with incoming power bus connection including three caps for terminating the power bus	A	**3RK1 903-0AK00**		1	1 unit	42D
TM-DS65-S31 **for DS1e-x and DSS1e-x direct-on-line starters** without incoming power bus connection	A	**3RK1 903-0AK10**		1	1 unit	42D
TM-RS130-S32 **for RS1e-x reversing starters** with incoming power bus connection including three caps for terminating the power bus	A	**3RK1 903-0AL00**		1	1 unit	42D
TM-RS130-S31 **for RS1e-x reversing starters** Without incoming power bus connection	A	**3RK1 903-0AL10**		1	1 unit	42D

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

- Disconnection of a complete group of motor starters is possible without any additional outlay (safety category 1 according to ISO 13849-1)
- PM-D power modules are plugged onto the TM-P15 terminal modules. (A PM-D power module must be followed by at least one motor starter or one frequency converter.)

PM-D power modules are used for monitoring the two 24 V DC auxiliary voltages for the group of motor starters following on the right or for supplying power to the group of frequency converters following on the right. The voltage is fed in through TM-D terminal modules to the self-assembling potential bars.

A voltage failure is signaled through PROFIBUS diagnostics to the higher-level master. Additional LEDs inform locally about the status of the auxiliary voltages.

The separation of auxiliary voltages for signal checkback and power section actuation enables the entire group to be shut down while maintaining the diagnostics capability.

Technical specifications

		PM-D power modules 3RK1 903-0BA00
Rated control supply voltage U_s up to 60 °C	V	20.4 ... 28
Rated operational current I_e		
• Recommended short-circuit protection	A	10
• Melting fuse	A	10
• Miniature circuit breaker	A	10, tripping characteristic B
Power consumption from the backplane bus	mA	≤ 10
Supply of		
• Motor starters		Yes
• Frequency converters		Yes
• Motor starters for safety technology		No
• Solid-state modules		No
• Ex(i) modules		No
Alarms		None
Diagnostics functions		Yes
• System fault/device fault		Red "SF" LED
• Monitoring the control supply voltage for solid-state modules U_1		Green "PWR" LED
• Monitoring the control supply voltage for contactors U_2		Green "CON" LED
• Diagnostics information can be read out		Yes
Conductor cross-sections		
• Flexible with end sleeve	mm^2	1.5
• Rigid	mm^2	2.5
Mounting dimensions (W x H x D)	mm	15 x 195.5 x 117.5

Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Power modules						
PM-D power modules for 24 V DC with diagnostics	A	**3RK1 903-0BA00**		1	1 unit	42D



3RK1 903-0BA00

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Power module terminal modules

Overview

Terminal module for power module

For feeding load and sensor voltage to the self-assembling potential bars of the Standard motor starters, High-Feature motor starters and frequency converters. Power modules for voltage monitoring are plugged onto TM-P modules.

TM-P modules can be used any number of times within the ET 200S. A power module must always be plugged upstream from the first motor starter/frequency converter.

Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Terminal module for power module						
TM-P15 S27-01 terminal modules for PM-D power module	A	**3RK1 903-0AA00**		1	1 unit	42D



3RK1 903-0AA00

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



ET 200S Failsafe motor starters F-DS1e-x direct-on-line starters

The Failsafe motor starter has been developed on the basis of the High-Feature motor starter (.-.AA4 starter). It differs in that, in addition to a motor starter protector and contactor assembly, a safe solid-state evaluation circuit is installed for error detection purposes which makes the motor starter failsafe.

If the contactor to be switched fails in an EMERGENCY-STOP case, the evaluation electronics detects a fault and opens the motor starter protector in the motor starter through a shunt release in a failsafe manner. The second redundant shutdown component is therefore no longer a main contactor, as it is generally the case, but the motor starter protector installed in the motor.

All functions of the High-Feature starter are already integrated

The new failsafe motor starters are characterized by easy, space-saving assembly as well as minimal wiring outlay. Like the High-Feature starters, the Failsafe motor starters have a switching capacity of up to 7.5 kW (16 A) which is achieved with just two motor starter versions. Another important feature is the high availability due to the high short-circuit strength (type of coordination "2").

Use

The Failsafe motor starter is predestined for use in combination with PROFIsafe (see connection diagram "ET 200S Safety Motor Starter Solution PROFIsafe with Failsafe Motor Starters" on page 8/107). Another field of application is in combination with ASIsafe or safety relays (see example 2 on page 8/105).

High degree of flexibility with safety technology

PROFIsafe solution with PM-D F PROFIsafe

In EMERGENCY-STOP applications, the Failsafe motor starters are selectively switched off through the upstream PM-D F PROFIsafe safety module. For each safety module, six switch-off groups can be formed. In the first delivery stage, the failsafe freely-programmable logic of the SIMATIC controller is used to interface with the relevant Failsafe sensor technology. The interface between PROFIsafe and installations that use conventional safety technologies is implemented through the F-CM Failsafe contact multiplier with four floating contacts.

Solution local with PM-D FX1

Failsafe motor starters with safety relay (Version 1) or ASIsafe (Version 2, see example 2 on page 8/105):
Signals with relevance for safety can be input to ET 200S through a PM-D F X1 infeed terminal module through the enabling circuits of the AS-i Safety Monitor or the safety relay to control the Failsafe motor starters which then selectively switch off the downstream motors.

Benefits

Advantages over conventional safety technology

- Significant savings in components (less hardware)
- Less mounting and installation work
- Motor starters are failsafe and offer high availability

Technical specifications

F-DS1e-x direct-on-line starters/F-RS1e-x reversing starters

			F-DS1e-x direct-on-line starters	F-RS1e-x reversing starters
Dimensions				
Dimensions (W x H x D)		mm	65 x 290 x 150 (incl. terminal module)	130 x 290 x 150 (incl. terminal module)
Height with PE/N module		mm	332	
Depth with 2DI control module (not safe)		mm	173	
Module-specific specifications				
Type of coordination			Type 2 up to $I_e \leq 16$ A at 400 V	
Internal power supply			U1 (from PM-D F/PM-DF X1)	
Maximum achievable safety class				
• According to IEC 62061			SIL 3	
• According to DIN VDE 0801			Shutdown class 6 (AK6)	
• According to ISO 13849-1			Category 4	
Safety characteristics				
Low demand	PFD_{AVG} (10a)			
• Test interval 3 months			3.5×10^{-5}	
• Test interval 6 months			8.0×10^{-5}	
High demand/continuous mode	PFH			
• Test interval 3 months		1/h	8.1×10^{-10}	
• Test interval 6 months		1/h	1.8×10^{-9}	
Proof-test interval		Years	10	

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ET 200S Failsafe motor starters

		F-DS1e-x direct-on-line starters	F-RS1e-x reversing starters
Voltages, currents, potentials			
Switching capacity		Up to 7.5 kW at 400 V AC in three setting ranges	
	A	• 0.3 ... 3	
	A	• 2.4 ... 8	
	A	• 2.4 ... 16	
Status, alarms, diagnostics			
Status display		SF, DEVICE and C-STAT, SG1 ... SG6	
Diagnostics functions			
• Group fault display		Red LED (SF)	
• Diagnostics information can be read out		Available	
Control circuits			
Rated operational voltage for electronics U_1	V DC	24 (20.4 ... 28.8)	24 (21.6 ... 26.4)
Reverse polarity protection for electronics U_1		Yes	
Rated operational voltage for contactor U_2	V DC	24 (20.4 ... 28.8)	
Reverse polarity protection for contactor U_2		Yes	
Power consumption			
• From electronics supply U_1	mA	Approx. 40	Approx. 100
• From contactor supply U_2			
- Pickup	A	1.7 (for 80 ms)	--
- Hold	mA	max. 350	--
• From SG1 up to 6			
- Pickup	mA	250 (for 200 ms)	
- Hold	mA	max. 55	
• Test function of the shunt release/starter circuit breaker (50 ms) from U_1	A	Approx. 1.5	
• From the backplane bus	mA	Approx. 20	
Main circuit			
Rated operational voltage U_e			
• Acc. to IEC 60947-1, VDE 0106, Part 101	V AC	500	
• Protective separation between main and auxiliary circuits	V	400	
• According to UL, CSA	V AC	600	
Rated insulation voltage U_i	V AC	500	
Rated impulse withstand voltage U_{imp}	kV	6	
Rated frequency	Hz	50/60	

Selection and ordering data

Setting range of the electronic release	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A						
ET 200S Failsafe motor starters						
F-DS1e-x direct-on-line starters Failsafe direct-on-line starters up to 7.5 kW at 400 V AC Mechanically switching Solid-state UE protection						
• 0.3 ... 3	A	**3RK1 301-0AB13-0AA4**		1	1 unit	42D
• 2.4 ... 8	A	**3RK1 301-0BB13-0AA4**		1	1 unit	42D
• 2.4 ... 16	A	**3RK1 301-0CB13-0AA4**		1	1 unit	42D
F-RS1e-x reversing starters Failsafe reversing starters up to 7.5 kW at 400 V AC Mechanically switching Solid-state UE protection, fuseless						
• 0.3 ... 3	A	**3RK1 301-0AB13-1AA4**		1	1 unit	42D
• 2.4 ... 8	A	**3RK1 301-0BB13-1AA4**		1	1 unit	42D
• 2.4 ... 16	A	**3RK1 301-0CB13-1AA4**		1	1 unit	42D



F-DS1e-x direct-on-line starters

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Terminal modules for Failsafe motor starters						
TM-FDS65-S32-01/S31-01 terminal modules for F-DS1e-x direct-on-line starters with coding						
• With incoming power bus connection (TM-FDS65-S32-01)	A	**3RK1 903-3AC00**		1	1 unit	42D
• Without incoming power bus connection (TM-FDS65-S31-01)	A	**3RK1 903-3AC10**		1	1 unit	42D
TM-FRS130-S32-01/S31-01 terminal modules for F-RS1e-x reversing starter with coding						
• With incoming power bus connection (TM-FRS130-S32-01)	A	**3RK1 903-3AD00**		1	1 unit	42D
• Without incoming power bus connection (TM-FRS130-S31-01)	A	**3RK1 903-3AD10**		1	1 unit	42D

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Safety modules local and PROFIsafe

Overview

ET 200S Safety Motor Starter Solutions local/PROFIsafe

The ET 200S Safety Motor Starter Solutions are preferred in all production and process automation fields in which the enhancement of plant availability and flexibility plays a key role.

- **ET 200S Safety Motor Starter Solutions local** are preferred from the safety technology point of view for locally restricted safety applications. These motor starters are not dependent on a safe control system.
- **ET 200S Safety Motor Starter Solutions PROFIsafe**, on the other hand, are often found in safety applications of the more complex type that are interlinked. In this case a safe control system is used with the PROFINET or PROFIBUS bus systems with the PROFIsafe profile.

The ET 200S Safety Motor Starter Solutions comprise:

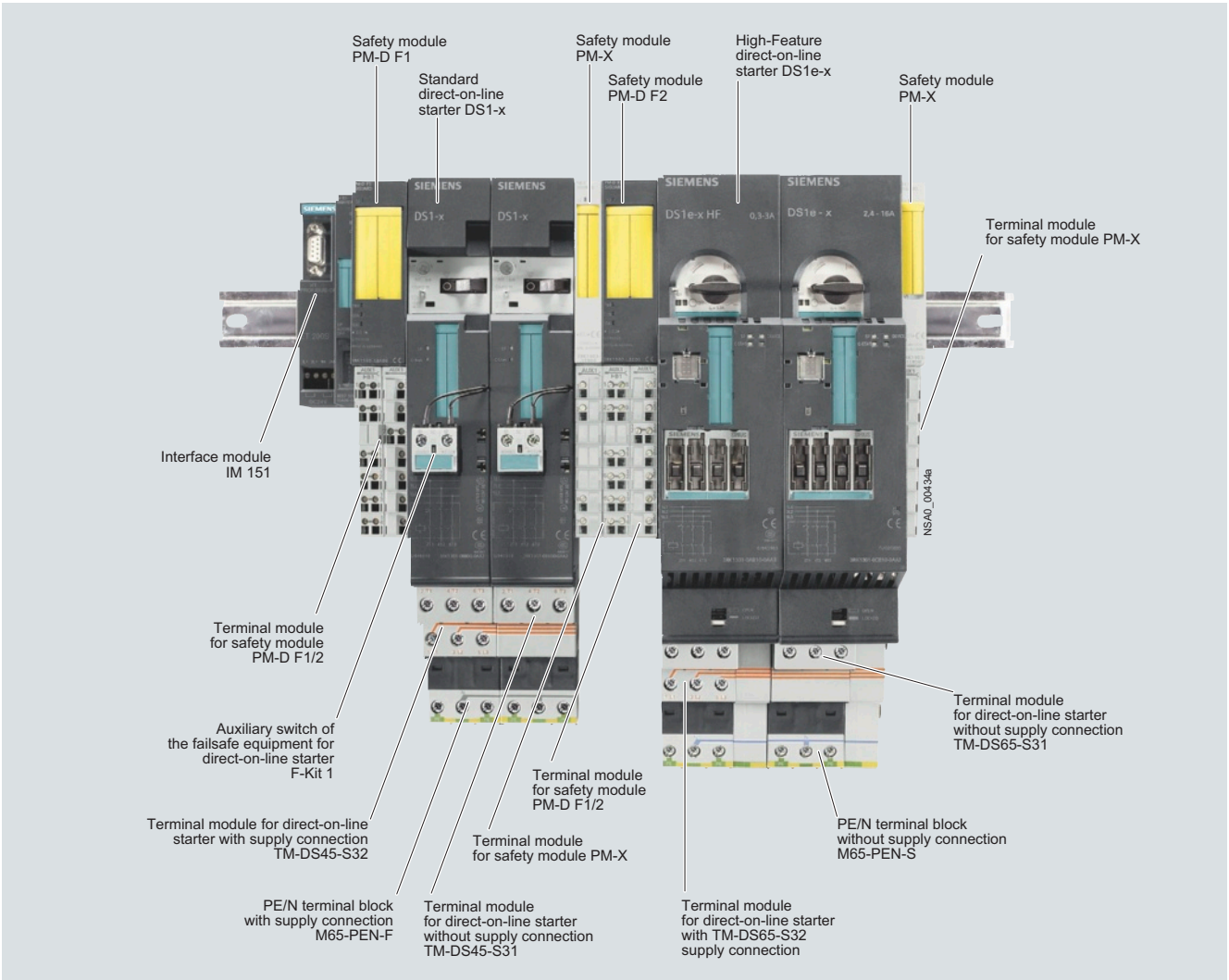
- Safety modules (page 8/103)
- Standard motor starters (page 8/90)
- High-Feature motor starters (page 8/93)
- Failsafe motor starters (page 8/99)

With the ET 200S Solutions safety motor starters there is no complicated and hence cost-intensive configuring and wiring compared to the conventional safety systems. The ET 200S Safety Motor Starter Solutions are designed for Category 4 according to ISO 13849-1 or SIL 3 IEC 62061.

They enable the use of safety-oriented direct-on-line starters or reversing starters in the SIMATIC ET 200S distributed I/O system on PROFINET or PROFIBUS. The fine modular architecture of the system permits optimum imaging of machine or plant applications.

Within an ET 200S station the Safety motor starters Solutions can also be combined with Standard motor starters or High-Feature motor starters without safety functions or the SIMATIC ET 200S FC frequency converters up to max. 4 kW and up to Category 3 according to ISO 13849-1 or SIL 2 according to IEC 62061.

ET 200S Safety Motor Starter Solution local



Interplay of ET 200S Safety Motor Starter Solutions local components

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Components for ET 200S Safety Motor Starter Solution local

The ET 200S Safety Motor Starter Solutions local comprise:

Version 1 (see example 1 on page 8/105):
- Safety modules PMD F1 ... 5
- PM-X module
- Standard motor starter or High-Feature motor starter

Version 2 (see example 2 on page 8/105):
- PM-D FX1 safety module
- Failsafe motor starters

Functionality of the ET 200S Safety Motor Starter Solutions local

- For use of Standard, High-Feature or Failsafe motor starters in systems with safety categories 2 to 4 (according to ISO 13849-1)
- Can also be used in combination with external safety relays
- Can also be used to activate external safety systems
- No complex wiring for conventional safety technology
- Safety module available for function-monitored and automatic starting
- Safety module available for Stop category 0 and 1
- Safety module for monitoring the auxiliary voltages for motor starters
- Safety modules can be plugged into the TM-PF30 terminal modules

With Safety motor starters Solutions local the highest safety category can be reached according to ISO 13849-1 and IEC 62061. They can thus be used for evaluation of EMERGENCY-STOP circuits or for monitoring protective doors and also for time-delayed disconnections. With the contact multiplier the safety-relevant signals can also be made available to external systems.

All standard safety applications can be covered through combination of different TM-PF30 terminal modules. Needless to say, ET 200S motor starters can also be used in conjunction with external safety relays or with ASIsafe.

Safety motor starter Solutions local reduce wiring by up to 80 % compared to conventional safety systems with local safety applications.

With the Safety motor starters Solutions local it is easy to install several safety circuits. The safety sensors are connected directly and locally to the safety modules. These safety modules perform the work of the otherwise obligatory safety relays and safely shut down the downstream motor starters in accordance with the function selected. The crosslinks required for this are already integrated in the system and need no additional wiring. All signals from the safety modules are automatically relayed as diagnostic signals, e.g. in the event of crossover in the EMERGENCY-STOP circuit.

The safety module evaluates the signal state of the connected safety sensors and, using the integrated safety relays, shuts down the group(s) of downstream motor starters. The shutdown function is monitored by the module, and the auxiliary voltages likewise.

Safety-relevant system signals, e.g. caused by an actuated EMERGENCY-STOP switch or a missing auxiliary voltage, are automatically generated and notified to the interface module. The latter assigns an unambiguous ID to the fault. Using the PROFIBUS DP diagnostics block, faults of this type can be identified and localized without a great deal of programming work.

PM-D F1/F2/F3/F4/F5 safety modules

- PM-D F1/F2/F3/F4 safety modules monitor auxiliary voltages and contain the complete functionality of a safety relay:
  - PM-D F1: For evaluation of EMERGENCY-STOP circuits with the function "Monitored start"
  - PM-D F2 For monitoring of protective doors with the function "automatic start".
  - PM-D F3: Expansion to PM-D F1/F2 for time-delayed disconnection.
  - PM-D F4: For expanding safety circuits with other ET 200S motor starters, e. g. in a different tier
  - PM-D F5: Transmits the status from PM-D F1 ... 4 via four floating enabling circuits to external safety devices (contact multipliers)
- The PM-D F1 and PM-D F2 modules can be combined with the PM-D F3 or PM-D F4 modules.
- A PM-D F5 can be positioned at any point between a PM-D F1 ... 4 and a PM-X[1)].
- Safety modules monitor the U1 and U2 auxiliary voltages. A voltage failure is relayed as a diagnostic signal over the bus.
  - No additional PM-D safety module is required when the safety modules are used.
  - Each safety circuit, beginning with a PM-D F1 ... 4, must be terminated with one PM-X each[1)].

1) See "Accessories for Safety modules Local" on page 8/116.



PM-D F1 safety module

PM-D FX1 safety module

The PM-D FX1 safety module is used for feeding in 1 to 6 switch-off groups. The infeed voltage can be switched using 1 to 6 external safety shutdown devices (either ASIsafe monitors or 3TK28 safety relays). This safety module is used in applications with external safety shutdown devices where there is a need for the fully selective safety shutdown of failsafe motor starters/frequency converters (example 2 on page 8/105).

Terminal modules for (TM-PF30) safety module

For feeding load and sensor voltage to the potential bars of the motor starters, and for the connection of the 2-channel sensor circuit (e.g. EMERGENCY-STOP pushbutton) and a RESET button. Different terminal modules are available for the configuring of separate safety circuits or for the cascading of safety circuits, and for applications with time-delayed disconnection (see page 8/111).

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Safety modules local and PROFIsafe

Terminal module (TM-X)

For connection of an external infeed contactor (2nd shutdown possibility), with terminals for contactor coil and feedback contact, is always required to terminate a group of safety-oriented motor starters.

Failsafe Kit

The Failsafe Kit (F-Kit) must be added to each Standard motor starter in a safety segment in order to monitor the switching function.

F-Kit 1 supplements the DS1-x direct-on-line starter, F-Kit 2 the RS1-x reversing starter.

The F-Kits are comprised of:
- Contact supports for the terminal modules
- One or two auxiliary switch blocks for the contactor/contactors of the motor starter
- Connecting cables.

High-Feature motor starters and their terminal modules come as standard with the functionality of the F-Kits integrated.

Components needed for applications with safety requirement

Components needed	Maximum achievable safety integrity according to ISO 13849-1 or IEC 62061				
	ISO 13849-1	PL b/c, Category 1	PL c, Category 2	PL d[1], Category 3	PL d[1], Category 4
	IEC 62061	SIL 1	SIL 1	SIL 2	SIL 3
PM-D		✓	--	--	--
PM-D F1/-F2/-F4		--	✓	✓	✓
PM-D F3		--	✓	✓	--
F-Kit 1 / F-Kit 2		--	✓[2]	✓[2]	✓[2]
PM-X		--	✓	✓	✓
PM-D FX1		--	✓	✓	✓

✓ Required
-- Not required

1) An external infeed contactor is required in the main circuit (2-channel capability).

2) F-Kit needed only for Standard motor starter; already integrated in High-Feature motor starter.

Possible combinations of safety and terminal modules

Terminal modules	PM-D F1	PM-D F2	PM-D F3	PM-D F4	PM-D F5	PM-X	PM-DFX1	FCM
TM-PF30 S47-B0	✓	✓	--	--	--	--	--	--
TM-PF30 S47-B1	✓	✓	--	--	--	--	--	--
TM-PF30 S47-C0	--	--	✓	✓	--	--	--	--
TM-PF30 S47-C1	--	--	✓	✓	--	--	--	--
TM-PF30 S47-D0	--	--	--	--	✓	--	--	--
TM-X15 S27-01	--	--	--	--	--	✓	--	--
TM-PFX30 S47-G0	--	--	--	--	--	--	✓	--
TM-PFX30 S47-G1	--	--	--	--	--	--	✓	--
TM-FCM30 S47	--	--	--	--	--	--	--	✓

✓ Available
-- Not available

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Examples

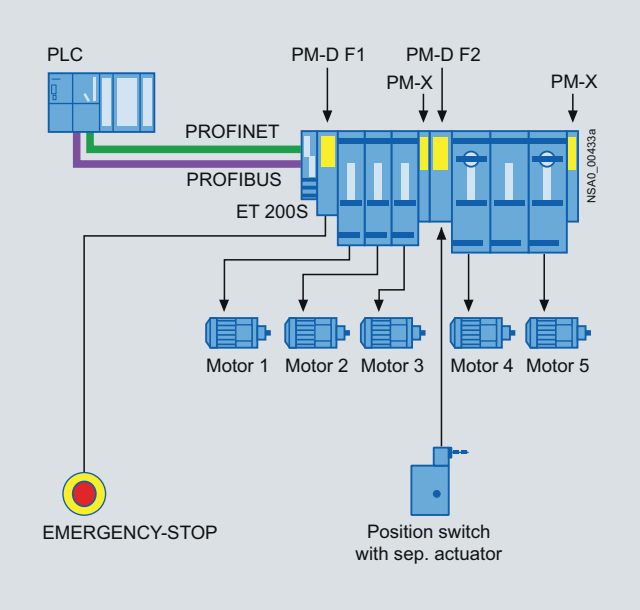
The diverse possible uses of the safety motor starter Solutions local are presented in the manual SIMATIC ET 200S Motor Starters in the context of typical sample applications.

Safety functional examples for easy, quick and low-cost implementations of applications with Safety motor starters Solutions local are available on the Internet:

You can find more information on the Internet at:

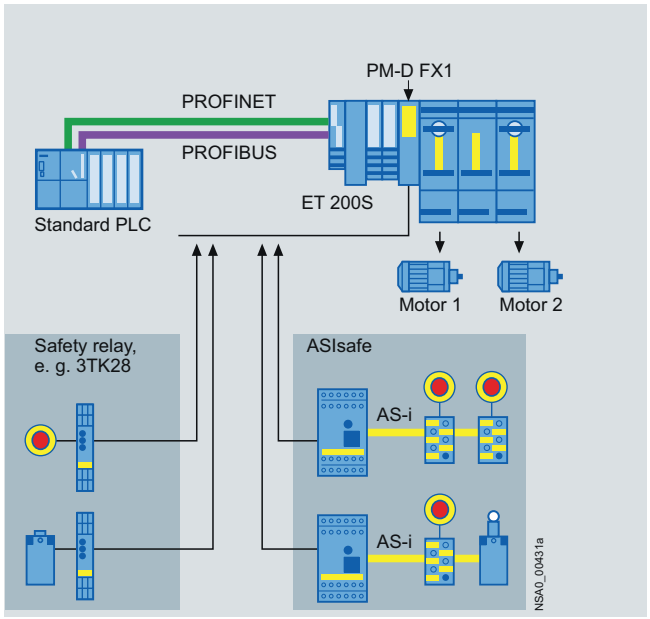
www.siemens.com/ET200S-motorstarter

Example 1:



ET 200S Safety Motor Starter Solutions local with 2 safety circuits (= switch-off groups), Standard motor starters and High-Feature motor starters.

Example 2:



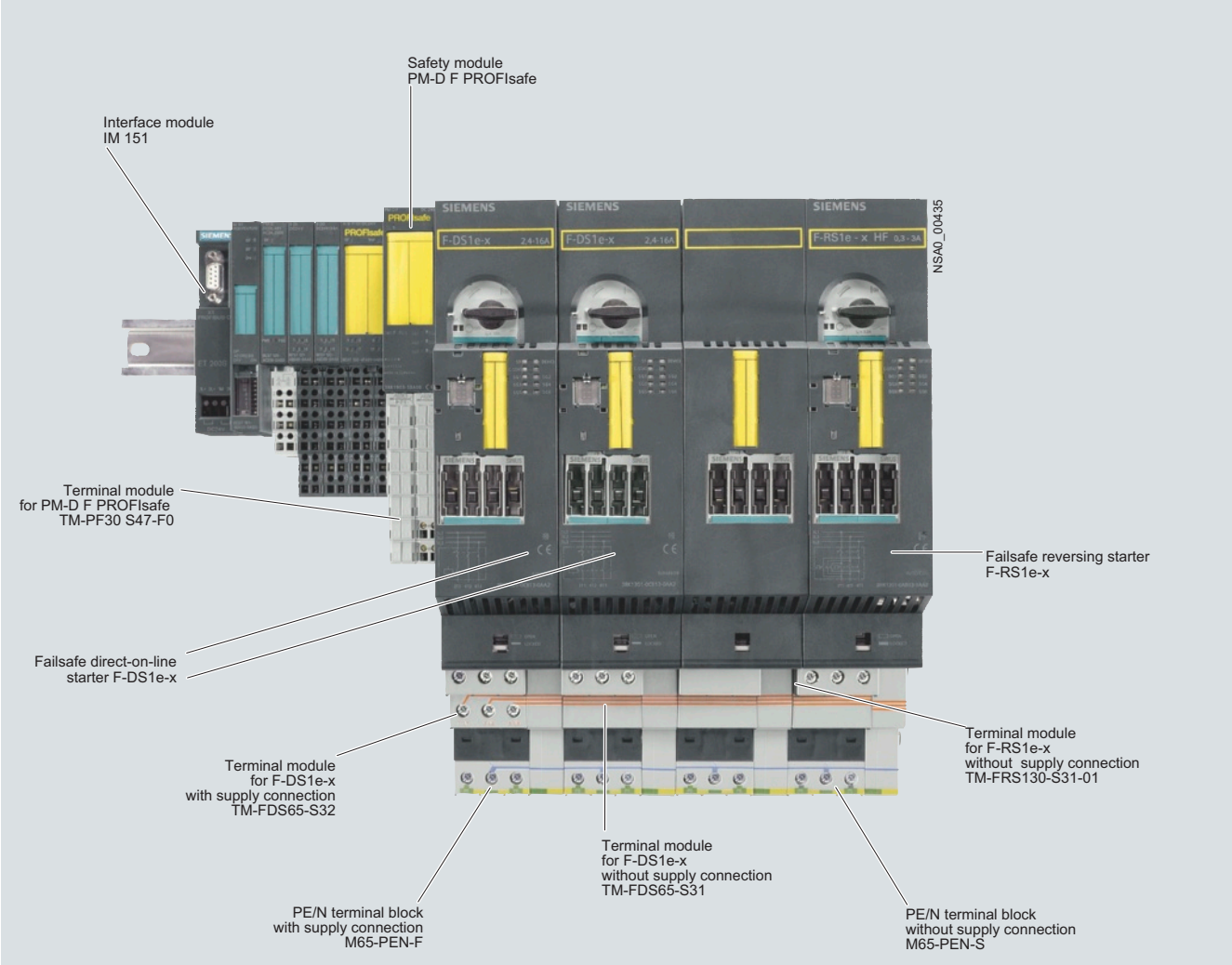
ET 200S Safety Motor Starter Solutions local with 2 external safety assemblies (= safety relays or ASIsafe monitors) and with Failsafe motor starters (PM-DFX1 application). 2 of the 6 available safe switch-off groups are used.

Signals with relevance for safety can be input to ET 200S through a PM-DFX1 infeed terminal module through the enabling circuits of the ASI-safe monitor or the safety relay to control the Failsafe motor starters which then selectively switch off the downstream motors.

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Safety modules local and PROFIsafe

ET 200S Safety Motor Starter Solutions PROFIsafe



Interplay of ET 200S Safety Motor Starter Solutions PROFIsafe components

Components for ET 200S Safety Motor Starter Solution PROFIsafe

The ET 200S Safety Motor Starter Solutions PROFIsafe consists of (see example on page 8/107):

- PMD F PROFIsafe safety modules
- Failsafe motor starters
- Safe control system is used with the PROFINET or PROFIBUS bus systems with the PROFIsafe profile

Functionality of the ET 200S Safety Motor Starter Solutions PROFIsafe

- For the use of Failsafe motor starters in plants with safety category 2 to 4 according to ISO 13849-1 and SIL 2 and 3 acc. to IEC 62061. The use of Standard or High-Feature motor starters is also possible with certain assemblies
- High flexibility (any assignment of sensors to motor starters using the PLC)
- Full selectivity of disconnection of the Failsafe motor starters
- No complex wiring for conventional safety systems, e.g. no in-feed contactors even in the highest safety category
- Can also be used to activate external safety systems through F-CM contact multiplier
- Safety module available for any safety function
- Safety module available for Stop category 0 and 1
- Safety module for monitoring the auxiliary voltages for motor starters
- Safety modules can be plugged into the TM-PF30 terminal modules

Sensor and actuator assignment are freely configurable within the framework of the distributed safety concept:

The logic of the safety functions is implemented by software. Safety-oriented PROFIsafe communication and the use of a safety-oriented control system are required. Integration of the safety technology in the standard automation is realized through a single bus system (see Advantages of PROFIsafe), using PROFIBUS as well as PROFINET.

High degree of flexibility with safety technology Failsafe motor starters for PROFIsafe

In EMERGENCY-STOP applications, the Failsafe motor starters are selectively switched off through the upstream PM-D F PROFIsafe safety module. For each safety module, six switch-off groups can be formed. In the first delivery stage, the failsafe freely-programmable logic of the SIMATIC controller is used to interface with the relevant Failsafe sensor technology.

F-CM contact multipliers

The interface between PROFIsafe and installations that use conventional safety technologies is implemented through the F-CM Failsafe contact multiplier with four floating contacts.

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PM-D F PROFIsafe safety modules

The PM-D F PROFIsafe safety module receives the shutdown signal from the interface module of the ET 200S and safely switches off 1 to 6 switch-off groups. This safety module is used in PROFIsafe applications where there is a need for the selective safety shutdown of Failsafe motor starters/frequency converters.

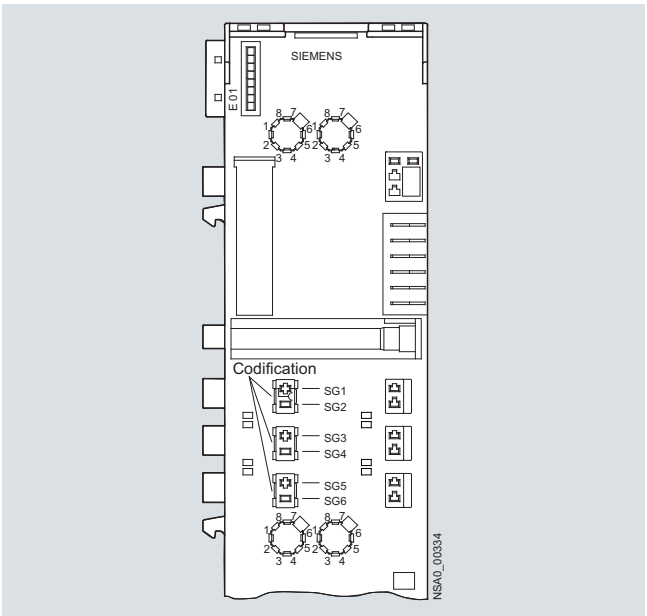


PM-D F PROFIsafe with TM-PF30 S47-F0 terminal module

Terminal modules

The terminal assignment of the terminal modules for safe motor starters corresponds to the terminal assignment of the 45 mm and 65 mm terminal modules. The terminal modules for safe motor starters have a coding module in addition. This enables the safe motor starter to be assigned to one of the six switch-off groups.

The terminal module contains three coding elements which fully cover the three coding openings in the terminal module. The labeled coding element contains (in the chamber marked with the dash) the busbar tap; the non-labeled coding elements are used only to cover the coding openings. Switch-off group 1 (AG1 or SG1) is coded in the as-delivered state. The coding can be changed to switch-off group 2 by releasing the coding element and turning it through 180°. Changing the coding to switch-off group 3 is possible by exchanging the labeled and blank coding elements. In this case, the dash on the labeled coding element must correlate with the dash of the required switch-off group (symbolized busbar).



The Failsafe motor starters are assigned to one of the six possible switch-off groups.

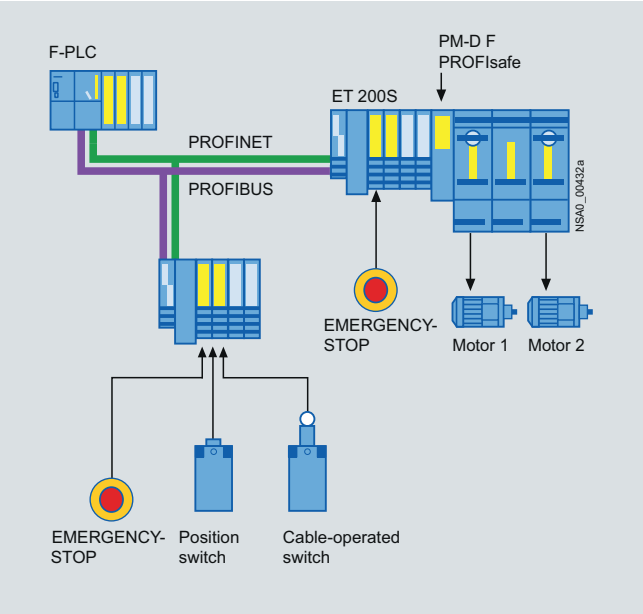
Example:

The diverse possible uses of the Safety motor starter Solutions PROFIsafe are presented in the manual SIMATIC ET 200S Motor Starters in the context of typical sample applications.

Safety functional examples for easy, quick and low-cost implementations of applications with safety motor starters Solution PROFIsafe are available on the Internet:

You can find more information on the Internet at:

www.siemens.com/ET200S



ET 200S Safety motor starters Solutions PROFIsafe with Failsafe motor starters and fully selective disconnection (PM-DF PROFIsafe application)

Within an ET 200S station the Failsafe motor starters are assigned to one of 6 safety segments. For plants with distributed configuration the shutdown signals of these safety segments are preferably issued by a higher-level, safety-oriented control system through PROFIsafe. This permits the greatest flexibility for assigning the motor starters to different safety circuits.

Alternatively, an ET 200S F-CPU can also be used for control purposes.

If a safety-oriented SIMATIC CPU is used, the ET 200S is available as a safety-oriented peripheral. Nevertheless, in such a station it is possible to configure conventional motor starters and input/output modules mixed with modules with safety functions.

Thanks to the PROFIsafe profile, the safety functions are available in the complete network, which means that the Safety motor starter Solutions PROFIsafe enable the selective disconnection of a Failsafe motor starters or the disconnection of a group of Standard and High-Feature motor starters regardless of where and on which I/O station the safe control devices were connected. As such, this solution provides an unprecedented level of flexibility and reduction of wiring for applications in widespread plants or with a sporadic demand for changes in the assignment of safety segments.

The safety motor starters Solution PROFIsafe are ideally suited for safety concepts with Cat. 2 to 4 according to ISO 13849-1 and up to SIL 3 according to IEC 62061.

Each safety module switches up to 6 switch-off groups for Failsafe motor starters/frequency converters.

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Technical specifications

PM-D F1, F2, F3, F4 and F5 safety modules		
Mechanical endurance	Operating cycles	10 x 10^6
Electrical endurance	Operating cycles	200000 at I_e
Utilization categories		DC-13
Control times		
• Minimum command duration	ms	200
• Recovery time	s	< 1
• Off-delay	ms	30
Control circuit U_1		
• Rated control supply voltage U_S	V DC	24
• Operating range DC up to 60 °C		0.85 ... 1.2 x U_s
• Power consumption	W	2.4
• Recommended short-circuit protection		gG 2 A
• Output OUT+/OUT- for control of expansion modules		24 V DC/< 50 mA (PTC fuse)
Switched auxiliary circuit U_2		
• Rated control supply voltage U_S	V DC	24
• Operating range DC up to 60 °C		0.85 ... 1.2 x U_s
• Rated operational current I_e (13 ... 24 V DC)	A	4
• Uninterrupted thermal current I_{th}	A	5
Recommended short-circuit protection for enabling and signaling circuits		Fuse links: LV HRC type 3NA, DIAZED type 5SB, NEOZED type 5SE gG 6 A operational class
Supply of		
• Motor starters		Yes
• Solid-state modules		No
• Ex(i) modules		No
• BG certification		Yes
• UL-, CSA certification		Yes
Cable length for EMERGENCY-STOP and ON buttons	m	max. 1 000
Mounting dimensions (W x H x D)	mm	30 x 196.5 x 117.5 (incl. terminal module)
Enabling circuits with PM-D F5		4 (floating)

PM-D FX1 safety module (infeed terminal module)		
Dimensions		
Mounting dimensions (W x H x D)	mm	30 x 196.5 x 117.5 (incl. terminal module)
Module-specific specifications		
Ambient temperature	°C	0 ... +60
Degree of protection		IP20
Maximum achievable safety classes		
• According to IEC 62061		SIL 3
• According to DIN V 19250		Shutdown class 5 and 6
• According to ISO 13849-1		Category 4
Safety characteristics		
Proof-test interval		10 years
Voltages, currents, potentials		
Rated control supply voltage U_s	V DC	21.6 ... 26.4 to 60 °C
Rated operational current I_e	A	6 Internal protection with 7 A melting fuse (quick)
Recommended upstream short-circuit protection	A	Melting fuse gG 6.3
Supplying		
• Failsafe motor starters		Yes
• Failsafe frequency converters		Yes
• Solid-state modules		No
• Ex[i] modules		No
Power consumption		
• From the backplane bus	mA	≤ 10
• From U_1	mA	≤ 35
• From SGx	mA	≤ 15
Status, alarms, diagnostics		
Alarms		None
Diagnostics functions		
• Group fault/device fault		Red "SF" LED
• Monitoring the control supply voltage for solid-state modules U1 (PWR)		Green PWR LED
• Monitoring of six switch-off groups		Green LED SG1 ... SG6
• Diagnostics information can be read out		Yes
Standards, approvals		
• TÜV		Yes
• UL-, CSA certification		Yes

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F-CM contact multipliers		
Dimensions		
Dimensions (W x H x D)	mm	30 x 196.5 x 117.5 (incl. terminal module)
Module-specific specifications		
Number of relay outputs		4 (4 x 1-channel or 2 x 2-channel safe coupling/contact multiplication)
Internal power supply for busbar		U1 (from PM-D F/PM-D FX1)
Maximum achievable safety class		
• According to IEC 62061		SIL3
• According to DIN VDE 0801		AK 6
• According to ISO 13849-1		Cat. 4
Voltages, currents, potentials		
Switching capacity of the relay outputs		Utilization category DC-13 (I_e/U_e): 1.5 A / 24 V
Electrical separation		
• Between outputs and backplane bus		Yes
• Between outputs and power supply		Yes
• Between outputs		Yes
• Between outputs/power supply and shield		Yes
Status, alarms, diagnostics		
Status display		PWR and STAT
Alarms: Diagnostics alarm		None
Diagnostics functions		Yes
• Group fault display		Red LED (SF)
• Diagnostics information can be read out		Available
• Monitoring the control supply voltage for solid-state modules U_1 (PWR)		Green PWR LED
• Monitoring the switching state of the enabling circuit		Red/green STAT LED

PM-D F PROFIsafe safety modules		
Dimensions		
Dimensions (W x H x D)	mm	30 x 196.5 x 117.5 (incl. terminal module)
Module-specific specifications		
Number of outputs, source input		6 switch-off groups (safety group 1 ... 6)
Internal power supply for busbar		U1
Assigned address range		
• In PAE	byte	5
• In PAA	byte	5
Maximum achievable safety class		
• According to IEC 62061		SIL3
• According to DIN VDE 0801		AK 6
• According to ISO 13849-1		Cat. 4
Voltages, currents, potentials		
Control supply voltage	V	24 DC
Electrical separation		
• Between outputs and backplane bus		Yes
• Between outputs and power supply		No
• Between outputs		No
• Between outputs/power supply and shield		Yes
Status, alarms, diagnostics		
Status display		Green LED per SG Green LED for electronics supply Green LED for load voltage
Alarms: Diagnostics alarm		"TO"
Diagnostics functions		
• Group fault display		Red LED (SF)
• Diagnostics information can be read out		Available
Settings		
Module address		Diverse: 1. Using a safety-oriented parameter in the parameterization message frame over the backplane bus 2. Using the 10-pole DIL switch (binary-coded) on the left side of the module The received address is then compared with the DIL switch setting

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Safety modules local and PROFIsafe

Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Safety modules local						
 3RK1 903-3DA00						
PM-D F1 With diagnostics Safety module for EMERGENCY-STOP application Monitored start	A	**3RK1 903-1BA00**		1	1 unit	42D
PM-D F2 With diagnostics Safety module for protective door monitoring Automatic start	A	**3RK1 903-1BB00**		1	1 unit	42D
PM-D F3 With diagnostics Safety module for expanding PM-D F1/2 for another voltage group Time-delayed 0 to 15 s	A	**3RK1 903-1BD00**		1	1 unit	42D
PM-D F4 With diagnostics Safety module for expanding PM-D F1/2 for another voltage group	A	**3RK1 903-1BC00**		1	1 unit	42D
PM-D F5 With diagnostics Safety module for expanding PM-D F1...4 with four floating enabling circuits Contact multipliers	A	**3RK1 903-1BE00**		1	1 unit	42D
PM-D FX1 With diagnostics Infeed terminal module for supply of 1 to 6 switch-off groups	A	**3RK1 903-3DA00**		1	1 unit	42D
FC-M contact multipliers With 4 safe floating contacts	A	**3RK1 903-3CA00**		1	1 unit	42D
Safety modules PROFIsafe						
PM-D F PROFIsafe safety modules For PROFIBUS and PROFINET For Failsafe motor starters For Failsafe contact multipliers With six switch-off groups (SG1 to SG6)	A	**3RK1 903-3BA02**		1	1 unit	42D
F-CM contact multipliers With 4 safe floating contacts	A	**3RK1 903-3CA00**		1	1 unit	42D

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Terminal modules for PM-D F1/F2/F3/F4/F5 safety modules

For feeding load and sensor voltage to the self-assembling potential bars of the Standard motor starters, High-Feature motor starters and frequency converters. Safety modules for voltage monitoring are plugged onto TM-P modules. TM-P modules can be used any number of times within the ET 200S. A safety module must always be plugged upstream from the first motor starter.

Different safety circuits can be functionally separated or else cascaded using different terminal modules. Each group in such a case must be terminated with a PM-X safety module (connection module).

TM-PF30 S47-B1

The terminal module is always positioned at the beginning of a safety segment and accommodates the PM-DF1 safety module for EMERGENCY-STOP applications or the PM-DF2 safety module for protective door monitorings. The 24 V control supply voltages for the electronics (U1) and those for supplying the contactors (U2) of the motor starters must be connected along with the 2-channel connection of the safety sensors (e.g. EMERGENCY-STOP pushbuttons) to this terminal module. Connections for the ON button (enabling) and safe output of the safety module are available in addition.

TM-PF30 S47-B0

The terminal module is used to cascade lower level safety segments and accommodates the PM-DF1 safety module for EMERGENCY-STOP applications or the PM-DF2 safety module for protective door monitorings. No other auxiliary voltage has to be connected to this terminal module. The supply comes from the preceding PM-DF1 or PM-DF2 module over the potential bars of the terminal modules. Once the potential of the preceding safety module is disconnected, this sub-potential also has no voltage.

TM-PF30 S47-C1

The terminal module is always positioned at the beginning of a safety segment expansion in a new station, e.g. at an interlace point. It accommodates the PM-D F3 safety module for time-delayed shutdown or the PM-D F4 safety module for direct shutdown in separately located ET 200S stations. The 24 V control supply voltages for the electronics (U1) and those for supplying the contactors (U2) are fed in new.
The shutdown command from an upstream ET 200S station is received through a safe input. Separate terminals are available to connect the feedback circuit to the upstream ET 200S station.
No safety sensors can be connected to this terminal module.

TM-PF30 S47-C0

The terminal module is used to cascade lower level safety segments and accommodates the PM-D F3 safety module for time-delayed shutdown or the PM-D F4 safety module. Only the U2 control supply voltage for the contactors must be connected to this terminal module. The U1 supply comes from the preceding safety module (sub-potential group) over the potential bars of the terminal modules. No safety sensors can be connected to this terminal module.

TM-PF30 S47-D0

The terminal module is used to accommodate the PM-D F5 safety module. On this terminal module, safe signals can be relayed to external systems through four groups, each with two safety relay contacts configured with redundancy. The terminal module must always be positioned between one of the above mentioned terminal modules and a terminal module for the TM-X connection module. No safety sensors can be connected to this terminal module.

Terminal module for PM-X safety module (TM-X)

TM-X15 S27-01

For connection of an external infeed contactor (second shutdown option) for category 3 and 4. The connection module is plugged on the right alongside the last motor starter of a safety segment. On the TM-X terminal module there are the terminals for connecting the positively driven NC contact of the contactors as well as the terminals for connecting the contactor coil. If no contactor with redundant switching is required, e. g. for category 2 (ISO 13849-1), the feedback circuit has to be closed at these terminals with a jumper. In applications with external safety relays it is also used instead of the safety module as interface to the external safety relay.

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Technical specifications

TM-PFX30 S47/TM-PF30 S47 terminal modules		
Dimensions		
• Mounting dimensions (W x H x D)	mm	30 x 196.5 x 102
• Depth with power module	mm	117.5
Insulation voltages and rated currents		
• Insulation voltage	V	500
• Rated operational voltage	V DC	24
• Rated operational current	A	10
Conductor cross-sections		
• Solid	mm^2	1 x (0.14 ... 2.5), according to IEC 60947 1 x 2.5
• Finely stranded with end sleeve	mm^2	1 x (0.14 ... 1.5), according to IEC 60947
• AWG cables, solid or stranded	AWG	1 x (18 ... 22)
Wiring		
• Required tool		Standard screwdriver size 1
• Tightening torque	Nm	0.4 ... 0.7

Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Terminal modules for Safety modules local						
TM-PF30 S47-B1 terminal modules For PM-D F1/2 Safety Modules With infeed U1/U2 and sensor connection	A	**3RK1 903-1AA00**		1	1 unit	42D
TM-PF30 S47-B0 terminal modules For PM-D F1/2 Safety Modules With sensor connection	A	**3RK1 903-1AA10**		1	1 unit	42D
TM-PF30 S47-C1 terminal modules For PM-D F3/4 Safety Modules With infeed U1/U2 and control input IN+/IN-	A	**3RK1 903-1AC00**		1	1 unit	42D
TM-PF30 S47-C0 terminal modules For PM-D F3/4 Safety Modules With infeed U2	A	**3RK1 903-1AC10**		1	1 unit	42D
TM-PF30 S47-D0 terminal modules For PM-D F5 Safety Modules	A	**3RK1 903-1AD10**		1	1 unit	42D
TM-X15 S27-01 terminal modules For PM-X Safety Module	A	**3RK1 903-1AB00**		1	1 unit	42D
TM-P15-S27-01 terminal modules For PM-D power module	A	**3RK1 903-0AA00**		1	1 unit	42D
TM-PFX30 S47-G0/G1 terminal modules For PM-D FX1 safety modules (infeed terminal modules)						
• Infeed left (TM-PFX30 S47-G0)	A	**3RK1 903-3AE10**		1	1 unit	42D
• Infeed center (TM-PFX30 S47-G1)	A	**3RK1 903-3AE00**		1	1 unit	42D
TM-FCM30 S47-F01 terminal modules For F-CM contact multipliers	A	**3RK1 903-3AB10**		1	1 unit	42D
Terminal modules for Safety modules PROFIsafe						
TM-PF30 S47-F0 terminal modules For PM-D F PROFIsafe safety modules	A	**3RK1 903-3AA00**		1	1 unit	42D
TM-FCM30 S47-F01 terminal modules For F-CM contact multipliers	A	**3RK1 903-3AB10**		1	1 unit	42D


3RK1 903-1AA00

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Accessories for Standard motor starters

Control kit

The control kit for the Standard motor starter provides the possibility of testing the motor during start-up or service by actuating the motor starter protector. Using the control kit with the motor starter protector tripped, the contactor is mechanically locked in ON position.

Control unit

With the control unit the contactor coils of the Standard motor starter can be directly controlled using 24 V DC. The motor starter can thus be started as normal using a on-site control point without PLC or bus.

Note:

The control unit cannot be used in combination with the safety system or a brake control module.

DM-V15 distance module

- Passive module without bus connection and terminals
- Does not need a separate terminal module
- Follows a TM-DS45 or TM-RS90 or TM-xB if required
- Does not need to be taken into account when configuring the GSD file

The distance module is available for applications with high motor currents or high ambient temperatures involving Standard motor starters. It can be used to the right and left of a DS1-x direct-online starter or to the right of an xB1...4 brake module in order to improve heat removal to the side. The distance module is a completely passive module and does not need to be taken into account with regard to the control system during configuration. Details of the distance module can be found in the manual "SIMATIC ET 200S". If you have any queries concerning the use of the distance module, contact Technical Support for Siemens Low Voltage Controls (Fax: +49(0)911/895-5907).

Accessories for High-Feature motor starters

Control module 2DI LC COM

The 2DI control module is plugged onto the interface on the front of the motor starter. The module provides two inputs which can receive signals from the process and be assigned directly to the starter.

The functionality can be selected from a list of various control functions as part of the PROFIBUS parameterization. On-site control point, emergency start and quick stop, for example, are available as functions. The signal levels can also be parameterized (NO/NC). For more extensive control functions the two inputs of a xB3 or x4 brake control module, which is plugged in alongside on the right, can be integrated in addition. The signal states of all inputs are transmitted in parallel with the internal use to the higher-level control system.

When a motor starter is replaced, the parameterization is automatically transmitted by download to the new starter. The inputs on the motor starter ensure autonomous operation, e.g. in the event of PLC failure, on the one hand and short response times through direct processing in the starter on the other hand. Another advantage results from the direct assignment of functions to modular machine concepts.

The 2DI LC COM control module has in addition a PC interface for connecting the Switch ES Motor Starter parameterization and diagnostics software (Version 2.0 and higher). The module works solely on High-Feature motor starters with ES Motor Starter interface. The Logo!-PC cable is used as connecting cable between the 2DI LC COM control module and the High-Feature motor starter.

Accessories for Standard and High-Feature motor starters

PE/N bridge module

PE/N bridge modules are used to bridge gaps in the PE/N bus which are caused, for example, by using brake control modules, PM-D(F) power modules or PM-X connection modules. If a bridge module is used, the supply must not be fed in anew. They are available in 15 mm and in 30 mm widths.

Bridge modules L123

The L123 bridge modules are used to bridge gaps in the power bus (see above). They are available in 15 mm and in 30 mm widths.

Brake control module

For motors with mechanical brake (see "General Data" ➞ "Overview", page 8/84)

Terminal modules for brake control modules

The TM-xB terminal modules are used to accommodate the xB1, xB2, xB3 and xB4 brake control modules. The TM-xB terminal module must always follow directly after a terminal module for Standard motor starters, High-Feature motor starters or frequency converters as control of the solid-state braking switch is provided through an output of the motor starter/frequency converter. The xB215 terminal modules for the brake control modules have not only the terminals for connecting the cable for the motor brake but also the terminals of the two local acting inputs. These local inputs are not evaluated by a frequency converter, which is why the xB215 terminal module can only be switched behind a motor starter.

Accessories for Standard, High-Feature and Failsafe motor starters

PE/N terminal blocks

The PE/N terminal block is required for direct connection of the protective conductor in the motor cable without intermediate terminals. It is plugged together with the terminal module for motor starters or frequency converters before the latter is mounted on the standard mounting rail. With two PE terminals and one N terminal the "-F" version is connected to the "-S32" terminal modules for motor starters or frequency converters. The "-S" version is combined with the "-S31" terminal module. The "F" terminal modules are delivered with two caps for closing the PE/N bus contacts on the final terminal module of a segment. The modules for the Standard motor starters have a width of 45 mm and the modules for the High-Feature motor starters and frequency converters have a width of 65 mm.

There is no electrical connection between the terminals of the PE/N terminal block and the integrated shielding of the frequency converter. The PE/N terminal block must therefore not be used for the shielding of the motor cable.

Accessories for Safety modules local

The Failsafe Kit (F-Kit) is required for Standard motor starters in a safety segment (see page 8/104).

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Accessories

Technical specifications

xB1, xB2, xB3, xB4, xB5, xB6 brake control modules

		xB1	xB3	xB2	xB4	xB5	xB6
Dimensions (W x H x D)	mm	15 x 196.5 x 125.5 including terminal module on 7.5 mm standard mounting rail					
Rated operational voltage	V	24 DC		500 DC (min. 100)		400 AC	
Power supply		Externally through terminal module		From brake rectifier through terminal module		Externally through terminal module	
Rated operational current	A	4		0.7		0.5	
Reverse polarity protection		No, in the event of polarity reversal the brake is released and the overload/short-circuit protection is not effective				Not relevant	
Overload/short-circuit protection		Electronic				1 A melting fuse	
Conductor cross-section of the terminal module for the brake control module	mm^2	1 x 2.5 without end sleeve 1 x 1.5 with end sleeve					
Number of outputs		0	1 (used internally)	0	1 (used internally)	0	1 (used internally)
Number of inputs		0	2	0	2	0	2
Address area required per module							
• With summary		0	2 bits	0	2 bits	0	2 bits
• Without summary		0	1 byte	0	1 byte	0	1 byte
Diagnostics functions							
• Group fault "SF"		Red LED					
• Switching state for brake "STAT"		Yellow LED					
• Inputs 1 and 5		--	Green LED	--	Green LED	--	Green LED
Parameters (default values underlined)							
• Brake overload diagnostics		--	Disable/<u>Enable</u>	--	Disable/<u>Enable</u>	--	
• Input delay	ms	--	0 / 0.1 / 0.5 / <u>3</u> / 15	--	0 / 0.1 / 0.5 / <u>3</u> / 15	--	0 / 0.1 / 0.5 / <u>3</u> / 15

Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories for Standard motor starters						
 3RK1 903-0CA00 **Control kits** for manually operating the contactor contacts during start-up and servicing (one set contains five control kits)	A	**3RK1 903-0CA00**		1	1 unit	42D
 3RK1 903-0CG00 **Control units** for direct contactor control (manual control) 24 V DC	A	**3RK1 903-0CG00**		1	1 unit	42D
 3RK1 903-0CD00 **DM-V15 distance modules for DS1-x direct-on-line starters with high temperatures or high current loading** 15 mm wide	A	**3RK1 903-0CD00**		1	1 unit	42D
 3RK1 903-2AA00 **PE/N M45-PEN-F terminal blocks** 45 mm wide including two caps in combination with TM-DS45-S32 / TM-RS90-S32	A	**3RK1 903-2AA00**		1	1 unit	42D

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories for Standard motor starters (continued)							
 3RK1 903-2AA10	**PE/N M45-PEN-S terminal blocks** 45 mm wide in combination with TM-DS45-S31/TM-RS90-S31	A	**3RK1 903-2AA10**		1	1 unit	42D
Accessories for High-Feature motor starters							
 3RK1 903-0CH20	**2DI LC COM control modules** Digital input module with 2 inputs (cable length up to 100 m) for local motor starter functions for mounting onto the front of motor starters, operational voltage 24 V DC (supplied from U_1), short-circuit proof, floating contact with serial interface for connecting ES motor starters, connected using LOGO!-PC cable	A	**3RK1 903-0CH20**		1	1 unit	42D
	LOGO! PC cables for connecting the High-Feature motor starter with ES interface switch to a PC	A	**6ED1 057-1AA00-0BA0**		1	1 unit	200
 3RK1 922-3BA00	**Handheld devices** for ET 200S High-Feature motor starters, (also for ET 200pro and ECOFAST), for on-site operation. A serial interface cable must be ordered separately.	B	**3RK1 922-3BA00**		1	1 unit	42D
	M65-PEN-F terminal blocks 65 mm wide, including two caps, in combination with TM-DS65-S32 / TM-RS130-S32	A	**3RK1 903-2AC00**		1	1 unit	42D
	M65-PEN-S terminal blocks 65 mm wide, in combination with TM-DS65-S31 / TM-RS130-S31	A	**3RK1 903-2AC10**		1	1 unit	42D
Accessories for Standard / High-Feature motor starters							
 3RK1 903-0AH00	**M15-PE/N bridge modules** 15 mm wide for bridging a 15 mm module	A	**3RK1 903-0AH00**		1	1 unit	42D
 3RK1 903-0AJ00	**M30-PE/N bridge modules** 30 mm wide for bridging a 30 mm module	A	**3RK1 903-0AJ00**		1	1 unit	42D
 3RK1 903-0AE00	**M15-L123 bridge modules** 15 mm wide for bridging a 15 mm module	A	**3RK1 903-0AE00**		1	1 unit	42D
 3RK1 903-0AF00	**M30-L123 bridge modules** 30 mm wide for bridging a 30 mm module	A	**3RK1 903-0AF00**		1	1 unit	42D

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Accessories

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories for Standard / High-Feature motor starters (continued)							
 3RK1 903-0AF20	**Sealing caps** for L123 bridge modules and PE/N	A	**3RK1 903-0AF20**		1	20 units	42D
 3RK1 903-0CB00	**Brake control modules** for motors with mechanical brakes						
	• **xB1 for motor starters** 24 V DC/4 A	A	**3RK1 903-0CB00**		1	1 unit	42D
	• **xB2 for motor starters** 500 V DC/0.7 A	A	**3RK1 903-0CC00**		1	1 unit	42D
	• **xB3 for motor starters** 24 V DC / 4 A / 2 DI 24 V DC local control with diagnostics, with two inputs	A	**3RK1 903-0CE00**		1	1 unit	42D
	• **xB4 for motor starters** 500 V DC / 0.7 A / 2 DI 24 V DC local control with diagnostics, with two inputs	A	**3RK1 903-0CF00**		1	1 unit	42D
	• **xB5 for motor starters** 400 V AC without digital input	A	**3RK1 903-0CJ00**		1	1 unit	42D
	• **xB6 for motor starters** 400 V AC with two digital inputs	A	**3RK1 903-0CK00**		1	1 unit	42D
	Terminal modules for brake control modules						
	• **TM-xB15 S24-01** for xB1, xB2 or xB5	A	**3RK1 903-0AG00**		1	1 unit	42D
	• **TM-xB215 S24-01** for xB3, xB4 or xB6	A	**3RK1 903-0AG01**		1	1 unit	42D
Accessories for Failsafe motor starters							
	M65-PEN-F terminal block With incoming connection, with caps	A	**3RK1 903-2AC00**		1	1 unit	42D
	M65-PEN-S terminal block without incoming connection	A	**3RK1 903-2AC10**		1	1 unit	42D
Accessories for power modules							
	Color coding plates 6 x 200 color coding plates for terminal modules One set contains 10 strips of 20 color coding plates per color						
	• White	X	**6ES7 193-4LA10-0AA0**		On request	1 unit	2F0
	• Yellow	X	**6ES7 193-4LB10-0AA0**		On request	1 unit	2F0
	• Yellow and green	X	**6ES7 193-4LC10-0AA0**		On request	1 unit	2F0
	• Red	X	**6ES7 193-4LD10-0AA0**		On request	1 unit	2F0
	• Blue	X	**6ES7 193-4LF10-0AA0**		On request	1 unit	2F0
	• Brown	X	**6ES7 193-4LG10-0AA0**		On request	1 unit	2F0
Accessories for Safety modules local							
 3RK1 903-1CA00	**PM-X safety modules (connection modules)** With diagnostics, for plugging onto TM-X15 S27-01 Module for connecting a safety group and for connecting an external infeed contactor or for connecting to an external safety circuit	A	**3RK1 903-1CB00**		1	1 unit	42D
	F-Kit 1 Failsafe equipment for DS1-x[1] Standard motor starters	A	**3RK1 903-1CA00**		1	1 unit	42D
 3RK1 903-1CA01	**F-Kit 2** Failsafe equipment for RS1-x[1] Standard motor starters	A	**3RK1 903-1CA01**		1	1 unit	42D

[1] The function of the Failsafe Kit is already integrated into High-Feature motor starters.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
IM 151-7 CPU interface modules						
IM 151-7 CPU FO (48 K) interface modules including termination module	A	**6ES7 151-7AB00-0AB0**		1	1 unit	250
IM 151-7 CPU (96 K) interface modules including termination module	A	**6ES7 151-7AA20-0AB0**		1	1 unit	250
Accessories						
MMC 64 Kbyte[1)] For program backups	A	**6ES7 953-8LF20-0AA0**		1	1 unit	230
MMC 128 Kbyte[1)] For program backups	A	**6ES7 953-8LG20-0AA0**		1	1 unit	230
MMC 512 Kbyte[1)] For program backups	A	**6ES7 953-8LJ30-0AA0**		1	1 unit	230
MMC 2 MByte[1)] For program backups and/or the firmware update	A	**6ES7 953-8LL20-0AA0**		1	1 unit	230
MMC 4 MByte[1)] For program backups	A	**6ES7 953-8LM20-0AA0**		1	1 unit	230
MMC 8 MByte[1)] For program backups	A	**6ES7 953-8LP20-0AA0**		1	1 unit	230
External prommers For e.g. MMC with USB interface	A	**6ES7 792-0AA00-0XA0**		1	1 unit	260
PG with integrated MMC interface		**On request**				
Inscription sheets in A4 format (10 units) Each sheet contains 60 labeling strips for I/O modules and 20 labeling strips for interface modules.						
• Petrol	A	**6ES7 193-4BH00-0AA0**		1	1 unit	250
• Red	A	**6ES7 193-4BD00-0AA0**		1	1 unit	250
• Yellow	A	**6ES7 193-4BB00-0AA0**		1	1 unit	250
• Light beige	A	**6ES7 193-4BA00-0AA0**		1	1 unit	250
Manuals for ET 200S distributed I/O system Can be downloaded as a PDF file from the Internet: www.siemens.com/simatic-docu						
Termination modules As spare part for ET 200S	A	**6ES7 193-4JA00-0AA0**		1	1 unit	250
SIMATIC S5, 35 mm standard mounting rails						
• 483 mm long for 19" cabinets	C	**6ES5 710-8MA11**		1	1 unit	250
• 530 mm long for 600 mm cabinets	A	**6ES5 710-8MA21**		1	1 unit	250
• 830 mm long for 900 mm cabinets	A	**6ES5 710-8MA31**		1	1 unit	250
• Length 2 m	A	**6ES5 710-8MA41**		1	1 unit	250
SIPLUS IM 151-7 CPU interface modules (extended temperature range and medial loading)						
SIPLUS IM 151-7 CPU (96 K) interface modules (-25 ... +70 °C)	D	**6AG1 151-7AA20-7AB0**		1	1 unit	471
Accessories		See IM 151-7 CPU interface modules				
IM 151-8 PN/DP CPU interface modules						
IM 151-8 PN/DP CPU interface modules (192 K)	A	**6ES7 151-8AB01-0AB0**		1	1 unit	250
Accessories						
MMC 64 Kbyte[1)] For program backups	A	**6ES7 953-8LF20-0AA0**		1	1 unit	230
MMC 128 Kbyte[1)] For program backups	A	**6ES7 953-8LG20-0AA0**		1	1 unit	230
MMC 512 Kbyte[1)] For program backups	A	**6ES7 953-8LJ30-0AA0**		1	1 unit	230
MMC 2 MByte[1)] For program backups and/or the firmware update	A	**6ES7 953-8LL20-0AA0**		1	1 unit	230
MMC 4 MByte[1)] For program backups	A	**6ES7 953-8LM20-0AA0**		1	1 unit	230
MMC 8 MByte[1)] For program backups	A	**6ES7 953-8LP20-0AA0**		1	1 unit	230
External prommers For e.g. MMC with USB interface	A	**6ES7 792-0AA00-0XA0**		1	1 unit	260
PG with integrated MMC interface		**On request**				

[1)] For operation of the CPU, a MMC is essential.

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ET 200S – interface modules with CPU

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
IM 151-8 PN/DP CPU interface modules (continued)						
Inscription sheets in A4 format (10 units) Each sheet contains 60 labeling strips for I/O modules and 20 labeling strips for interface modules.						
• Petrol	A	**6ES7 193-4BH00-0AA0**		1	1 unit	250
• Red	A	**6ES7 193-4BD00-0AA0**		1	1 unit	250
• Yellow	A	**6ES7 193-4BB00-0AA0**		1	1 unit	250
• Light beige	A	**6ES7 193-4BA00-0AA0**		1	1 unit	250
Manuals for ET 200S distributed I/O system Can be downloaded as a PDF file from the Internet: www.siemens.com/simatic-docu						
Termination modules As spare part for ET 200S	A	**6ES7 193-4JA00-0AA0**		1	1 unit	250
SIMATIC S5, 35 mm standard mounting rails						
• 483 mm long for 19" cabinets	C	**6ES5 710-8MA11**		1	1 unit	250
• 530 mm long for 600 mm cabinets	A	**6ES5 710-8MA21**		1	1 unit	250
• 830 mm long for 900 mm cabinets	A	**6ES5 710-8MA31**		1	1 unit	250
• Length 2 m	A	**6ES5 710-8MA41**		1	1 unit	250
Industrial Ethernet FC RJ45 Plug 180 RJ45 plug-in connector for Industrial Ethernet, with rugged metal enclosure and integrated cutting and clamping contacts for connection of Industrial Ethernet FC installation cables; with 180° cable feeder						
• 1 unit	A	**6GK1 901-1BB10-2AA0**		1	1 unit	5K1
• 10 units	A	**6GK1 901-1BB10-2AB0**		1	1 unit	5K1
• 50 units	A	**6GK1 901-1BB10-2AE0**		1	1 unit	5K1
Industrial Ethernet Fast Connect installation cables						
• Fast Connect standard cables	A	**6XV1 840-2AH10**		1	1 m	5K1
• Fast Connect trailing cables	A	**6XV1 840-3AH10**		1	1 m	5K1
• Fast Connect marine cables	A	**6XV1 840-4AH10**		1	1 m	5K1
Industrial Ethernet Fast Connect stripping tools	A	**6GK1 901-1GA00**		1	1 unit	5K2
SIPLUS IM 151-8 PN/DP interface modules (extended temperature range and medial loading)						
SIPLUS IM 151-8 PN/DP CPU interface modules (0 ... +60 °C)	D	**6AG1 151-8AB00-4AB0**		1	1 unit	471
SIPLUS IM 151-8 PN/DP CPU interface modules (-25 ... +70 °C)	D	**6AG1 151-8AB00-7AB0**		1	1 unit	471
Accessories		See IM 151-8 PN/DP CPU interface modules				
Master interface modules for IM 151-7(8) CPU/ IM 151-7 F-CPU interface modules						
Master interface modules for IM 151-7 CPU / IM 151-7 F-CPU / IM 151-8 PN/DP CPU / IM 151-8 F PN/DP CPU interface modules	A	**6ES7 138-4HA00-0AB0**		1	1 unit	250
Accessories						
Inscription sheets in A4 format (10 units) Each sheet contains 60 labeling strips for I/O modules and 20 labeling strips for interface modules.						
• Petrol	A	**6ES7 193-4BH00-0AA0**		1	1 unit	250
• Red	A	**6ES7 193-4BD00-0AA0**		1	1 unit	250
• Yellow	A	**6ES7 193-4BB00-0AA0**		1	1 unit	250
• Light beige	A	**6ES7 193-4BA00-0AA0**		1	1 unit	250
Manuals for ET 200S distributed I/O system Can be downloaded as a PDF file from the Internet: www.siemens.com/simatic-docu						
SIPLUS IM 151 CPU master interface modules (extended temperature range and medial loading)						
Master interface modules for SIPLUS IM 151-7 CPU / IM 151-7 F-CPU / IM 151-8 PN/DP CPU / IM 151-8 F PN/DP CPU interface modules (-25 ... +70 °C)	D	**6AG1 138-4HA00-7AB0**		1	1 unit	471
Accessories		See master interface modules for IM 151 CPU				

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
IM 151-7 F-CPU interface modules						
IM 151-7 F-CPU interface modules For constructing a failsafe automation system	A	**6ES7 151-7FA20-0AB0**		1	1 unit	241
Accessories						
Distributed Safety V5.4 programming tools Task: Configuration software for configuring failsafe user programs for SIMATIC S7-300F, S7-400F and ET 200S Requirements: STEP 7 V5.3 SP3 and higher						
• Floating license	A	**6ES7 833-1FC02-0YA5**		1	1 unit	241
• Software Update Service	B	**6ES7 833-1FC00-0YX2**		1	1 unit	241
Distributed Safety upgrade from V5.x to V5.3; floating license for 1 user	B	**6ES7 833-1FC02-0YE5**		1	1 unit	241
MMC 64 Kbyte For program backups	A	**6ES7 953-8LF20-0AA0**		1	1 unit	230
MMC 128 Kbyte For program backups	A	**6ES7 953-8LG20-0AA0**		1	1 unit	230
MMC 512 Kbyte For program backups	A	**6ES7 953-8LJ30-0AA0**		1	1 unit	230
MMC 2 MByte For program backups and/or the firmware update	A	**6ES7 953-8LL20-0AA0**		1	1 unit	230
MMC 4 MByte For program backups	A	**6ES7 953-8LM20-0AA0**		1	1 unit	230
External prommers For MMC with USB interface	A	**6ES7 792-0AA00-0XA0**		1	1 unit	260
Termination modules As spare part for ET 200S	A	**6ES7 193-4JA00-0AA0**		1	1 unit	250
SIMATIC S5, 35 mm standard mounting rails						
• 483 mm long for 19" cabinets	C	**6ES5 710-8MA11**		1	1 unit	250
• 530 mm long for 600 mm cabinets	A	**6ES5 710-8MA21**		1	1 unit	250
• 830 mm long for 900 mm cabinets	A	**6ES5 710-8MA31**		1	1 unit	250
• Length 2 m	A	**6ES5 710-8MA41**		1	1 unit	250
SIPLUS IM 151-7 F-CPU interface modules (extended temperature range and medial loading)						
SIPLUS IM 151-7 F-CPU interface modules (-25 ... +60 °C)	D	**6AG1 151-7FA20-2AB0**		1	1 unit	471
Accessories		See IM 151-7 F-CPU interface modules				

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ET 200S – interface modules with failsafe CPU

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
IM 151-8F PN/DP CPU interface modules						
IM 151-8F PN/DP CPU interface modules (256 K) including termination module	A	**6ES7 151-8FB01-0AB0**		1	1 unit	241
Accessories						
Distributed Safety V5.4 programming tools Task: Configuration software for configuring failsafe user programs for SIMATIC S7-300F, S7-400F and ET 200S Requirements: STEP 7 V5.3 SP3 and higher						
• Floating license	A	**6ES7 833-1FC02-0YA5**		1	1 unit	241
• Software Update Service	B	**6ES7 833-1FC00-0YX2**		1	1 unit	241
Distributed Safety upgrade From V5.3 to V5.4; floating license for 1 user	B	**6ES7 833-1FC02-0YE5**		1	1 unit	241
MMC 64 Kbyte[1)] For program backups	A	**6ES7 953-8LF20-0AA0**		1	1 unit	230
MMC 128 Kbyte[1)] For program backups	A	**6ES7 953-8LG20-0AA0**		1	1 unit	230
MMC 512 Kbyte[1)] For program backups	A	**6ES7 953-8LJ30-0AA0**		1	1 unit	230
MMC 2 MByte[1)] For program backups and/or the firmware update	A	**6ES7 953-8LL20-0AA0**		1	1 unit	230
MMC 4 MByte[1)] For program backups	A	**6ES7 953-8LM20-0AA0**		1	1 unit	230
MMC 8 MByte[1)] For program backups	A	**6ES7 953-8LP20-0AA0**		1	1 unit	230
External prommers For e.g. MMC with USB interface	A	**6ES7 792-0AA00-0XA0**		1	1 unit	260
PG with integrated MMC interface		**On request**				
Inscription sheets in A4 format (10 units) Each sheet contains 60 labeling strips for I/O modules and 20 labeling strips for interface modules.						
• Petrol	A	**6ES7 193-4BH00-0AA0**		1	1 unit	250
• Red	A	**6ES7 193-4BD00-0AA0**		1	1 unit	250
• Yellow	A	**6ES7 193-4BB00-0AA0**		1	1 unit	250
• Light beige	A	**6ES7 193-4BA00-0AA0**		1	1 unit	250
Manuals for ET 200S distributed I/O system Can be downloaded as a PDF file from the Internet: www.siemens.com/simatic-docu						
Termination modules As spare part for ET 200S	A	**6ES7 193-4JA00-0AA0**		1	1 unit	250
SIMATIC S5, 35 mm standard mounting rails						
• 483 mm long for 19" cabinets	C	**6ES5 710-8MA11**		1	1 unit	250
• 530 mm long for 600 mm cabinets	A	**6ES5 710-8MA21**		1	1 unit	250
• 830 mm long for 900 mm cabinets	A	**6ES5 710-8MA31**		1	1 unit	250
• Length 2 m	A	**6ES5 710-8MA41**		1	1 unit	250
Industrial Ethernet FC RJ45 Plug 180 RJ45 plug-in connector for Industrial Ethernet, with rugged metal enclosure and integrated cutting and clamping contacts for connection of Industrial Ethernet FC installation cables; with 180° cable feeder						
• 1 unit	A	**6GK1 901-1BB10-2AA0**		1	1 unit	5K1
• 10 units	A	**6GK1 901-1BB10-2AB0**		1	1 unit	5K1
• 50 units	A	**6GK1 901-1BB10-2AE0**		1	1 unit	5K1
Industrial Ethernet Fast Connect installation cables						
• Fast Connect standard cables	A	**6XV1 840-2AH10**		1	1 m	5K1
• Fast Connect trailing cables	A	**6XV1 840-3AH10**		1	1 m	5K1
• Fast Connect marine cables	A	**6XV1 840-4AH10**		1	1 m	5K1
Industrial Ethernet Fast Connect stripping tools	A	**6GK1 901-1GA00**		1	1 unit	5K2
SIPLUS IM 151-8F PN/DP CPU interface modules (extended temperature range and medial loading)						
SIPLUS IM 151-8F PN/DP CPU interface modules (-25 ... +60 °C)	D	**6AG1 151-8FB01-2AB0**		1	1 unit	471
Accessories		See IM 151-8F PN/DP CPU interface modules				

[1)] For operation of the CPU, a MMC is essential.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
IM 151-1 interface modules						
IM 151-1 BASIC interface modules For ET 200S; transmission rates up to 12 Mbit/s; up to 12 power, solid-state and motor starter modules can be connected; connection to bus through 9-pole Sub-D including bus termination module	A	**6ES7 151-1CA00-0AB0**		1	1 unit	250
IM 151-1 COMPACT 32 DI 24 V DC interface modules For ET 200S; transmission rates up to 12 Mbit/s; 32 digital inputs, up to 12 power, solid-state and motor starter modules can be connected; connection to bus through 9-pole Sub-D including bus termination module	A	**6ES7 151-1CA00-1BL0**		1	1 unit	250
IM 151-1 COMPACT 16 DI 24 V DC / 16 DO 24 V/0.5 A interface modules For ET 200S; transmission rates up to 12 Mbit/s; 16 digital inputs and 16 digital outputs, up to 12 power, solid-state and motor starter modules can be connected; connection to bus through 9-pole Sub-D including bus termination module	A	**6ES7 151-1CA00-3BL0**		1	1 unit	250
IM 151-1 STANDARD interface modules For ET 200S; transmission rates up to 12 Mbit/s; data volume of 244 bytes each for inputs and outputs; up to 63 power, solid-state and motor starter modules can be connected; connection to bus through 9-pole Sub-D including bus termination module	A	**6ES7 151-1AA05-0AB0**		1	1 unit	250
IM 151-1 FO STANDARD interface modules For ET 200S; transmission rates up to 12 Mbit/s; data volume of 128 bytes each for inputs and outputs; up to 63 power, solid-state and motor starter modules can be connected; connection to bus using integrated fiber-optic cable including bus termination module	A	**6ES7 151-1AB05-0AB0**		1	1 unit	250
IM 151-1 HIGH FEATURE interface modules For ET 200S; transmission rates up to 12 Mbit/s; data volume of 244 bytes each for inputs and outputs; up to 63 modules can be connected; connection of PROFIsafe modules, isochrone mode (clocked operation); connection to bus through 9-pole Sub-D including bus termination module	A	**6ES7 151-1BA02-0AB0**		1	1 unit	250
Accessories						
TM-C120S terminal modules Terminal module for ET 200S COMPACT, screw terminals	A	**6ES7 193-4DL10-0AA0**		1	1 unit	250
TM-C120C terminal modules Terminal module for ET 200S COMPACT, spring-type terminals	A	**6ES7 193-4DL00-0AA0**		1	1 unit	250
TE-U120S4x10 additional terminals Additional terminal for TM-C120x terminal modules of ET 200S COMPACT; screw terminals for 3-conductor connection; please order two for 4-conductor connection. Can also be plugged into TM-E/TM-P if the same height of the terminal modules exists over a width of at least 120 mm.	A	**6ES7 193-4FL10-0AA0**		1	1 unit	250
TE-U120C4x10 additional terminals Additional terminal for TM-C120x terminal modules of ET 200S COMPACT; spring-type terminals for 3-conductor connection; please order two for 4-conductor connection Can also be plugged into TM-E/TM-P if the same height of the terminal modules exists over a width of at least 120 mm.	A	**6ES7 193-4FL00-0AA0**		1	1 unit	250
Manuals for ET 200S distributed I/O system Can be downloaded as a PDF file from the Internet: www.siemens.com/simatic-docu						
SIMATIC Manual Collection Electronic manuals on DVD, several languages: S7-200, TD 200, S7-300, M7-300, C7, S7-400, M7-400, STEP 7, Engineering Tools, Runtime Software, SIMATIC DP (Distributed I/O), SIMATIC HMI (Human Machine Interface), SIMATIC NET (Industrial Communication)	A	**6ES7 998-8XC01-8YE0**		1	1 unit	230
SIMATIC Manual Collection – Update service for 1 year Scope of supply: The current DVD S7 Manual Collection as well as the three subsequent updates	X	**6ES7 998-8XC01-8YE2**		1	1 unit	230
PROFIBUS DP interface RS485 bus connectors With 90° cable feeder for FastConnect connections, max. transmission rate 12 Mbit/s						
Without PG interface						
• 1 unit	A	**6ES7 972-0BA52-0XA0**		1	1 unit	250
• 100 units	A	**6ES7 972-0BA52-0XB0**		1	1 unit	250
With PG interface						
• 1 unit	A	**6ES7 972-0BB52-0XA0**		1	1 unit	250
• 100 units	A	**6ES7 972-0BB52-0XB0**		1	1 unit	250
100 Simplex connectors For plastic fiber-optic cable including 5 polishing sets	A	**6GK1 901-0FB00-0AA0**		1	1 set	5K2
50 plug-in adapters each for 2 Simplex connectors	A	**6ES7 195-1BE00-0XA0**		1	1 unit	250
Inscription sheets in A4 format (10 units) Each sheet contains 60 labeling strips for I/O modules and 20 labeling strips for interface modules.						
• Petrol	A	**6ES7 193-4BH00-0AA0**		1	1 unit	250
• Red	A	**6ES7 193-4BD00-0AA0**		1	1 unit	250
• Yellow	A	**6ES7 193-4BB00-0AA0**		1	1 unit	250
• Light beige	A	**6ES7 193-4BA00-0AA0**		1	1 unit	250

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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ET 200S – interface modules
Interface modules without CPU

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
IM 151-1 interface modules (continued)						
Inscription sheets in A4 format (10 units) Can be used for ET 200S COMPACT. Each sheet contains 10 labeling strips						
• Beige	A	**6ES7 193-4BA10-0AA0**		1	1 unit	250
• Yellow	A	**6ES7 193-4BB10-0AA0**		1	1 unit	250
• Red	A	**6ES7 193-4BD10-0AA0**		1	1 unit	250
• Petrol	A	**6ES7 193-4BH10-0AA0**		1	1 unit	250
Termination modules As spare part for ET 200S	A	**6ES7 193-4JA00-0AA0**		1	1 unit	250
Power supply plugs Spare parts; for connection to control supply voltage 24 V DC						
• With push-in terminals	A	**6ES7 193-4JB00-0AA0**		1	1 unit	250
• With screw terminals	A	**6ES7 193-4JB50-0AA0**		1	1 unit	250
SIMATIC S5, 35 mm standard mounting rails						
• 483 mm long for 19" cabinets	C	**6ES5 710-8MA11**		1	1 unit	250
• 530 mm long for 600 mm cabinets	A	**6ES5 710-8MA21**		1	1 unit	250
• 830 mm long for 900 mm cabinets	A	**6ES5 710-8MA31**		1	1 unit	250
• Length 2 m	A	**6ES5 710-8MA41**		1	1 unit	250
SIPLUS IM 151-1 interface modules (extended temperature range and medial loading)						
SIPLUS IM 151-1 STANDARD interface modules (-25 ... +70 °C) for ET 200S; transmission rates up to 12 Mbit/s; data volume of 244 bytes each for inputs and outputs; up to 63 power, solid-state and motor starter modules can be connected; connection to bus through 9-pole Sub-D including bus termination module	D	**6AG1 151-1AA05-7AB0**		1	1 unit	471
SIPLUS IM 151-1 HIGH FEATURE interface modules (-25 ... +60 °C) (extended temperature range and medial load) For ET 200S; transmission rates up to 12 Mbit/s; data volume of 244 bytes each for inputs and outputs; up to 63 modules can be connected; connection of PROFIsafe modules, isochrone mode (clocked operation); connection to bus through 9-pole Sub-D including bus termination module	D	**6AG1 151-1BA02-2AB0**		1	1 unit	471
Accessories		See IM 151-1 interface modules				
IM 151-3 PN interface modules						
IM 151-3 PN interface modules For ET 200S; transmission rates up to 100 Mbit/s; data volume dependent on number of modules mounted, up to 63 modules can be connected, connection to bus through RJ45	A	**6ES7 151-3AA23-0AB0**		1	1 unit	250
IM 151-3 PN PROFINET High Feature interface modules For ET 200S; transmission rates up to 100 Mbit/s; up to 63 modules with max. width of 2 m can be connected, connection to bus through RJ45, including termination module	A	**6ES7 151-3BA23-0AB0**		1	1 unit	250
IM 151-3 FO interface modules For ET 200S; with 2 PROFINET fiberoptic interfaces and integrated 2-port switch, up to 63 modules up to 2 m wide can be connected, including bus termination module	A	**6ES7 151-3BB23-0AB0**		1	1 unit	250
Accessories						
Industrial Ethernet FC RJ45 Plug 90 RJ45 plug-in connector for Industrial Ethernet, with rugged metal enclosure and integrated cutting and clamping contacts for connection of Industrial Ethernet FC installation cables; with 90° cable feeder						
• 1 unit	A	**6GK1 901-1BB20-2AA0**		1	1 unit	5K1
• 10 units	A	**6GK1 901-1BB20-2AB0**		1	1 unit	5K1
• 50 units	A	**6GK1 901-1BB20-2AE0**		1	1 unit	5K1
Industrial Ethernet Fast Connect installation cables						
• Fast Connect standard cables	A	**6XV1 840-2AH10**		1	1 m	5K1
• Fast Connect trailing cables	A	**6XV1 840-3AH10**		1	1 m	5K1
• Fast Connect marine cables	A	**6XV1 840-4AH10**		1	1 m	5K1
Termination kits						
• SC RJ POF Plug Termination kit for local mounting of SC RJ connectors, comprising insulation stripping tool, kevlar shears, microscope, abrasive paper and support	A	**6GK1 900-0ML00-0AA0**		1	1 unit	5K2
• IE SC RJ POF Plug Threaded connectors for local mounting on POF fiber-optic cables (1 pack = 20 units)	A	**6GK1 900-0MB00-0AC0**		1	1 unit	5K2
• IE SC RJ Refill Set POF Refill set for SC RJ POF Plug termination kit, comprising abrasive paper and disk (set of 5)	A	**6GK1 900-0MN00-0AA0**		1	1 unit	5K2
• SC RJ PCF Plug Termination kit for local mounting of SC RJ connectors, comprising insulation stripping tool, buffer insulation stripping tool, kevlar shears, fiber cleaver, microscope	A	**6GK1 900-0NL00-0AA0**		1	1 unit	5K2
• Industrial Ethernet SC RJ PCF Plug Threaded connectors for local mounting on PCF fiber-optic cables (1 pack = 10 units)	A	**6GK1 900-0NB00-0AC0**		1	1 unit	5K2
Industrial Ethernet Fast Connect stripping tools	A	**6GK1 901-1GA00**		1	1 unit	5K2

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
IM 151-3 PN interface modules (continued)						
MMC 64 Kbyte[1] For storing the unit's name	A	**6ES7 953-8LF20-0AA0**		1	1 unit	230
MMC 128 Kbyte[1] For storing the unit's name	A	**6ES7 953-8LG20-0AA0**		1	1 unit	230
MMC 512 Kbyte[1] For storing the unit's name	A	**6ES7 953-8LJ30-0AA0**		1	1 unit	230
MMC 2 MByte[1] For storing the unit's name and/or the firmware update	A	**6ES7 953-8LL20-0AA0**		1	1 unit	230
MMC 4 MByte[1] For storing the unit's name and/or the firmware update	A	**6ES7 953-8LM20-0AA0**		1	1 unit	230
MMC 8 MByte[1] For storing the unit's name and/or the firmware update	A	**6ES7 953-8LP20-0AA0**		1	1 unit	230
Manuals for ET 200S distributed I/O system Can be downloaded as a PDF file from the Internet: www.siemens.com/simatic-docu						
SIMATIC Manual Collection Electronic manuals on DVD, several languages: S7-200, TD 200, S7-300, M7-300, C7, S7-400, M7-400, STEP 7, Engineering Tools, Runtime Software, SIMATIC DP (Distributed I/O), SIMATIC HMI (Human Machine Interface), SIMATIC NET (Industrial Communication)	A	**6ES7 998-8XC01-8YE0**		1	1 unit	230
SIMATIC Manual Collection – Update service for 1 year Scope of supply: The current DVD S7 Manual Collection as well as the three subsequent updates	X	**6ES7 998-8XC01-8YE2**		1	1 unit	230
Inscription sheets in A4 format (10 units) Each sheet contains 60 labeling strips for I/O modules and 20 labeling strips for interface modules.						
• Petrol	A	**6ES7 193-4BH00-0AA0**		1	1 unit	250
• Red	A	**6ES7 193-4BD00-0AA0**		1	1 unit	250
• Yellow	A	**6ES7 193-4BB00-0AA0**		1	1 unit	250
• Light beige	A	**6ES7 193-4BA00-0AA0**		1	1 unit	250
Termination modules as spare part for ET 200S	A	**6ES7 193-4JA00-0AA0**		1	1 unit	250
Power supply plugs Spare parts; for connection to control supply voltage 24 V DC						
• With push-in terminals	A	**6ES7 193-4JB00-0AA0**		1	1 unit	250
• With screw terminals	A	**6ES7 193-4JB50-0AA0**		1	1 unit	250
35 mm standard mounting rails						
• 483 mm long for 19" cabinets	C	**6ES5 710-8MA11**		1	1 unit	250
• 530 mm long for 600 mm cabinets	A	**6ES5 710-8MA21**		1	1 unit	250
• 830 mm long for 900 mm cabinets	A	**6ES5 710-8MA31**		1	1 unit	250
• Length 2 m	A	**6ES5 710-8MA41**		1	1 unit	250
Industrial Ethernet switches Managed Industrial Ethernet switches; isochronous real-time, LED diagnostics, error signaling contacts with SET button, redundant power supply						
• SCALANCE X202-2P IRT 2 x 10/100 Mbit/s RJ45 ports, 2 x 100 Mbit/s POF/PCF SC RJ	B	**6GK5 202-2BH00-2BA3**		1	1 unit	5N2
• SCALANCE X201-3P IRT 1 x 10/100 Mbit/s RJ45 ports, 3 x 100 Mbit/s POF/PCF SC RJ	D	**6GK5 201-3BH00-2BA3**		1	1 unit	5N2
• SCALANCE X200-4P IRT 4 x 100 Mbit/s POF/PCF SC RJ	A	**6GK5 200-4AH00-2BA3**		1	1 unit	5N2
SIPLUS IM 151-3 PN interface modules (extended temperature range and medial loading)						
SIPLUS IM 151-3 PN interface modules (-25 ... +60 °C) For ET 200S; transmission rates up to 100 Mbit/s; data volume dependent on number of modules mounted, up to 63 modules can be connected, connection to bus through RJ45	D	**6AG1 151-3AA23-2AB0**		1	1 unit	471
Accessories		See IM 151-3 PN interface modules				

[1] For operation of the IM 151-3, a MMC is essential.

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Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
PM-E power modules for solid-state modules						
PM-E power modules 24 V DC [1] For solid-state modules, with diagnostics						
• 1 unit	A	**6ES7 138-4CA01-0AA0**		1	1 unit	250
• 5 units	A	**6ES7 138-4CA01-1AA0**		1	1 unit	250
High-Feature PM-E power modules 24 V DC [1] For solid-state modules, with diagnostics	A	**6ES7 138-4CA60-0AB0**		1	1 unit	250
PM-E power modules 24 to 48 V DC For solid-state modules, with diagnostics, with status bit "Load voltage available"						
• 1 unit	A	**6ES7 138-4CA50-0AB0**		1	1 unit	250
• 5 units	A	**6ES7 138-4CA50-1AB0**		1	1 unit	250
PM-E power modules 24 to 48 V DC, 42 to 230 V AC For solid-state modules, with diagnostics and fuse	A	**6ES7 138-4CB11-0AB0**		1	1 unit	250
Accessories						
Inscription sheets in A4 format (10 units) Each sheet contains 60 labeling strips for I/O modules and 20 labeling strips for interface modules.						
• Petrol	A	**6ES7 193-4BH00-0AA0**		1	1 unit	250
• Red	A	**6ES7 193-4BD00-0AA0**		1	1 unit	250
• Yellow	A	**6ES7 193-4BB00-0AA0**		1	1 unit	250
• Light beige	A	**6ES7 193-4BA00-0AA0**		1	1 unit	250
SIPLUS PM-E power modules for solid-state modules (extended temperature range and medial loading)						
SIPLUS PM-E power modules						
PM-E power modules 24 V DC[1] **(-25 ... +60 °C)** For solid-state modules, with diagnostics	D	**6AG1 138-4CA01-2AA0**		1	1 unit	471
PM-E power modules 24 to 48 V DC (-25 ... +60 °C) For solid-state modules, with diagnostics, with status bit "Load voltage available"	D	**6AG1 138-4CA50-2AB0**		1	1 unit	471
PM-E power modules 24 to 48 V DC, 24 to 230 V AC (-25 ... +60 °C) For solid-state modules, with diagnostics and fuse	C	**6AG1 138-4CB11-2AB0**		1	1 unit	471
Accessories		See PM-E power modules for solid-state modules				
Reserve modules						
Reserve modules for ET 200S For reserving space in unused slots						
• 15 mm width (5 units)	A	**6ES7 138-4AA01-0AA0**		1	1 unit	250
• 30 mm width (1 unit)	A	**6ES7 138-4AA11-0AA0**		1	1 unit	250
Potential distributor modules						
Potential distributor modules for ET 200S For supplying the load voltage to additional terminals, 15 mm wide, 1 unit	A	**6ES7138-4FD00-0AA0**		1	1 unit	250
Accessories for inscription						
Inscription sheets in A4 format (10 units) Each sheet contains 60 labeling strips for I/O modules and 20 labeling strips for interface modules.						
• Petrol	A	**6ES7 193-4BH00-0AA0**		1	1 unit	250
• Red	A	**6ES7 193-4BD00-0AA0**		1	1 unit	250
• Yellow	A	**6ES7 193-4BB00-0AA0**		1	1 unit	250
• Light beige	A	**6ES7 193-4BA00-0AA0**		1	1 unit	250

[1] For all solid-state and technology modules except 2 DI 120 V AC/2 DI 230 V AC/2 DO 120/230 V AC.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Digital solid-state modules						
Digital input modules						
Order unit 5 units						
• 2 DI 24 V DC Standard	A	**6ES7 131-4BB01-0AA0**		1	1 unit	250
• 2 DI 24 V DC High Feature	A	**6ES7 131-4BB01-0AB0**		1	1 unit	250
• 4 DI 24 V DC Standard	A	**6ES7 131-4BD01-0AA0**		1	1 unit	250
• 4 DI 24 V DC High Feature	A	**6ES7 131-4BD01-0AB0**		1	1 unit	250
• 2 DI 120 V AC	A	**6ES7 131-4EB00-0AB0**		1	1 unit	250
• 2 DI 230 V AC	A	**6ES7 131-4FB00-0AB0**		1	1 unit	250
• 4 DI 24 ... 48 V UC	A	**6ES7 131-4CD02-0AB0**		1	1 unit	250
• 4 DI 24 V DC SOURCE INPUT	A	**6ES7 131-4BD51-0AA0**		1	1 unit	250
Order unit 1 unit						
• 4 DI 24 V DC NAMUR	A	**6ES7 131-4RD02-0AB0**		1	1 unit	250
• 8 DI 24 V DC Standard	A	**6ES7 131-4BF00-0AA0**		1	1 unit	250
• 8 DI 24 V DC Standard SOURCE INPUT	A	**6ES7 131-4BF50-0AA0**		1	1 unit	250
Digital output modules						
Order unit 5 units						
• 2 DO 24 V DC/0.5 A Standard	A	**6ES7 132-4BB01-0AA0**		1	1 unit	250
• 2 DO 24 V DC/0.5 A High Feature	A	**6ES7 132-4BB01-0AB0**		1	1 unit	250
• 2 DO 24 V DC/2 A Standard	A	**6ES7 132-4BB31-0AA0**		1	1 unit	250
• 2 DO 24 V DC/2 A High Feature	A	**6ES7 132-4BB31-0AB0**		1	1 unit	250
• 4 DO 24 V DC/0.5 A Standard	A	**6ES7 132-4BD02-0AA0**		1	1 unit	250
• 4 DO 24 V DC/0.5 A Standard SOURCE OUTPUT	A	**6ES7 132-4BD50-0AA0**		1	1 unit	250
• 4 DO 24 V DC/0.5 A High Feature	A	**6ES7 132-4BD00-0AB0**		1	1 unit	250
• 8 DO 24 V DC/0.5 A High Feature	A	**6ES7 132-4BF00-0AB0**		1	1 unit	250
• 4 DO 24 V DC/2 A Standard	A	**6ES7 132-4BD32-0AA0**		1	1 unit	250
• 4 DO 24 V DC/2 A High Feature	A	**6ES7 132-4BD30-0AB0**		1	1 unit	250
• 2 DO 24 V to 230 V AC /1 A	A	**6ES7 132-4FB01-0AB0**		1	1 unit	250
• 2 DO 24 V DC to 230 V AC/5 A relay, NO contact	A	**6ES7 132-4HB01-0AB0**		1	1 unit	250
• 2 DO 24 ... 48 V DC to 230 V AC/5 A relay, CO contact	A	**6ES7 132-4HB12-0AB0**		1	1 unit	250
Order unit 1 unit						
• 8 DO 24 V DC/0.5 A Standard	A	**6ES7 132-4BF00-0AA0**		1	1 unit	250
• 8 DO 24 V DC/0.5 A Standard SOURCE OUTPUT	A	**6ES7 132-4BF50-0AA0**		1	1 unit	250
• 2 DO 24 ... 48 V DC/5 A, 24 ... 230 V AC/5 A relay, CO contact	A	**6ES7 132-4HB50-0AB0**		1	1 unit	250
Accessories						
Inscription sheets in A4 format (10 units)						
Each sheet contains 60 labeling strips for I/O modules and 20 labeling strips for interface modules.						
• Petrol	A	**6ES7 193-4BH00-0AA0**		1	1 unit	250
• Red	A	**6ES7 193-4BD00-0AA0**		1	1 unit	250
• Yellow	A	**6ES7 193-4BB00-0AA0**		1	1 unit	250
• Light beige	A	**6ES7 193-4BA00-0AA0**		1	1 unit	250
SIPLUS digital solid-state modules (extended temperature range and medial loading)						
SIPLUS digital input modules						
Order unit 5 units						
• 4 DI 24 V DC Standard (-25 ... +60 °C)	D	**6AG1 131-4BD01-2AA0**		1	1 unit	471
• 4 DI 24 V DC High Feature (-25 ... +70 °C)	D	**6AG1 131-4BD01-7AB0**		1	1 unit	471
• 8 DI 24 V DC Standard (-25 ... +70 °C)	D	**6AG1 131-4BF00-7AA0**		1	1 unit	471
Order unit 1 unit						
• 8 DI 24 V DC Source Input (-25 ... +70 °C)	D	**6AG1 131-4BF50-7AA0**		1	1 unit	471
SIPLUS digital output modules						
Order unit 5 units						
• 2 DO 24 V DC/0.5 A High Feature (-25 ... +60 °C)	D	**6AG1 132-4BB01-2AB0**		1	1 unit	471
• 2 DO 24 V DC/2 A High Feature (-25 ... +60 °C)	D	**6AG1 132-4BB31-7AB0**		1	1 unit	471
• 4 DO 24 V DC/0.5 A Standard (-25 ... + 70 °C)	D	**6AG1 132-4BD02-7AA0**		1	1 unit	471
• 4 DO 24 V DC/2 A Standard (-25 ... + 70 °C)	D	**6AG1 132-4BD32-2AA0**		1	1 unit	471
• 2 DO 24 V DC to 230 V AC/5 A relay, NO contact (-25 ... + 70 °C)	D	**6AG1 132-4HB01-2AB0**		1	1 unit	471
• 2 DO 24 V DC to 230 V AC/5 A relay, CO contact (-25 ... +60 °C)	D	**6AG1 132-4HB12-2AB0**		1	1 unit	471
Order unit 1 unit						
• 8 DO 24 V DC/0.5 A Standard	D	**6AG1 132-4BF00-7AA0**		1	1 unit	471
• 8 DO 24 V DC/0.5 A Standard SOURCE OUTPUT	D	**6AG1 132-4BF50-7AA0**		1	1 unit	471
Accessories		See digital solid-state modules				

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ET 200S – I/O modules

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Analog solid-state modules						
Analog input modules Order unit 1 unit						
• 2 AI U Standard	A	**6ES7 134-4FB01-0AB0**		1	1 unit	250
• 2 AI U High Speed	A	**6ES7 134-4FB52-0AB0**		1	1 unit	250
• 2 AI U High Feature	A	**6ES7 134-4LB02-0AB0**		1	1 unit	250
• 2 AI I Standard 2-wire	A	**6ES7 134-4GB01-0AB0**		1	1 unit	250
• 2 AI I High Speed 2-wire	A	**6ES7 134-4GB52-0AB0**		1	1 unit	250
• 2 AI I Standard 4-wire	A	**6ES7 134-4GB11-0AB0**		1	1 unit	250
• 2 AI High Speed 1-4 wire	A	**6ES7 134-4GB62-0AB0**		1	1 unit	250
• 2 AI I High Feature 2/4-wire (15 bits + sign)	A	**6ES7 134-4MB02-0AB0**		1	1 unit	250
• 2 AI RTD Standard	A	**6ES7 134-4JB51-0AB0**		1	1 unit	250
• 2 AI TC Standard	A	**6ES7 134-4JB01-0AB0**		1	1 unit	250
• 2 AI RTD High Feature	A	**6ES7 134-4NB51-0AB0**		1	1 unit	250
• 2 AI TC High Feature	A	**6ES7 134-4NB01-0AB0**		1	1 unit	250
• 4 AI Standard 2-wire	A	**6ES7 134-4GD00-0AB0**		1	1 unit	250
• 4 AI TC Standard	A	**6ES7 134-4JD00-0AB0**		1	1 unit	250
Analog output modules Order unit 1 unit						
• 2 AO U Standard	A	**6ES7 135-4FB01-0AB0**		1	1 unit	250
• 2 AO U High Speed	A	**6ES7 135-4FB52-0AB0**		1	1 unit	250
• 2 AO U High Feature	A	**6ES7 135-4LB02-0AB0**		1	1 unit	250
• 2 AO I Standard	A	**6ES7 135-4GB01-0AB0**		1	1 unit	250
• 2 AO I High Speed	A	**6ES7 135-4GB52-0AB0**		1	1 unit	250
• 2 AO I High Feature	A	**6ES7 135-4MB02-0AB0**		1	1 unit	250
Accessories for inscription						
Inscription sheets in A4 format (10 units) Each sheet contains 60 labeling strips for I/O modules and 20 labeling strips for interface modules.						
• Petrol	A	**6ES7 193-4BH00-0AA0**		1	1 unit	250
• Red	A	**6ES7 193-4BD00-0AA0**		1	1 unit	250
• Yellow	A	**6ES7 193-4BB00-0AA0**		1	1 unit	250
• Light beige	A	**6ES7 193-4BA00-0AA0**		1	1 unit	250
Accessories for system-integrated shield connections						
Shield attachments Order unit 5 units For plugging into TM-E and TM-P	A	**6ES7 193-4GA00-0AA0**		1	1 unit	250
Shield terminals Order unit 5 units For busbars 3 × 10 mm	A	**6ES7 193-4GB00-0AA0**		1	1 unit	250
Ground connection terminals Order unit 1 unit For conductor cross-sections up to 25 mm^2	C	**8WA2 868**		1	50 units	041
Busbars 3 x 10 mm Order unit 1 unit	A	**8WA2 842**		1	1 unit	041
SIPLUS analog solid-state modules (extended temperature range and medial loading)						
SIPLUS analog input modules						
• 2 AI U Standard (-25 ... +60 °C)	D	**6AG1 134-4FB01-2AB0**		1	1 unit	471
• 2 AI I Standard 2-wire (-25 ... +60 °C)	D	**6AG1 134-4GB01-2AB0**		1	1 unit	471
• 2 AI I Standard 4-wire (-25 ... +60 °C)	D	**6AG1 134-4GB11-2AB0**		1	1 unit	471
• 2 AI I High Feature 2/4-wire (15 bits + sign) (-25 ... +60 °C)	D	**6AG1 134-4MB02-2AB0**		1	1 unit	471
• 2 AI High Speed 2-wire (-25 ... +60 °C)	D	**6AG1 134-4GB52-2AB0**		1	1 unit	471
• 4 AI Standard 2-wire (-25 ... +60 °C)	D	**6AG1 134-4GD00-2AB0**		1	1 unit	471
• 2 AI RTD Standard (-25 ... +70 °C)	D	**6AG1 134-4JB51-7AB0**		1	1 unit	471
• 2 AI RTD High Feature (-25 ... +60 °C)	D	**6AG1 134-4NB51-2AB0**		1	1 unit	471
• 2 AI TC High Feature (0 ... +70 °C)	D	**6AG1 134-4NB01-7AB0**		1	1 unit	471
SIPLUS analog output modules						
• 2 AO U Standard (-25 ... +60 °C)	D	**6AG1 135-4FB01-2AB0**		1	1 unit	471
• 2 AO U High Feature (-25 ... +60 °C)	D	**6AG1 135-4LB02-7AB0**		1	1 unit	471
• 2 AO I Standard (-25 ... +60 °C)	D	**6AG1 135-4GB01-2AB0**		1	1 unit	471
Accessories		See analog solid-state modules				

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SSI modules						
SSI modules For the connection of absolute encoders with SSI interface	A	**6ES7 138-4DB03-0AB0**		1	1 unit	250
Accessories						
Inscription sheets in A4 format (10 units) Each sheet contains 60 labeling strips for I/O modules and 20 labeling strips for interface modules.						
• Petrol	A	**6ES7 193-4BH00-0AA0**		1	1 unit	250
• Red	A	**6ES7 193-4BD00-0AA0**		1	1 unit	250
• Yellow	A	**6ES7 193-4BB00-0AA0**		1	1 unit	250
• Light beige	A	**6ES7 193-4BA00-0AA0**		1	1 unit	250
Signal cables Assembled for SSI absolute encoders 6FX2 001-5, without Sub-D connector, UL/DESINA	B	**6FX5 002-2CC12-….**		1	1 unit	764
2 PULSE pulse generators						
2PULSE pulse generators and timer modules For ET 200S	A	**6ES7 138-4DD01-0AB0**		1	1 unit	250
Accessories						
Inscription sheets in A4 format (10 units) Each sheet contains 60 labeling strips for I/O modules and 20 labeling strips for interface modules.						
• Petrol	A	**6ES7 193-4BH00-0AA0**		1	1 unit	250
• Red	A	**6ES7 193-4BD00-0AA0**		1	1 unit	250
• Yellow	A	**6ES7 193-4BB00-0AA0**		1	1 unit	250
• Light beige	A	**6ES7 193-4BA00-0AA0**		1	1 unit	250
1STEP step modules						
1STEP step modules For simple positioning tasks with stepper motor axes	A	**6ES7 138-4DC01-0AB0**		1	1 unit	250
Accessories						
Inscription sheets in A4 format (10 units) Each sheet contains 60 labeling strips for I/O modules and 20 labeling strips for interface modules.						
• Petrol	A	**6ES7 193-4BH00-0AA0**		1	1 unit	250
• Red	A	**6ES7 193-4BD00-0AA0**		1	1 unit	250
• Yellow	A	**6ES7 193-4BB00-0AA0**		1	1 unit	250
• Light beige	A	**6ES7 193-4BA00-0AA0**		1	1 unit	250
SIMOSTEP stepper motors		see Catalog ST 70				
Power sections for stepper motors FM STEPDRIVE		see Catalog ST 70				
1POS U positioning modules						
1POS U positioning modules Single-channel positioning module for ET 200S for positioning of adjusting and operating axes	A	**6ES7 138-4DL00-0AB0**		1	1 unit	250

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ET 200S – I/O modules
Technology modules

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
1 COUNT 24 V/100 kHz counter modules						
1 COUNT 24 V/100 kHz counter modules For universal counting and measuring tasks with ET 200S	A	**6ES7 138-4DA04-0AB0**		1	1 unit	250
Accessories						
Inscription sheets in A4 format (10 units) Each sheet contains 60 labeling strips for I/O modules and 20 labeling strips for interface modules.						
• Petrol	A	**6ES7 193-4BH00-0AA0**		1	1 unit	250
• Red	A	**6ES7 193-4BD00-0AA0**		1	1 unit	250
• Yellow	A	**6ES7 193-4BB00-0AA0**		1	1 unit	250
• Light beige	A	**6ES7 193-4BA00-0AA0**		1	1 unit	250
Shield attachments For TM-P and TM-E terminal modules, as support for busbar 3 x 10 mm, 5 units	A	**6ES7 193-4GA00-0AA0**		1	1 unit	250
Shield terminals For connection of braided shields to busbars, 5 units	A	**6ES7 193-4GB00-0AA0**		1	1 unit	250
SIMODRIVE sensor incremental encoders Mountable sensor, optically incremental with HTL level, operational voltage 10 ... 30 V		**6FX2 001-4....** see Catalog ST 70				
Signal cables Assembled, for HTL and TTL sensors, without Sub-D connector, UL/DESINA	B	**6FX5 002-2CA12-....**		1	1 unit	764
SIPLUS 1 COUNT 24 V/100 kHz counter modules (extended temperature range and medial loading)						
1 COUNT 24 V/100 kHz counter modules (-25 ... +60 °C) For universal counting and measuring tasks with ET 200S	D	**6AG1 138-4DA04-2AB0**		1	1 unit	471
Accessories		See 1 COUNT 24 V/100 kHz counter modules				
1 COUNT 5 V/500 kHz counter modules						
1 COUNT 5 V/500 kHz counter modules For universal counting and measuring tasks with ET 200S	A	**6ES7 138-4DE02-0AB0**		1	1 unit	250
Accessories						
Inscription sheets in A4 format (10 units) Each sheet contains 60 labeling strips for I/O modules and 20 labeling strips for interface modules.						
• Petrol	A	**6ES7 193-4BH00-0AA0**		1	1 unit	250
• Red	A	**6ES7 193-4BD00-0AA0**		1	1 unit	250
• Yellow	A	**6ES7 193-4BB00-0AA0**		1	1 unit	250
• Light beige	A	**6ES7 193-4BA00-0AA0**		1	1 unit	250
Shield attachments For TM-P and TM-E terminal modules, as support for busbar 3 x 10 mm, 5 units	A	**6ES7 193-4GA00-0AA0**		1	1 unit	250
Shield terminals For connection of braided shields to busbars, 5 units	A	**6ES7 193-4GB00-0AA0**		1	1 unit	250
SIMODRIVE incremental encoders With RS 422 (TTL), operational voltage 10 ... 30 V		**6FX2 001-2....** see Catalog ST 70				
Signal cables Assembled, for HTL and TTL sensors, without Sub-D connector, UL/DESINA	B	**6FX5 002-2CA12-....**		1	1 unit	764
1 SI interface modules						
1SI interface modules						
• ASCII and 3964(R) protocol	A	**6ES7 138-4DF01-0AB0**		1	1 unit	250
• Modbus and USS protocol	A	**6ES7 138-4DF11-0AB0**		1	1 unit	250
Accessories						
TM-E15S 26-A1 terminal modules Order unit 5 units	A	**6ES7 193-4CA40-0AA0**		1	1 unit	250
TM-E15C26-A1 terminal modules Order unit 5 units	A	**6ES7 193-4CA50-0AA0**		1	1 unit	250
TM-E15N24-A1 terminal modules Order unit 5 units	A	**6ES7 193-4CA80-0AA0**		1	1 unit	250
TM-E15S24-01 terminal modules Order unit 5 units	A	**6ES7 193-4CB20-0AA0**		1	1 unit	250
TM-E15C24-01 terminal modules Order unit 5 units	A	**6ES7 193-4CB30-0AA0**		1	1 unit	250
TM-E15N24-01 terminal modules Order unit 5 units	A	**6ES7 193-4CB70-0AA0**		1	1 unit	250
SIPLUS 1 SI interface modules (extended temperature range and medial loading)						
1SI interface modules						
• ASCII and 3964(R) protocols (-25 ... +70 °C)	D	**6AG1 138-4DF11-7AB0**		1	1 unit	471
• Modbus and USS protocols (-25 ... +70 °C)	D	**6AG1 138-4DF01-7AB0**		1	1 unit	471
Accessories		See 1 SI interface modules				

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIWAREX CS						
SIWAREX CS Weighing electronics for weighers in SIMATIC ET 200S	D	**7MH4 910-0AA01**		1	1 unit	816
SIWAREX CS manuals • In various languages Free download from: www.siemens.com/weighingtechnology						
SIWAREX CS "Getting started" Sample software for a simple introduction to programming weighers in STEP 7. Free download from: www.siemens.com/weighingtechnology						
SIWAREX CS configuration package on CD-ROM for SIMATIC S7, Version V5.4 and higher • SIWATOOL CS software for weigher calibration (in various languages) • Manuals on CD (in various languages) • SIWAREX CD "Getting started"	C	**7MH4 910-0AK01**		1	1 unit	816
SIWATOOL connection cables from SIWAREX U/CS with serial PC interface, for 9-pole PC interfaces (RS 232), length 3 m	C	**7MH4 607-8CA**		1	1 unit	815
Installation materials *(essential)*						
Terminal modules TM-E 30 mm wide (required for each SIWAREX module)	A	**6ES7 193-4CG20-0AA0** or compatible		1	1 unit	250
Shield attachments Contents 5 units, sufficient for 5 cables	A	**6ES7 193-4GA00-0AA0**		1	1 unit	250
Shield connection terminals Contents: 5 units, sufficient for 5 cables Note: One shield connection terminal is required for • Weigher connection and • The TTY interface or • RS 232 interface	A	**6ES7 193-4GB00-0AA0**		1	1 unit	250
N busbars, galvanized 3 x 10 mm, 1 m long	A	**8WA2 842**		1	1 unit	041
Feeder terminals for N busbar	C	**8WA2 868**		1	50 units	041
Remote displays (optional) The digital remote displays can be connected directly through the TTY interface to the SIWAREX CS. Usable remote display: S102			Obtainable from the company Siebert, see Chapter 16 "Appendix" → "External Partners"			
Accessories						
SIWAREX JB junction box, aluminium housing For parallel switching of up to 4 weigh-cells and for connecting several connection boxes	C	**7MH4 710-1BA**		1	1 unit	815
SIWAREX JB junction box, stainless steel housing For parallel switching of up to 4 weigh-cells	D	**7MH4 710-1EA**		1	1 unit	815
Ex-Interface, type SIWAREX Pi with UL and FM approval, but **without ATEX approval** For the inherently safe connection of weigh-cells, suitable for the SIWAREX U, CS, MS, FTA, FTC and M weigher modules. Use in the EU is not possible.	D	**7MH4 710-5AA**		1	1 unit	815
SIWAREX Pi Ex-Interface manuals	X	**C71000-T5974-C29**		1	1 unit	815
Ex-Interface, type SIWAREX IS with ATEX approval, but **without UL and FM approval** For the inherently safe connection of weigh-cells, including manual, suitable for the SIWAREX U, CS, MS, FTA, FTC, M and CF weigher modules. Use in the EU is possible.						
• With short-circuit current < DC 199 mA	C	**7MH4 710-5BA**		1	1 unit	815
• With short-circuit current < DC 137 mA	C	**7MH4 710-5CA**		1	1 unit	815

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Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIWAREX CS (continued)						
***Cables** (optional)*						
Cables Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY, sheath color orange For connecting SIWAREX U, CS, MS, FTA, FTC, M and CF to the connection and distribution box (JB), extension box (EB) or Ex-Interface (Ex-I) and between two JBs, for local laying, occasional bending is possible, 10.8 mm external diameter, for ambient temperature -40 ... +80 °C	C	**7MH4 702-8AG**		1	1 m	815
Cables Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY, sheath color blue Connecting of connection and distribution box (JB) or extension box (EB) in hazardous areas and Ex-Interface (Ex-I), for local laying, occasional bending is possible, blue PVC insulating covering, approx. 10.8 mm external diameter, for ambient temperature -40 ... +80 °C	C	**7MH4 702-8AF**		1	1 m	815
Cables LiYCY 4 x 2 x 0.25 mm² For TTY (switch 2 core pairs each in parallel), for connecting a remote indication	C	**7MH4 407-8BD0**		1	1 m	815
SIWAREX CF						
SIWAREX CF Force measuring module for DMS sensors in SIMATIC ET 200S (SIWAREX CF configuration package not required)	C	**7MH4 920-0AA01**		1	1 unit	816
SIWAREX CF manuals • German, English Free download from: www.siemens.com/weighingtechnology						
SIWAREX CF "Getting started" Sample software for a simple introduction to programming in STEP 7. Free download from: www.siemens.com/weighingtechnology						
***Installation materials** (essential)*						
Terminal modules TM-E 30 mm wide (required for each SIWAREX module)	A	**6ES7 193-4CG20-0AA0** or compatible		1	1 unit	250
Shield attachments Contents 5 units, sufficient for 5 cables	A	**6ES7 193-4GA00-0AA0**		1	1 unit	250
Shield connection terminals Contents: 5 units, sufficient for 5 cables One shield connection terminal is required for each sensor cable	A	**6ES7 193-4GB00-0AA0**		1	1 unit	250
N busbars, galvanized 3 x 10 mm, 1.5 m long	A	**8WA2 842**		1	1 unit	041
Feeder terminals for N busbar	C	**8WA2 868**		1	50 units	041
Accessories						
SIWAREX EB extension boxes For extending sensor cables	C	**7MH4 710-2AA**		1	1 unit	815
Ex-Interface, type SIWAREX IS with ATEX approval, but **without UL and FM approval** For the inherently safe connection of weigh-cells, including manual, suitable for the SIWAREX U, CS, MS, FTA, FTC, M and CF weigher modules. Use in the EU is possible.						
• With short-circuit current < DC 199 mA	C	**7MH4 710-5BA**		1	1 unit	815
• With short-circuit current < DC 137 mA	C	**7MH4 710-5CA**		1	1 unit	815
***Cables** (optional)*						
Cables Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY, sheath color orange For connecting SIWAREX U, CS, MS, FTA, FTC, M and CF to the connection and distribution box (JB), extension box (EB) or Ex-Interface (Ex-I) and between two JBs, for local laying, occasional bending is possible, 10.8 mm external diameter, for ambient temperature -40 ... +80 °C	C	**7MH4 702-8AG**		1	1 m	815

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Terminal modules for power- and solid-state modules						
TM-P terminal modules for PM-E power modules						
TM-P15S23-A1 2 × 3 terminals, termination onto AUX1 rail, AUX1 connected through to the left, screw terminals						
• Order unit 1 unit	A	**6ES7 193-4CC20-0AA0**		1	1 unit	250
• Order unit 5 units	A	**6ES7 193-4CC20-1AA0**		1	1 unit	250
TM-P15C23-A1 2 × 3 terminals, termination onto AUX1 rail, AUX1 connected through to the left, spring-type terminals						
• Order unit 1 unit	A	**6ES7 193-4CC30-0AA0**		1	1 unit	250
• Order unit 5 units	A	**6ES7 193-4CC30-1AA0**		1	1 unit	250
TM-P15N23-A1, order unit 1 unit 2 × 3 terminals, termination onto AUX1 rail, AUX1 connected through to the left, FastConnect	A	**6ES7 193-4CC70-0AA0**		1	1 unit	250
TM-P15S23-A0 2 × 3 terminals, termination onto AUX1 rail, AUX1 disconnected through to the left, screw terminals						
• Order unit 1 unit	A	**6ES7 193-4CD20-0AA0**		1	1 unit	250
• Order unit 5 units	A	**6ES7 193-4CD20-1AA0**		1	1 unit	250
TM-P15C23-A0 2 × 3 terminals, termination onto AUX1 rail, AUX1 disconnected through to the left, spring-type terminals						
• Order unit 1 unit	A	**6ES7 193-4CD30-0AA0**		1	1 unit	250
• Order unit 5 units	A	**6ES7 193-4CD30-1AA0**		1	1 unit	250
TM-P15N23-A0 Order unit: 1 unit 2 × 3 terminals, termination onto AUX1 rail, AUX1 disconnected through to the left, FastConnect	A	**6ES7 193-4CD70-0AA0**		1	1 unit	250
TM-P15S22-01 2 × 2 terminals, no termination onto AUX1 rail, AUX1 connected through to the left, screw terminals						
• Order unit 1 unit	A	**6ES7 193-4CE00-0AA0**		1	1 unit	250
• Order unit 5 units	A	**6ES7 193-4CE00-1AA0**		1	1 unit	250
TM-P15C22-01 2 × 2 terminals, no termination onto AUX1 rail, AUX1 connected through to the left, spring-type terminals						
• Order unit 1 unit	A	**6ES7 193-4CE10-0AA0**		1	1 unit	250
• Order unit 5 units	A	**6ES7 193-4CE10-1AA0**		1	1 unit	250
TM-P15N22-01, order unit 1 unit 2 × 2 terminals, no termination onto AUX1 rail, AUX1 connected through to the left, FastConnect	A	**6ES7 193-4CE60-0AA0**		1	1 unit	250
TM-P30S44-A0, order unit 1 unit 7 × 2 terminals, termination onto AUX1 rail, AUX1 disconnected through to the left, screw terminals for PM-E F PROFIsafe	A	**6ES7 193-4CK20-0AA0**		1	1 unit	241
TM-P30C44-A0, order unit 1 unit 7 × 2 terminals, termination onto AUX1 rail, AUX1 disconnected through to the left, spring-type terminals for PM-E F PROFIsafe	A	**6ES7 193-4CK30-0AA0**		1	1 unit	241
TM-E terminal modules for solid-state modules[1)]						
TM-E15S24-A1, order unit 5 units 2 × 4 terminals, termination onto AUX1 rail, AUX1 connected through to the left, screw terminals	A	**6ES7 193-4CA20-0AA0**		1	1 unit	250
TM-E15C24-A1, order unit 5 units 2 × 4 terminals, termination onto AUX1 rail, AUX1 connected through to the left, spring-type terminals	A	**6ES7 193-4CA30-0AA0**		1	1 unit	250
TM-E15S24-01, order unit 5 units 2 × 4 terminals, no termination onto AUX1 rail, AUX1 connected through to the left, screw terminals	A	**6ES7 193-4CB20-0AA0**		1	1 unit	250
TM-E15C24-01, order unit 5 units 2 × 4 terminals, no termination onto AUX1 rail, AUX1 connected through to the left, spring-type terminals	A	**6ES7 193-4CB30-0AA0**		1	1 unit	250
TM-E15S23-01, order unit 5 units 2 × 3 terminals, no termination onto AUX1 rail, AUX1 connected through to the left, screw terminals	A	**6ES7 193-4CB00-0AA0**		1	1 unit	250
TM-E15C23-01, order unit 5 units 2 × 3 terminals, no termination onto AUX1 rail, AUX1 connected through to the left, spring-type terminals	A	**6ES7 193-4CB10-0AA0**		1	1 unit	250
TM-E15N23-01, order unit 5 units 2 × 3 terminals, no termination onto AUX1 rail, AUX1 connected through to the left, FastConnect	A	**6ES7 193-4CB60-0AA0**		1	1 unit	250

[1)] Note for selecting suitable TM-E and TM-P configuration aids.

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Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Terminal modules for power and solid-state modules (continued)						
TM-E terminal modules for solid-state modules[1] *(continued)*						
TM-E15N24-01 Order unit: 5 units 2 × 4 terminals, no termination onto AUX1 rail, AUX1 connected through to the left, FastConnect	A	**6ES7 193-4CB70-0AA0**		1	1 unit	250
TM-E15S26-A1 Order unit: 5 units 2 × 6 terminals, termination onto AUX1 rail, AUX1 connected through to the left, screw terminals	A	**6ES7 193-4CA40-0AA0**		1	1 unit	250
TM-E15C26-A1 Order unit: 5 units 2 × 6 terminals, termination onto AUX1 rail, AUX1 connected through to the left, spring-type terminals	A	**6ES7 193-4CA50-0AA0**		1	1 unit	250
TM-E15N24-A1 Order unit: 5 units 2 × 4 terminals, termination onto AUX1 rail, AUX1 connected through to the left, FastConnect	A	**6ES7 193-4CA70-0AA0**		1	1 unit	250
TM-E15N26-A1 Order unit: 5 units 2 × 6 terminals, termination onto AUX1 rail, AUX1 connected through to the left, FastConnect	A	**6ES7 193-4CA80-0AA0**		1	1 unit	250
TM-E30S44-01 Order unit: 1 unit 4 × 4 terminals, no termination onto AUX1 rail, AUX1 connected through to the left, screw terminals	A	**6ES7 193-4CG20-0AA0**		1	1 unit	250
TM-E30C44-01 Order unit: 1 unit 4 × 4 terminals, no termination onto AUX1 rail, AUX1 connected through to the left, spring-type terminals	A	**6ES7 193-4CG30-0AA0**		1	1 unit	250
TM-E30S46-A1 Order unit: 1 unit 4 × 6 terminals, termination onto AUX1 rail, AUX1 connected through to the left, screw terminals	A	**6ES7 193-4CF40-0AA0**		1	1 unit	250
TM-E30C46-A1 Order unit: 1 unit 4 × 6 terminals, termination onto AUX1 rail, AUX1 connected through to the left, spring-type terminals	A	**6ES7 193-4CF50-0AA0**		1	1 unit	250
TM-E15S24-AT Order unit: 1 unit for internal temperature compensation for 2 AI TC High Feature, screw terminals	A	**6ES7 193-4CL20-0AA0**		1	1 unit	250
TM-E15C24-AT Order unit: 1 unit for internal temperature compensation for 2 AI TC High Feature, spring-type terminals	A	**6ES7 193-4CL30-0AA0**		1	1 unit	250
Accessories for shield connection						
Shield attachments Order unit: 5 units, for plugging onto TM-E and TM-P	A	**6ES7 193-4GA00-0AA0**		1	1 unit	250
Shield terminals Order unit: 5 units, for busbars 3 × 10 mm	A	**6ES7 193-4GB00-0AA0**		1	1 unit	250
Ground connection terminals Order unit: 1 unit, for conductor cross-sections up to 25 mm^2	C	**8WA2 868**		1	50 units	041
Busbars 3 x 10 mm Order unit 1 unit	A	**8WA2 842**		1	1 unit	041
Accessories for coding						
Color coding plates Order unit: 200 units for TM-P, TM-E						
• White	A	**6ES7 193-4LA20-0AA0**		1	1 unit	250
• Yellow	A	**6ES7 193-4LB20-0AA0**		1	1 unit	250
• Yellow and green	A	**6ES7 193-4LC20-0AA0**		1	1 unit	250
• Red	A	**6ES7 193-4LD20-0AA0**		1	1 unit	250
• Blue	A	**6ES7 193-4LF20-0AA0**		1	1 unit	250
• Brown	A	**6ES7 193-4LG20-0AA0**		1	1 unit	250
• Turquoise	A	**6ES7 193-4LH20-0AA0**		1	1 unit	250
Inscription labels, with inscription Order unit: 1 set						
• 200 units for slot numbering (1 ... 20) 10 ×	A	**8WA8 861-0AB**		100	200 units	041
• 200 units for slot numbering (1 ... 40) 5 ×	A	**8WA8 861-0AC**		100	200 units	041
• 200 units for slot numbering (1 ... 64) 1 ×, (1 ... 68) 2 ×	C	**8WA8 861-0DA**		100	200 units	041
Inscription labels, blank 200 units for slot numbering	A	**8WA8 848-2AY**		100	100 units	041

[1] Note for selecting suitable TM-E and TM-P configuration aids.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIPLUS terminal modules for power and solid-state modules (extended temperature range and medial load)						
TM-P terminal modules for PM-E power modules						
TM-P15S23-A0 (-25 ... +60 °C) Order unit: 1 unit 2 x 3 terminals, termination onto AUX1 rail, AUX1 disconnected through to the left, screw terminals	D	**6AG1 193-4CD20-2AA0**		1	1 unit	471
TM-P15C23-A0 (-25 ... +60 °C) Order unit: 1 unit 2 x 3 terminals, termination onto AUX1 rail, AUX1 disconnected through to the left, spring-type terminals	C	**6AG1 193-4CD30-2AA0**		1	1 unit	471
TM-P15C22-01c (-40 ... +70 °C) Order unit 1 unit 2 x 2 terminals, no termination onto AUX1 rail, AUX1 connected through to the left, spring-type terminals	D	**6AG1 193-4CE10-2AA0**		1	1 unit	471
TM-E terminal modules for solid-state modules						
TM-E15C23-01 (0 ... +70 °C) Order unit 5 units 2 x 3 terminals, no termination onto AUX1 rail, AUX1 connected through to the left, spring-type terminals	D	**6AG1 193-4CB10-7AA0**		1	1 unit	471
TM-E15N24-01 (-40 ... +70 °C) Order unit 5 units 2 x 4 terminals, no termination onto AUX1 rail, AUX1 connected through to the left, FastConnect	D	**6AG1 193-4CB70-7AA0**		1	1 unit	471
TM-E15C24-A1 (-25 ... +60 °C) Order unit 5 units 2 x 4 terminals, termination onto AUX1 rail, AUX1 connected through to the left, spring-type terminals	D	**6AG1 193-4CA30-2AA0**		1	1 unit	471
TM-E15C24-01 (-25 ... +60 °C) Order unit 5 units 2 x 4 terminals, no termination onto AUX1 rail, AUX1 connected through to the left, spring-type terminals	D	**6AG1 193-4CB30-2AA0**		1	1 unit	471
TM-E15S26-A1 (-25 ... +60 °C) Order unit 5 units 2 x 6 terminals, terminal connection with termination onto AUX1 rail, AUX1 connected through to the left, screw terminals	D	**6AG1 193-4CA40-2AA0**		1	1 unit	471
TM-E15C26-A1 (-25 ... +60 °C) Order unit 5 units 2 x 6 terminals, termination onto AUX1 rail, AUX1 connected through to the left, spring-type terminals	D	**6AG1 193-4CA50-2AA0**		1	1 unit	471
TM-E30C44-01 (-25 ... +60 °C) Order unit: 1 unit 4 x 4 terminals, no termination onto AUX1 rail, AUX1 connected through to the left, spring-type terminals	D	**6AG1 193-4CG30-2AA0**		1	1 unit	471
TM-E30C46-A1 (-40 ... +70 °C) Order unit 1 unit 4 x 6 terminals, termination onto AUX1 rail, AUX1 connected through to the left, spring-type terminals	D	**6AG1 193-4CF50-7AA0**		1	1 unit	471
TM-E15C24-AT (0 ... +70 °C) Order unit: 1 unit for internal temperature compensation for 2 AI TC High Feature, spring-type terminals	D	**6AG1 193-4CL30-7AA0**		1	1 unit	471
Accessories for shield connection		See terminal modules for power and solid-state modules				
4 IQ-Sense and 8 IQ-Sense sensor modules						
4 IQ-Sense sensor modules	A	**6ES7 138-4GA00-0AB0**		1	1 unit	2AP
8 x IQ-Sense sensor modules	A	**6ES7 338-7XF00-0AB0**		1	1 unit	231
Sensors						

Note:

The following sensors can be connected to the sensor module:
C40 IQ-Sense diffuse sensors, K80 IQ-Sense retroflective sensors and M18 IQ-Sense ultrasonic sensors.
Since July 1st, 2010 these sensors have been distributed and sold by the company Pepperl+Fuchs (see Chapter 16 "Appendix" → "External Partners").

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ET 200S – failsafe I/O modules

Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
PM-E F PROFIsafe F power modules						
PM-E F pm PROFIsafe 24 V DC power modules For the safe disconnection of digital output modules	A	**6ES7 138-4CF03-0AB0**		1	1 unit	241
PM-E F pp PROFIsafe 24 V DC power modules For the safe disconnection of digital output modules	A	**6ES7 138-4CF42-0AB0**		1	1 unit	241
Accessories						
IM 151-1 HIGH FEATURE interface modules For ET 200S; transmission rates up to 12 Mbit/s; data volume of 244 bytes each for inputs and outputs; up to 63 modules can be connected; connection of PROFIsafe modules, isochrone mode (clocked operation); connection to bus through 9-pole Sub-D including bus termination module	A	**6ES7151-1BA02-0AB0**		1	1 unit	250
IM 151-3 PN HF interface modules For ET 200S; transmission rates up to 100 Mbit/s; up to 63 I/O modules up to 2 m width can be connected; 2 x connection to bus with RJ45 plug, including bus termination module	A	**6ES7 151-3BA23-0AB0**		1	1 unit	250
IM 151-3 PN FO interface modules For ET 200S; 2 PROFINET fiberoptic interfaces, integrated 2-port switch, up to 63 I/O modules up to 2 m wide can be connected, including bus termination module	A	**6ES7151-3BB23-0AB0**		1	1 unit	250
Terminal modules for power modules						
TM-P30S44-A0 Order unit: 1 unit 7 × 2 terminals, termination onto AUX1 rail, AUX1 disconnected through to the left, screw terminals for PM-E F PROFIsafe	A	**6ES7 193-4CK20-0AA0**		1	1 unit	241
TM-P30C44-A0 Order unit: 1 unit 7 × 2 terminals, termination onto AUX1 rail, AUX1 disconnected through to the left, spring-type terminals for PM-E F PROFIsafe	A	**6ES7 193-4CK30-0AA0**		1	1 unit	241
Distributed Safety V5.4 programming tools Task: Configuration software for configuring failsafe user programs for SIMATIC S7-300F, S7-400F and ET 200S Precondition: STEP 7 V5.3 SP3 and higher						
• Floating license • Software Update Service	A B	**6ES7 833-1FC02-0YA5** **6ES7 833-1FC00-0YX2**		1 1	1 unit 1 unit	241 241
Distributed Safety upgrade from V5.x to V5.3; floating license for 1 user	B	**6ES7 833-1FC02-0YE5**		1	1 unit	241
SIMATIC Manual Collection Manuals on DVD-ROM, five languages: S7-200/300/400, C7, LOGO!, SIMATIC DP, PC, PG, STEP 7, Engineering Software, Runtime Software, PCS 7, SIMATIC HMI, SIMATIC NET	A	**6ES7 998-8XC01-8YE0**		1	1 unit	230
SIMATIC Manual Collection update service for 1 year	X	**6ES7 998-8XC01-8YE2**		1	1 unit	230
F solid-state modules						
4/8 F-DI PROFIsafe 24 V DC solid-state modules 30 mm width, up to Category 4 (EN 954-1)	A	**6ES7 138-4FA04-0AB0**		1	1 unit	241
4 F-DO PROFIsafe 24 V DC/2 A solid-state modules 30 mm width, up to Category 4 (EN 954-1)	A	**6ES7 138-4FB03-0AB0**		1	1 unit	241
4 F-DI / 3 F-DO PROFIsafe 24 V DC/2 A solid-state modules 30 mm width, up to Category 3 (EN 954-1) / SIL 2 (IEC 62061)	A	**6ES7 138-4FC01-0AB0**		1	1 unit	241
Accessories						
Terminal modules for solid-state modules		See F terminal modules				
IM151-1 High-Feature interface modules For ET 200S; transmission rates up to 12 Mbit/s; up to 63 modules can be connected, with isochrone mode, connection to bus through 9-pole Sub-D, including termination module	A	**6ES7 151-1BA02-0AB0**		1	1 unit	250
IM151-3 PN HF interface modules For ET 200S; transmission rates up to 100 Mbit/s; up to 63 I/O modules up to 2 m width can be connected; 2 x connection to bus with RJ45 plug, including bus termination module	A	**6ES7 151-3BA23-0AB0**		1	1 unit	250
IM151-3 PN FO interface modules For ET 200S; 2 PROFINET fiberoptic interfaces, integrated 2-port switch, up to 63 I/O modules up to 2 m wide can be connected, including bus termination module	A	**6ES7 151-3BB23-0AB0**		1	1 unit	250
Distributed Safety V5.4 programming tools Task: Configuration software for configuring failsafe user programs for SIMATIC S7-300F, S7-400F and ET 200S Precondition: STEP 7 V5.3 SP3 and higher						
• Floating license • Software Update Service	A B	**6ES7 833-1FC02-0YA5** **6ES7 833-1FC00-0YX2**		1 1	1 unit 1 unit	241 241
Distributed Safety upgrade from V5.x to V5.3; floating license for 1 user	B	**6ES7 833-1FC02-0YE5**		1	1 unit	241

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
F solid-state modules (continued)						
SIMATIC Manual Collection Electronic manuals on DVD, several languages: S7-200, TD 200, S7-300, M7-300, C7, S7-400, M7-400, STEP 7, Engineering Tools, Runtime Software, SIMATIC DP (Distributed I/O), SIMATIC HMI (Human Machine Interface), SIMATIC NET (Industrial Communication)	A	**6ES7 998-8XC01-8YE0**		1	1 unit	230
SIMATIC Manual Collection – Update service for 1 year Scope of supply: The current DVD S7 Manual Collection as well as the three subsequent updates	X	**6ES7 998-8XC01-8YE2**		1	1 unit	230
SIPLUS F solid-state modules (extended temperature range and medial loading)						
4/8 F-DI PROFIsafe solid-state modules 24 V DC (-25 ... +60 °C) 30 mm width, up to Category 4 (EN 954-1)	D	**6AG1 138-4FA04-2AB0**		1	1 unit	471
4 F-DO PROFIsafe solid-state modules 24 V DC/2 A (-25 ... +60 °C) 30 mm width, up to Category 4 (EN 954-1)	D	**6AG1 138-4FB03-2AB0**		1	1 unit	471
Accessories		See F solid-state modules				
RELAY F solid-state modules						
1 F-RO solid-state modules 24 V DC/5 A 24 ... 230 V AC/5A	A	**6ES7 138-4FR00-0AA0**		1	1 unit	241
Accessories						
Terminal modules for solid-state modules		See F terminal modules				
IM151-1 High-Feature interface modules For ET200S; transmission rates up to 12 Mbit/s; up to 63 modules can be connected, with isochrone mode, connection to bus through 9-pole Sub-D, including termination module	A	**6ES7 151-1BA02-0AB0**		1	1 unit	250
IM151-3 PN HF interface modules For ET 200S; transmission rates up to 100 Mbit/s; up to 63 I/O modules up to 2 m width can be connected; 2 x connection to bus with RJ45 plug, including bus termination module	A	**6ES7 151-3BA23-0AB0**		1	1 unit	250
IM151-3 PN FO interface modules For ET 200S; 2 PROFINET fiberoptic interfaces, integrated 2-port switch, up to 63 I/O modules up to 2 m wide can be connected, including bus termination module	A	**6ES7 151-3BB23-0AB0**		1	1 unit	250
Distributed Safety V5.4 programming tools Task: Configuration software for configuring failsafe user programs for SIMATIC S7-300F, S7-400F and ET 200S Precondition: STEP 7 V5.3 SP3 and higher						
• Floating license	A	**6ES7 833-1FC02-0YA5**		1	1 unit	241
• Software Update Service	B	**6ES7 833-1FC00-0YX2**		1	1 unit	241
Distributed Safety upgrade from V5.x to V5.3; floating license for 1 user	B	**6ES7 833-1FC02-0YE5**		1	1 unit	241
SIMATIC Manual Collection Electronic manuals on DVD, several languages: S7-200, TD 200, S7-300, M7-300, C7, S7-400, M7-400, STEP 7, Engineering Tools, Runtime Software, SIMATIC DP (Distributed I/O), SIMATIC HMI (Human Machine Interface), SIMATIC NET (Industrial Communication)	A	**6ES7 998-8XC01-8YE0**		1	1 unit	230
SIMATIC Manual Collection – Update service for 1 year Scope of supply: The current DVD S7 Manual Collection as well as the three subsequent updates	X	**6ES7 998-8XC01-8YE2**		1	1 unit	230
F terminal modules						
F terminal modules for power modules						
TM-P15S23-A1 2 x 3 terminals, termination onto AUX1 rail, AUX1 connected through to the left, screw terminals						
• Order unit 1 unit	A	**6ES7 193-4CC20-0AA0**		1	1 unit	250
• Order unit 5 units	A	**6ES7 193-4CC20-1AA0**		1	1 unit	250
TM-P15C23-A1 2 x 3 terminals, termination onto AUX1 rail, AUX1 connected through to the left, spring-type terminals						
• Order unit 1 unit	A	**6ES7 193-4CC30-0AA0**		1	1 unit	250
• Order unit 5 units	A	**6ES7 193-4CC30-1AA0**		1	1 unit	250
TM-P15S23-A0 2 x 3 terminals, termination onto AUX1 rail, AUX1 disconnected through to the left, screw terminals						
• Order unit 1 unit	A	**6ES7 193-4CD20-0AA0**		1	1 unit	250
• Order unit 5 units	A	**6ES7 193-4CD20-1AA0**		1	1 unit	250
TM-P15C23-A0 2 x 3 terminals, termination onto AUX1 rail, AUX1 disconnected through to the left, spring-type terminals						
• Order unit 1 unit	A	**6ES7 193-4CD30-0AA0**		1	1 unit	250
• Order unit 5 units	A	**6ES7 193-4CD30-1AA0**		1	1 unit	250

* You can order this quantity or a multiple thereof.
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ET 200S – failsafe I/O modules

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
F terminal modules (continued)						
TM-P15S22-01 2 x 2 terminals, no termination onto AUX1 rail, AUX1 connected through to the left, screw terminals						
• Order unit 1 unit	A	**6ES7 193-4CE00-0AA0**		1	1 unit	250
• Order unit 5 units	A	**6ES7 193-4CE00-1AA0**		1	1 unit	250
TM-P15C22-01 2 x 2 terminals, no termination onto AUX1 rail, AUX1 connected through to the left, spring-type terminals						
• Order unit 1 unit	A	**6ES7 193-4CE10-0AA0**		1	1 unit	250
• Order unit 5 units	A	**6ES7 193-4CE10-1AA0**		1	1 unit	250
TM-P30S44-A0 Order unit: 1 unit 7 x 2 terminals, termination onto AUX1 rail, AUX1 disconnected through to the left, screw terminals for PM-E F PROFIsafe	A	**6ES7 193-4CK20-0AA0**		1	1 unit	241
TM-P30C44-A0 Order unit: 1 unit 7 x 2 terminals, termination onto AUX1 rail, AUX1 disconnected through to the left, spring-type terminals for PM-E F PROFIsafe	A	**6ES7 193-4CK30-0AA0**		1	1 unit	241
F terminal modules for solid-state modules						
TM-E30S44-01 Order unit: 1 unit 4 x 4 terminals, no termination onto AUX1 rail, AUX1 connected through to the left, screw terminals	A	**6ES7 193-4CG20-0AA0**		1	1 unit	250
TM-E30C44-01 Order unit: 1 unit 4 x 4 terminals, no termination onto AUX1 rail, AUX1 connected through to the left, spring-type terminals	A	**6ES7 193-4CG30-0AA0**		1	1 unit	250
TM-E30S46-A1 Order unit: 1 unit 4 x 6 terminals, termination onto AUX1 rail, AUX1 connected through to the left, screw terminals	A	**6ES7 193-4CF40-0AA0**		1	1 unit	250
TM-E30C46-A1 Order unit: 1 unit 4 x 6 terminals, termination onto AUX1 rail, AUX1 connected through to the left, spring-type terminals	A	**6ES7 193-4CF50-0AA0**		1	1 unit	250
Accessories						
Color coding plates Order unit: 200 units for TM-P, TM-E						
• White	A	**6ES7 193-4LA20-0AA0**		1	1 unit	250
• Yellow	A	**6ES7 193-4LB20-0AA0**		1	1 unit	250
• Yellow and green	A	**6ES7 193-4LC20-0AA0**		1	1 unit	250
• Red	A	**6ES7 193-4LD20-0AA0**		1	1 unit	250
• Blue	A	**6ES7 193-4LF20-0AA0**		1	1 unit	250
• Brown	A	**6ES7 193-4LG20-0AA0**		1	1 unit	250
• Turquoise	A	**6ES7 193-4LH20-0AA0**		1	1 unit	250
Ground connection terminals Order unit 1 unit For conductor cross-sections up to 25 mm^2	C	**8WA2 868**		1	50 units	041
Busbars 3 x 10 mm Order unit 1 unit	A	**8WA2 842**		1	1 unit	041
Inscription labels, with inscription Order unit: 1 set						
• 200 units for slot numbering (1 ... 20) 10 ×	A	**8WA8 861-0AB**		100	200 units	041
• 200 units for slot numbering (1 ... 40) 5 ×	A	**8WA8 861-0AC**		100	200 units	041
• 200 units for slot numbering (1 ... 64) 1 ×, (1 ... 68) 2 ×	C	**8WA8 861-0DA**		100	200 units	041
Inscription labels, blank 200 units for slot numbering	A	**8WA8 848-2AY**		100	100 units	041

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
IO-Link 4SI electronic module						
IO-Link masters Connection method: Screw terminals, spring-type terminals or FastConnect	A	**6ES7 138-4GA50-0AB0**		1	1 unit	250
SIRIUS 4SI electronic modules						
IO-Link masters Connection method: Screw terminals, spring-type terminals or FastConnect	►	**3RK1 005-0LB00-0AA0**		1	1 unit	42F

8

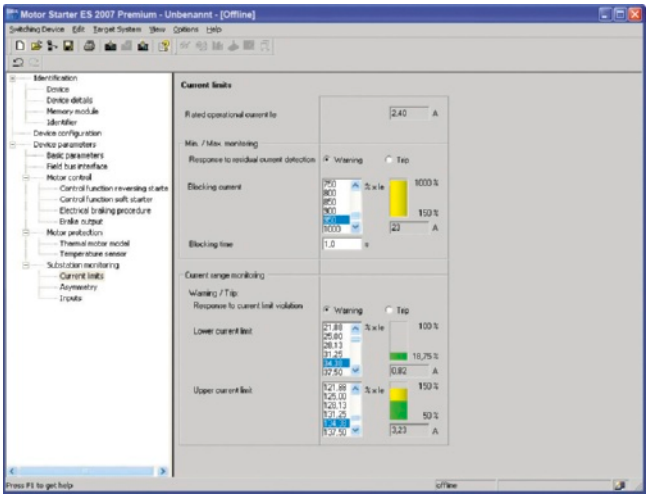
* You can order this quantity or a multiple thereof.
Illustrations are approximate

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ET 200S software
Motor Starter ES, block library for PCS 7

Overview

Motor Starter ES

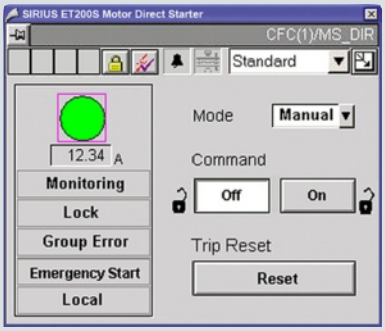


Motor Starter ES for parameterization, monitoring, diagnostics and testing of motor starters

Motor Starter ES is used for start-up, parameterization, diagnostics, documentation and the preventative maintenance of the motor starters in the SIMATIC ET 200S, SIMATIC ET 200pro, ECOFAST and SIRIUS M200D product families.

For detailed information on the Motor Starter ES Software see Chapter 14 "Parametrization, Configuration and Visualization with SIRIUS".

SIRIUS motor starter block library for SIMATIC PCS 7



Faceplate of the motor block

With the SIRIUS motor starter PCS 7 block library, SIRIUS ET 200S motor starters (direct and reversing starters, direct-online soft starters) can be easily and simply integrated into the SIMATIC PCS 7 process control system. The SIRIUS motor starter PCS 7 block library contains the diagnostics and driver blocks corresponding to the SIMATIC PCS 7 diagnostics and driver concept as well as the elements (symbols and faceplates) required for operator control and process monitoring.

Detailed information about the block library for SIRIUS motor starters for SIMATIC PCS 7 see Chapter 14 "Parametrization, Configuration and Visualization with SIRIUS".

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Motor Starters for Use in the Field, High Degree of Protection

9



Price groups
PG 2AP, 5DK, 5K1, 5K2, 5N2, 5W1, 41B, 42C, 42D, 42E, 230, 241, 250, 266, 337, 343, 346

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ET 200pro motor starters
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9/7 Standard motor starters
9/7 High-Feature motor starters
9/8 ET 200pro isolator modules
ET 200pro safety motor starters Solutions local/PROFIsafe
Safety modules
9/9 - Safety local isolator modules
9/9 - 400 V disconnecting modules
9/9 - F-Switch PROFIsafe
9/12 Accessories for ET 200pro motor starters
9/15 ET 200pro – interface modules
9/25 ET 200pro – I/O modules
9/29 ET 200pro FC frequency converters
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SIRIUS M200D motor starters
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9/37 M200D Basic motor starters
9/38 M200D Standard motor starters
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9/52 Accessories

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MCU motor starters, I/O-controlled
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Accessories
9/82 - ECOFAST selection modules

More information can be found on the Internet: see opening information, page 13

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Motor Starters for Use in the Field, High Degree of Protection

Introduction

Overview



3RK1 304



3RK1 315



3RK4 353



3RK4 320

		Order No.	Page
Motor starters for use in the field, high degree of protection			
ET 200pro motor starters			
ET 200pro motor starters	• Motor Starters, Standard and High-Feature	**3RK1 304**	9/3
ET 200pro isolator modules	• With switch disconnector function for safe disconnection	**3RK1 304**	9/8
Safety modules	• Isolator modules, 400 V disconnecting modules, F-Switch PROFIsafe	**3RK1 304**	9/9
Accessories for ET 200pro motor starters		**3RK1 9**	9/12
ET 200pro – interface modules		**6ES7 1**	9/15
ET 200pro – I/O modules	• Digital/analog expansion modules, failsafe expansion modules, power modules, ET 200pro pneumatic interfaces	**6ES7 1**	9/25
ET 200pro FC frequency converters		**6SL32**	9/29
SIRIUS M200D motor starters			
	• Distributed motor starters up to 5.5 kW		
M200D AS-i Basic motor starters		**3RK1 315**	9/37
M200D AS-i Standard motor starters		**3RK1 325**	9/38
M200D communication modules for PROFIBUS		**3RK1 305**	9/43
M200D communication modules for PROFINET		**3RK1 335**	9/43
M200D motor starter modules		**3RK1 395**	9/43
Accessories	• Energy supply, motor cables, control cables		9/44
ECOFAST motor starters			
3RK1 3 ECOFAST motor starters	• Distributed motor starters for PROFIBUS and AS-Interface • Reversing starters and soft starters	**3RK1 303/323**	9/50
SIRIUS MCU motor starters			
MCU motor starters, locally controlled	• For autonomously controlled motors such as pumps, fans, etc.	**3RK4 353**	9/56
MCU motor starters, I/O-controlled	• Economical solution for controlling induction motors distributed in the field	**3RK4 340**	9/57
MCU motor starters for AS-Interface	• Controlling and scanning through the AS-i bus		
• Plastic enclosures, electromechanical		**3RK4 320**	9/58
• Metal enclosures, electromechanical		**3RK4 320**	9/59
• Metal enclosures, electronic		**3RK4 320**	9/61
Motor starters for AS-Interface, 24 V DC			
	• For the low-end performance range up to 70 W		
	• Quick and easy connection of 24 V DC motors and related sensors directly on-site to AS-Interface		
3 versions	• Single direct-on-line starters, double direct-on-line starters, reversing starters	**3RK1 400-1**	9/63
Energy Communication Field Installation System (ECOFAST)			
Connection technology according to ISO 23570 and ECOFAST	• Connects the components of an automation system (such as switching and control devices, I/O stations, motors and geared motors) using a uniform, standardized connection method for data and power		
Communication via PROFIBUS DP	• Hybrid field bus connections (passive and active)	**3RK1 911**	9/69
	• ECOFAST Cu-RS 485 bus cables	**6XV1**	9/71
	• ECOFAST Fiber Optic Hybrid Cable	**6XV1**	9/74
Communication via AS-Interface	• AS-Interface shaped cable	**3RX9**	9/77
Power connection technology	• Power cables, power terminal connectors	**3RK1 911**	9/79
	• Motor connection cables	**3RK1 911**	9/81
Accessories	• ECOFAST selection module	**3RK1 911**	9/82

Flexible and cost-efficient distributed starter solutions

Be it their high degree of protection, compact design or integrated multifunctionality – our motor starters and soft starters for use in the field are ideal for realizing distributed drive solutions. The modular concepts, distributed power distribution and integrated safety technology of our portfolio for a high degree of protection consistently supports current trends in drive technology.

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Overview

ET 200pro motor starters in the ET 200pro I/O system

SIMATIC ET 200pro is a modular I/O system in the degree of protection IP65/66/67 for near-machine, cabinet-free use.
ET 200pro motor starters in the high degree of protection IP65 are an integral part of ET 200pro.



ET 200pro motor starter: Isolator module, Standard starter and High-Feature starter mounted on a wide module rack

ET 200pro motor starters

- Only two versions up to 5.5 kW
- All settings can be parameterized by bus
- Comprehensive diagnostic signals
- Overload can be acknowledged by remote reset
- Current unbalance monitoring
- Stall protection
- Emergency start function in the event of overload
- Current value transmission by bus
- Current limit monitoring
- Direct-on-line or reversing starters
- Power bus can be plugged in using the new HAN Q4/2 plug-in connectors
- Conductor cross-sections up to 6 x 4 mm^2
- 25 A per segment
(power looped through using jumper plug)
- In the Standard and High-Feature versions
(with 4 DI onBoard)
- Electromechanical switching and electronic switching
- Electronic starter for direct activation or with integrated smooth-starter function
- Supplied with 400 V AC brake contact as an option

Isolator modules

The isolator module with switch disconnector function is used for safe disconnection of the 400 V operational voltage during repair work in the plant and provides an integrated group fusing function (i.e. additional group short-circuit protection for all subsequently supplied motor starters).

Depending on the power distribution concept, all stations can be equipped with an isolator module as an option.

Safety applications

Safety local isolator module

With the Safety local modules

- Safety local isolator module and
- 400 V disconnecting modules

it is possible to achieve safety category 4/SIL 3 with an appropriate connection.

Safety Solution PROFIsafe

With the Safety PROFIsafe modules

- F-Switch and
- 400 V disconnecting modules

it is likewise possible to achieve safety category 4/SIL 3 with an appropriate connection.

Functionality

With the ET 200pro motor starters, any AC loads can be protected and switched. They are an integral part of ET 200pro and have the high degree of protection IP65. This makes them ideal for operation in modular, distributed peripherals without control cabinets or control enclosures.

The ET 200pro motor starters are available both with mechanical as well as electronic contacts

The ET 200pro electromechanical starters are offered as direct (DSe/DSe) and reversing starters (RSe/RSe) in the High Feature version with the following equipment:

- 4 digital inputs
- Device versions with or without control for externally fed brakes with 400 V AC
- With expanded parameterization capabilities

The ET 200pro electronic starters are offered as direct (DSe/DSe) and reversing starters (RSe/RSe) in the High Feature version with the following equipment:

- 4 digital inputs
- With soft-start and smooth ramp-down function
- With the deactivated smooth start function as an electronic starter for applications with a high level of switching frequency
- Device versions with or without control for externally fed brakes with 400 V AC
- With expanded parameterization capabilities

As the result of the protection concept with solid-state overload evaluation and the use of SIRIUS controls size S00, additional advantages are realized on the standard and High-Feature motor starters - advantages which soon make themselves positively felt particularly in manufacturing processes with high plant stoppage costs:

- Configuration is made easier by the fine modular structure. When using the ET 200pro motor starters, the list of parts per load feeder is reduced to two main units: the bus module and the motor starter. This makes the ET 200pro ideal for modular machine concepts or solutions for conveying systems and in machine-tool building.
- Expansions are easily possible through the subsequent adding of modules. The innovative plug-in technology also does away with the wiring needed up to now. Through the hot swapping function (disconnection and connection during operation) a motor starter can be replaced within seconds if necessary, without having to shut down the ET 200pro station and with it the process in the plant. The motor starters are therefore recommendable in particular for applications with special demands on availability. Storage costs are optimized in addition by the low level of variance (2 units up to 5.5 kW).

The ordering option for motor starters with a 400 V AC brake output provides the possibility of controlling motors with 400 V AC brakes. With four locally acting inputs available on the High-Feature motor starter it is possible to realize autonomous special functions which work independently of the bus and the higher-level control system, e.g. as a quick stop on gate valve controls or limit position disconnectors. In parallel with this, the states of these inputs are signaled to the control system.

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General data

Type		Standard motor starters	High-Feature motor starters	
Technology designation[1)]		**DSe, RSe**	**DSe, RSe**	**sDSSte, sDSte, sRSSte, sRSte**
Device functions				
Parameterizable rated operational current		✓		
Parameterizable current limit values		--	✓, 2 limit values	
Parameterizable response in case of current limit violation		--	✓	
Zero current monitoring		✓		
Parameterizable response in case of zero current violation		✓		
Parameterizable current unbalance limit	%	--, fixed limit value (30 x I_e)	✓, 30 ... 60 x I_e	
Parameterizable response in case of unbalance limit violation		✓		
Motor blocking monitoring		--	✓	
Parameterizable blocking current limit	%	--	✓, 150 ... 1 000 x I_e	
Parameterizable blocking time limit	s	--	✓, 1 ... 5	
Current value transmission		✓		
Group warning diagnostics		--	✓, parameterizable	
Group diagnostics		✓, parameterizable		
Emergency start		✓		
Digital inputs		--	✓, 4 inputs	
• Parameterizable input signal		--	✓, latching/ non-latching	
• Parameterizable input level		--	✓, NC/NO	
• Parameterizable input signal delay	ms	--	✓, 10 ... 80	
• Parameterizable input signal extension	ms	--	✓, 0 ... 200	
• Parameterizable input control actions		--	✓, 12 different actions	
400 V brake output		✓, order option		
Parameterizable brake enabling delay	s	✓, -2.5 ... 2.5		
Parameterizable holding time of the brake during stopping	s	✓, 0 ... 25		
Parameterizable start-up type		--		✓
Parameterizable ramp-down time		--		✓
Parameterizable starting voltage		--		✓
Parameterizable stopping voltage		--		✓
Local device interface		✓		
Firmware update		✓, by trained personnel		
Thermal motor model		✓		
Parameterizable trip class		--, CLASS 10 fixed	✓, CLASS 5, 10, 15, 20	
Parameterizable response in case of overload of thermal motor model		--	✓, 3 possible states	
Advance warning limit for motor heating	%	--	✓, parameterizable 0 ... 95	
Advance warning limit time-related trip reserve	s	--	✓, parameterizable 0 ... 500	
Parameterizable recovery time	min	--	✓, 1 ... 30	
Parameterizable protection against voltage failure		--, permanently integrated	✓	
Reversing start function		✓, order option		
Parameterizable interlock time for reversing starters		--, 150 ms fixed	✓, 0 ... 60 s	
Integrated logbook functions		✓, 3 device logbooks		
Integrated statistics data memory		✓		
Parameterizable response in case of CPU / master stop		✓		
Device indications				
• Group fault		SF LED (red)		
• Switching state		STATE LED (red, yellow, green)		
• Device status		DEVICE LED (red, yellow, green)		
• Digital inputs		--	IN 1 ... IN 4, LED	

✓ Function is available

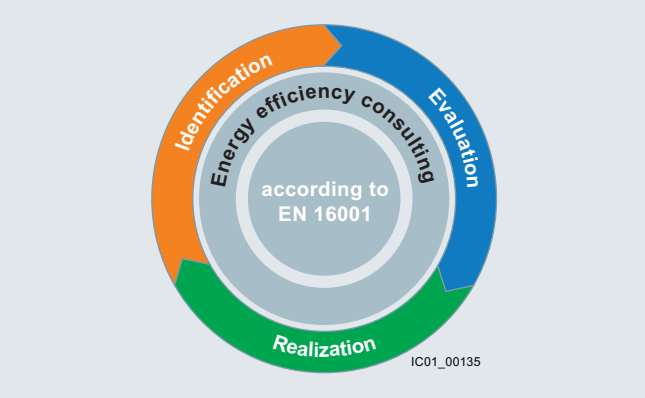
-- Function not available

1) DS .... direct-on-line starter
RS .... reversing starter
DSS .. direct-on-line soft starter
RSS .. reversing soft starter
e ..... electronic motor protection
te ..... full motor protection (thermal + electronic)
s ..... electronic switching with semiconductor.

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Benefits

Advantages through energy efficiency



Overview of the energy management process

We offer you a unique portfolio for industrial energy management, using an energy management system that helps to optimally define your energy needs. We split up our industrial energy management into three phases – Identification, Evaluation and Realization – and we support you with the appropriate hardware and software solutions in every process phase.

The innovative products of the SIRIUS industrial controls portfolio can also make a substantial contribution to a plant's energy efficiency (see www.siemens.com/sirius/energysaving).

SIMATIC ET 200pro motor starters contribute to energy efficiency as follows:

- Energy management
  Provision of energy data (current) by bus to higher-level systems using PROFIenergy
- Elimination of energy consumption in dead times through disconnection using PROFIenergy
- Current management
  With solid-state soft starters, avoidance of current peaks and therefore reduction of the load on the grid and the mechanical system
- Technology-reduced inherent power loss as speed-controlled drive systems
- Solid-state modules equipped with soft start technology with bypass contactor, resulting in lower power losses than with conventional soft starters after start-up

Product advantages

ET 200pro motor starters provide the following advantages:

- High flexibility thanks to a modular and compact design
- Little variance among all motor starter versions (2 units up to 5.5 kW)
- Extensive parameterization using STEP 7 HW-Config
- Increase of plant availability through fast replacement of units (easy mounting and plug-in technology)
- Extensive diagnostics and information for preventive maintenance
- Parameterizable inputs for on-site control functions (High-Feature)
- Cabinet-free construction thanks to high degree of protection IP65

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General data

Technical specifications

Type		Standard motor starters	High-Feature motor starters	
		Mechanically switching without inputs	Mechanically switching with inputs	Mechanically switching with inputs and soft starter function
Technology designation[1]		DSe, RSe	DSe, RSe	sDSSte, sDSte, sRSSte, sRSte
Mechanics and environment				
Motor starters that can be connected to ET 200pro or modules With width of 110 mm		Max. 8		
Mounting dimensions (W x H x D)				
• Direct-on-line starter and reversing starter	mm	110 x 230 x 150		110 x 230 x 160
Permissible ambient temperature				
• During operation	°C	-25 ... +55, from +40 with derating		
• During storage	°C	-40 ... +70		
Permissible mounting positions		Vertical, horizontal		
Vibration resistance acc. to IEC 60068, Part 2-6	*g*	2		
Shock resistance acc. to IEC 60068 Part 2-27	*g*/ms	Half-sine 15/11		
Degree of protection		IP65		
Pollution degree		3, IEC 60664 (IEC 61131)		
Electrical specifications				
Power consumption at 24 V DC				
• From auxiliary circuit L+/M (U1)	mA	Approx. 40		
• From auxiliary circuit A1/A2 (U2)	mA	Approx. 200		
Rated operational current for power bus I_e	A	25		
Rated operational voltage U_e	V AC	400 (50/60 Hz)		
• Approval according to EN 60947-1, Appendix N	V AC	Up to 400 (50/60 Hz)		Up to 400 (50/60 Hz)
• Approval according to CSA and UL	V AC	Up to 600 (50/60 Hz)		Up to 480 (50/60 Hz)
Approval				
• DIN VDE 0106, Part 101	V	Up to 400		Up to 480
• CSA and UL approval	V	Up to 600		Up to 480
Conductor cross-sections				
• Incoming energy supply	mm^2	Max. 6 x 4		
Touch protection		Finger-safe		
Rated impulse withstand voltage U_{imp}	kV	6		
Rated insulation voltage U_i	V	400		
Rated operational current for starters I_e				
• AC-1/2/3 at 40 °C				
- At 400 V	A	0.15 ... 2.0/1.5 ... 12.0		0.15 ... 2.0/1.5 ... 12.0[2]
- At 500 V	A	0.15 ... 2.0/1.5 ... 9.0		
• AC-4 at 40 °C				
- At 400 V	A	0.15 ... 2.0/1.5 ... 4.0		
Rated short-circuit breaking capacity	kA	100 at 400 V		
Type of coordination acc. to IEC 60947-4-1		1		
Power of induction motors at 400 V	kW	Max. 5.5		Max. 5.5/4[3]
Utilization categories		AC-1, AC-2, AC-3, AC-4		AC-53a[4] (max. 9 A with deactivated soft start function up to CLASS 10)
Protective separation between main and auxiliary circuits	V	400, Acc. to EN 60947-1, Appendix N		
Endurance of contactor				
• Mechanical	Operating cycles	30 million		--
• Electrical	Operating cycles	Up to 10 million, dependent on the current loading (see Manual)		--
Reliable switching frequency		Dependent on the current loading, motor starting time and relative ON period (see Manual)		
Operating times for 0.85 ... 1.1 x U_e				
• Closing delay	ms	11 ... 50		--
• Opening delay	ms	5 ... 45		--

[1] DS .... direct-on-line starter
RS .... reversing starter
DSS .. direct-on-line soft starter
RSS .. reversing soft starter
e ..... electronic motor protection
te ..... full motor protection (thermal + electronic)
s ..... electronic switching with semiconductor.

[2] Note:
With deactivated soft starter control function the permissible rated operational current is reduced to 9 A up to CLASS 10.

[3] With parameterization as electronic starter max. 4 kW.

[4] 8-hour operation.

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Selection and ordering data

Version	DT[2]	Order No.		Price per PU	PU (UNIT, SET, M)	PS*	PG
Standard motor starters, mechanical Motor protection: thermal model							
 DSe Standard	**DSe direct-on-line starters[1]**						
• Without brake output	A	**3RK1 304-5□S40-4AA0**			1	1 unit	42D
• With brake output 400 V AC	A	**3RK1 304-5□S40-4AA3**			1	1 unit	42D
	RSe reversing starters[1]						
• Without brake output	A	**3RK1 304-5□S40-5AA0**			1	1 unit	42D
• With brake output 400 V AC	A	**3RK1 304-5□S40-5AA3**			1	1 unit	42D
Setting range Rated operational current				***Additional price***			
• 0.15 ... 2.0 A			**K**	None			
• 1.5 ... 12.0 A			**L**	x			
High-Feature motor starters, mechanical Motor protection: thermal model							
 RSe High-Feature	**DSe direct-on-line starters[1]**						
• Without brake output and with 4 inputs	C	**3RK1 304-5□S40-2AA0**			1	1 unit	42D
• With brake output 400 V AC and 4 inputs	C	**3RK1 304-5□S40-2AA3**			1	1 unit	42D
	RSe reversing starters[1]						
• Without brake output and with 4 inputs	C	**3RK1 304-5□S40-3AA0**			1	1 unit	42D
• With brake output 400 V AC and 4 inputs	C	**3RK1 304-5□S40-3AA3**			1	1 unit	42D
Setting range Rated operational current				***Additional price***			
• 0.15 ... 2.0 A			**K**	None			
• 1.5 ... 12.0 A			**L**	x			
High-Feature motor starters[3], electronic Full motor protection, comprising thermal motor protection and thermistor motor protection							
 sRSSte High-Feature	**sDSSte/sDSte direct-on-line starters[1][3]**						
• Without brake output and with 4 inputs	C	**3RK1 304-5□S70-2AA0**			1	1 unit	42D
• With brake output 400 V AC and 4 inputs	C	**3RK1 304-5□S70-2AA3**			1	1 unit	42D
	sRSSte/sRSte reversing starters[1][3]						
• Without brake output and with 4 inputs	C	**3RK1 304-5□S70-3AA0**			1	1 unit	42D
• With brake output 400 V AC and 4 inputs	C	**3RK1 304-5□S70-3AA3**			1	1 unit	42D
Setting range Rated operational current				***Additional price***			
• 0.15 ... 2.0 A			**K**	None			
• 1.5 ... 12.0 A			**L**	x			

x = Additional price

1) Only functions when used together with the backplane bus module and the wide module rack. The backplane bus module and the wide module rack must be ordered separately (see "Accessories for ET 200pro Motor Starters" on page 9/14).

2) Delivery time class A for setting range of rated operational current 0.15 ... 2.0 A

3) The solid-state motor starters can be used not only as solid-state motors starters with a high level of switching frequency but also as fully fledged soft starters for soft starting and smooth ramp-down. The changeover from motor starter to soft starter takes place through reparameterization in HW Config.
Depending on the setting, this results in the following current ranges:
- Parameterization as solid-state motor starter: 0.15 to 2 A and 1.5 to 9 A (4 kW)
- Parameterization as soft starter: 0.15 to 2 A and 1.5 to 12 A (5.5 kW).

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ET 200pro isolator modules

Overview

The isolator module with integrated group fusing function (i.e. additional group short-circuit protection for all subsequently supplied motor starters) and switch disconnector function is used for safe disconnection of the 400 V operational voltage in the plant.

Depending on the power distribution concept, all stations can be equipped with an isolator module as an option.

The following properties apply to the isolator module:

- Increase of plant availability through fast replacement of units (easy mounting and plug-in technology)
- Cabinet-free construction thanks to high degree of protection IP65

The isolator module is available in addition in a safety version (see page 9/9 "Safety local Isolator Modules").

Technical specifications

Type		Isolator modules
General data		
Mounting dimensions (W x H x D)		
• Direct-on-line starter and reversing starter	mm	110 x 230 x 170
Permissible ambient temperature		
• During operation	°C	-25 ... +55
• During storage	°C	-40 ... +70
Permissible mounting positions		Any
Vibration resistance acc. to IEC 60068 Part 2-6	*g*	2
Shock resistance acc. to IEC 60068 Part 2-27	*g*/ms	Half-sine 15/11
Power consumption		
• From auxiliary circuit L+/M (U1)	mA	Approx. 20
• From auxiliary circuit A1/A2 (U2)		--
Rated operational current for power bus I_e	A	25
Rated operational voltage U_e	V	400
Approvals according to		
• DIN VDE 0106, Part 101	V	Up to 500
• CSA and UL	V	Up to 600
Conductor cross-sections		
• Incoming energy supply	mm^2	max. 6 x 4

Type		Isolator modules
Degree of protection		IP65
Touch protection		Finger-safe
Pollution degree		3, IEC 60664 (IEC 61131)
Rated impulse withstand voltage U_{imp}	kV	6
Rated insulation voltage U_i	V	400
Rated operational current for starters I_e		
• AC-1/2/3 at 40 °C		
- At 400 V	A	25
- At 500 V	A	25
Rated short-circuit breaking capacity	kA	50 at 400 V
Type of coordination acc. to IEC 60947-4-1		2
Protective separation between main and auxiliary circuits	V	400, acc. to DIN VDE 0106 Part 101
Device functions		
• Group diagnostics		Yes, parameterizable
Device indications		
• Group fault		SF LED (red)

Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
ET 200pro isolator modules, mechanical						
Isolator modules[1]						
Rated operational current 25 A	A	**3RK1 304-0HS00-6AA0**		1	1 unit	42D



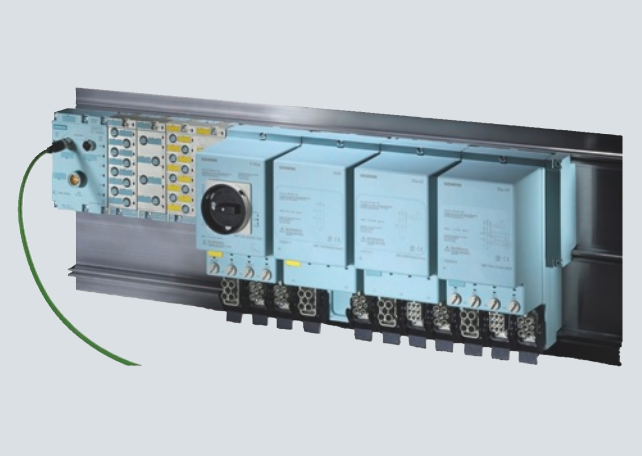
3RK1 304-0HS00-6AA0

[1] Only functions when used together with the related 110 mm backplane bus module and the wide module rack. The backplane bus module and the wide module rack must be ordered separately (see page 9/14,"Accessories for ET 200pro Motor Starters").

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



ET 200pro motor starter: Safety local isolator module, disconnecting module, Standard starter and High-Feature starter mounted on a wide module rack

Safety local isolator module

The Safety local isolator module is a repair switch with integrated safety evaluation functions that can be parameterized using DIP switches.

It is used for:
- Connection of a 1 or 2-channel EMERGENCY-STOP circuit up to Cat. 3-4/SIL 3 (protective door or EMERGENCY-STOP pushbuttons) and parameterizable start behavior
- For controlling the 400 V disconnecting module by means of a safety rail signal

400 V disconnecting modules

The 400 V disconnecting module enables the safe disconnection of an operational voltage of 400 V up to Category3-4/SIL 3. For operation in a Safety Solution local application it functions only in combination with the Safety local isolator module.

For operation in a Safety PROFIsafe application it functions only in combination with the F-Switch.

F-Switch PROFIsafe

Fail-safe digital inputs/outputs in degrees of protection IP65 to IP67 for near-machine, cabinet-free use.

Fail-safe digital inputs

- For the failsafe reading in of sensor information (1-/2-channel)
- Including integrated discrepancy evaluation for 2v2 signals
- Internal sensor supplies (incl. testing) available

Fail-safe digital outputs

- 3 failsafe PP-switching outputs for safe switching of the backplane busbars

The F-Switch is certified up to Cat. 4 (EN 954-1) and up to SIL 3 (IEC 61508) and has detailed diagnostics.

It supports PROFIsafe in PROFIBUS configurations as well as in PROFINET configurations.

Note:

Safety characteristics see Chapter 16, "Appendix" → "Standards and Approvals" → "Overview".

Functionality

Safety local isolator module

The Safety local isolator module features the same functions as a standard isolator module with an additional local safety function.

The Safety local isolator module contains a 3TK28 41 module and is equipped with M12 terminals for the connection of external safety components.

Terminals 1 and 2 can be used to connect either 1-channel or 2-channel EMERGENCY-STOP circuits or protective door circuits (IN 1, IN 2).

For monitored starts, an external START switch can be connected to terminal 3.

The required safety functions can be set using 2 slide switches located under the left M12 opening.

In the event of an EMERGENCY-STOP, the Safety local isolator module trips the downstream 400 V disconnecting module. This safely isolates the 400 V circuit up to Cat. 4/SIL 3.

In combination with the 400 V disconnecting module, the Safety local isolator module can be used for safety applications up to Cat. 4/SIL 3 according to EN 13849-1 / IEC 61508 1-4.

400 V disconnecting modules

The 400V disconnecting module can be used together with the Safety local isolator module for local safety applications and together with the F-Switch for PROFIsafe safety applications.

It contains two contactors connected in series for safety-oriented disconnection of the main circuit.

The auxiliary circuit supply of the device is over a safety power rail in the backplane bus module.

The 400 V disconnecting module can be used together with the Safety local isolator module or with the F-Switch for safety applications up to Cat. 4/SIL 3 according to EN 13849-1 / IEC 61508 1-4.

F-Switch PROFIsafe

The F-Switch is a failsafe solid-state module for PROFIsafe safety applications. It has two failsafe inputs and outputs for safe switching of the 24 V supply over backplane busbars. In combination with the 400 V disconnecting module it can be used in PROFIsafe applications for the failsafe disconnection of ET 200pro motor starters up to Cat. 4/SIL 3.

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Technical specifications

Type		Safety local isolator module	400 V disconnecting modules
General data			
Mounting dimensions (W x H x D)			
• Direct-on-line starter and reversing starter	mm	110 x 230 x 170	110 x 230 x 150
Permissible ambient temperature			
• During operation	°C	-25 ... +55	
• During storage	°C	-40 ... +70	
Permissible mounting positions		Any	
Vibration resistance acc. to IEC 60068, Part 2-6		2 *g*	
Shock resistance acc. to IEC 60068 Part 2-27		Half-sine 15 *g*/11 ms	
Power consumption			
• From auxiliary circuit L+/M (U1)	mA	Approx. 20	
• From auxiliary circuit A1/A2 (U2)		--	
Rated operational current for power bus I_e	A	25	
Rated operational voltage U_e	V	400 (50/60 Hz)	
Approval to DIN VDE 0106 Part 101	V	Up to 500	
CSA and UL approval	V	Up to 600	
Conductor cross-sections			
Incoming energy supply	mm^2	max. 6 x 4	
Degree of protection		IP65	
Touch protection		Finger-safe	
Pollution degree		3, IEC 60664 (IEC 61131)	
Rated impulse withstand voltage U_{imp}	kV	6	
Rated insulation voltage U_i	V	400	
Rated operational current for starters I_e			
• AC-1/2/3 at 40 °C			
- At 400 V	A	16	25
- At 500 V	A	16	25
Rated short-circuit breaking capacity	kA	50 at 400 V	
Type of coordination acc. to IEC 60947-4-1		2	
Protective separation between main and auxiliary circuits	V	400, acc. to DIN VDE 0106 Part 101	
Operating times for 0.85 ... 1.1 x U_e			
• Closing delay	ms	--	25 ... 100
• Opening delay	ms	--	7 ... 10
Device functions			
• Group diagnostics		Yes, parameterizable	
Device indications			
• Group fault		SF LED (red)	

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Selection and ordering data

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
ET 200pro safety modules							
 3RK1 304-0HS00-7AA0	**Safety local isolator modules**[1)2)]						
	Rated operational current 16 A	C	**3RK1 304-0HS00-7AA0**		1	1 unit	42D
 3RK1 304-0HS00-8AA0	**400 V disconnecting modules**[3)4)]						
	Rated operational current 25 A	C	**3RK1 304-0HS00-8AA0**		1	1 unit	42D
 6ES7 148-1FS00-0AB0	**F-Switch PROFIsafe**						
	24 V DC, including bus module Connection module must be ordered separately	A	**6ES7 148-4FS00-0AB0**		1	1 unit	241
	Connection modules for F-Switch						
	24 V DC	A	**6ES7 194-4DA00-0AA0**		1	1 unit	241

1) The Safety local isolator module only functions when used together with the 400 V disconnecting module.

2) Only in combination with the special backplane bus module for the Safety local isolator module (see page 9/14 "Accessories for ET 200pro Motor Starters").

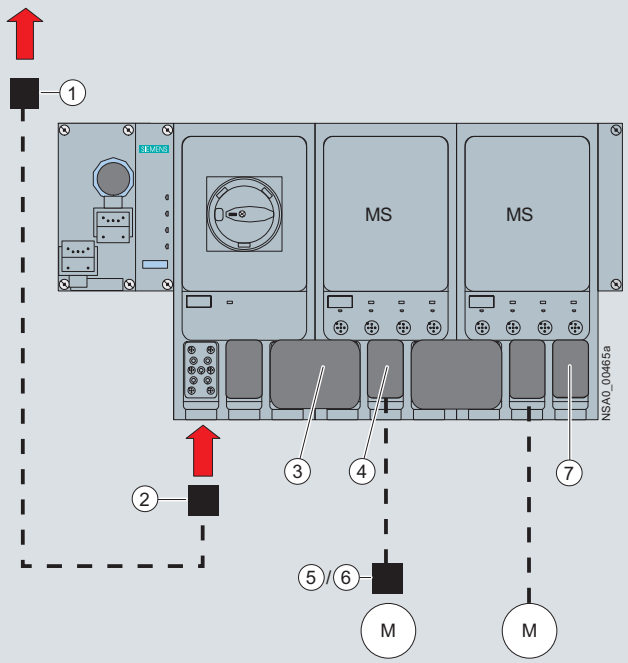
3) The 400 V disconnecting module functions only when used together with the Safety local isolator module or with the F-Switch.

4) The 400 V disconnecting module functions only when used together with the backplane bus module and the wide module rack. The backplane bus module and the wide module rack must be ordered separately (see page 9/14, "Accessories for ET 200pro Motor Starters").

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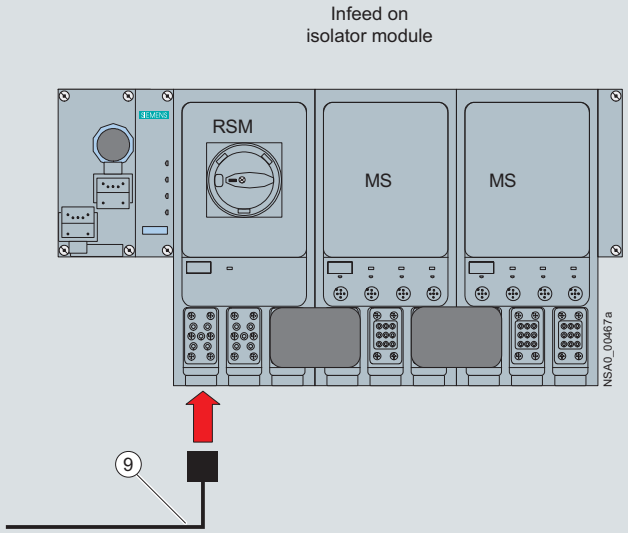
Accessories for ET 200pro motor starters

Overview



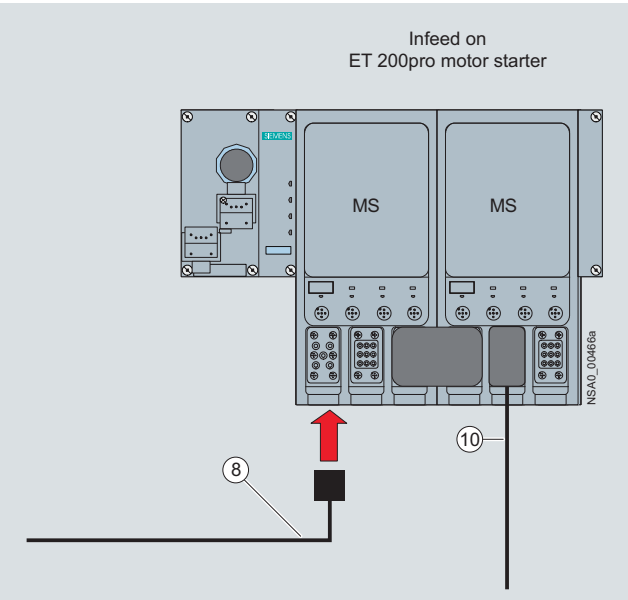
1 Power feeder plug
2 Power connection plug
3 Power jumper plug
4 Motor connection plug
5 Motor plug
6 Motor plug with EMC suppressor circuit
7 Power loop-through plug

Basic design of an ET 200pro motor starter



9 Power connection cable for isolator module

Infeed on the RSM isolator module



8 Power connection cable
10 Motor cable

Infeed on the ET 200pro motor starter

Legend:
① Power feeder plug (see page 9/13)
② Power connection plug (see page 9/13)
③ Power jumper plug (see page 9/13)
④ Motor connection plug (see page 9/13)
⑤ Motor plug (see page 9/13)
⑥ Motor plug with EMC suppressor circuit (see page 9/13)
⑦ Power loop-through plug (see page 9/13)
⑧ Power connection cable (see page 9/13)
⑨ Power connection cable for isolator modules (see page 9/13)
⑩ Motor cable (see page 9/14)

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Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
ET 200pro accessories						
① **Power feeder plugs** Connector set for energy supply, e.g. for connecting to T terminal connectors, comprising a coupling enclosure, straight outgoing feeder (with bracket), pin insert for HAN Q4/2, incl. gland						
• 5 male contacts 2.5 mm²	B	**3RK1 911-2BS60**		1	1 unit	42D
• 5 male contacts 4 mm²	B	**3RK1 911-2BS20**		1	1 unit	42D
• 5 male contacts 6 mm²	B	**3RK1 911-2BS40**		1	1 unit	42D
② **Power connection plugs** Connector set for energy supply for connection to ET 200pro motor starters/ET 200pro isolator modules, comprising a cable-end connector hood, angled outgoing feeder, female insert for HAN Q4/2, incl. gland						
• 5 female contacts 2.5 mm²	C	**3RK1 911-2BE50**		1	1 unit	42D
• 5 female contacts 4 mm²	B	**3RK1 911-2BE10**		1	1 unit	42D
• 5 female contacts 6 mm²	B	**3RK1 911-2BE30**		1	1 unit	42D
③ **Power jumper plugs**	B	**3RK1 922-2BQ00**		1	1 unit	42D
④ **Motor connection plugs** Connector set for motor cable for connection to ET 200pro motor starters, comprising a cable-end connector hood, angular outgoing feeder, pin insert for HAN Q8/0, incl. gland						
• 8 male contacts 1.5 mm²	B	**3RK1 902-0CE00**		1	1 unit	42D
• 6 male contacts 2.5 mm²	B	**3RK1 902-0CC00**		1	1 unit	42D
⑤ **Motor plugs** Connector set for motor cable for connection to motors, comprising a cable-end connector hood, straight outgoing feeder, female insert for HAN 10e, incl. star jumper, incl. gland						
• 7 female contacts 1.5 mm²	C	**3RK1 911-2BM21**		1	1 set	42D
• 7 female contacts 2.5 mm²	C	**3RK1 911-2BM22**		1	1 set	42D
⑥ **Motor plugs with EMC suppressor circuit** Connector set for motor cable for connection to motors, comprising a cable-end connector hood, straight outgoing feeder, female insert for HAN 10e with EMC suppressor circuit, incl. star jumper, incl. gland						
• 7 female contacts 1.5 mm²	C	**3RK1 911-2BL21**		1	1 set	42D
• 7 female contacts 2.5 mm²	C	**3RK1 911-2BL22**		1	1 set	42D
⑦ **Power loop-through plugs** Connector set for power loop-through for connection to ET 200pro motor starters/ET 200pro isolator modules, comprising a cable-end connector hood, angled outgoing feeder, pin insert for HAN Q4/2, incl. gland						
• 4 male contacts 2.5 mm²	B	**3RK1 911-2BF50**		1	1 unit	42D
• 4 male contacts 4 mm²	B	**3RK1 911-2BF10**		1	1 unit	42D
⑧ **Power connection cables, assembled at one end** Power connection cable for ET 200pro motor starters, ECOFAST, open at one end, for HAN Q4/2, angled, insert turned at isolator module end, 4 x 4 mm²						
• Length 1.5 m	B	**3RK1 911-0DB13**		1	1 unit	42D
• Length 5.0 m	B	**3RK1 911-0DB33**		1	1 unit	42D
⑨ **Power connection cables for isolator modules, assembled at one end** Power connection cable for ET 200pro isolator modules, open at one end, for HAN Q4/2, angled, insert turned at isolator module end, 4 x 4 mm²						
• Length 1.5 m	C	**3RK1 911-0DF13**		1	1 unit	42D
• Length 5.0 m	C	**3RK1 911-0DF33**		1	1 unit	42D

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Accessories for ET 200pro motor starters

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
ET 200pro accessories (continued)						
⑩ **Motor cables, assembled at one end** Open at one end, HAN Q8, angled, length 5 m						
• Motor cable for motor without brake, for ET 200pro, ET 200X, AS-i Compact, 4 x 1.5 mm^2	C	**3RK1 911-0EB31**		1	1 unit	42D
• Motor cable for motor with brake, for ET 200pro, 6 x 1.5 mm^2	C	**3RK1 911-0ED31**		1	1 unit	42D

More connection technology products
can be found at "Siemens Solution Partners Automation"
www.siemens.com/automation/partnerfinder
under "Distributed Field Installation System" technology.

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Module racks, wide[1]						
• Length 500 mm	A	**6ES7 194-4GB00-0AA0**		1	1 unit	250
• Length 1 000 mm	A	**6ES7 194-4GB60-0AA0**		1	1 unit	250
• Length 2 000 mm	A	**6ES7 194-4GB20-0AA0**		1	1 unit	250
Module racks, wide, compact[1]						
• Length 500 mm	A	**6ES7 194-4GD00-0AA0**		1	1 unit	250
• Length 1 000 mm	A	**6ES7 194-4GD10-0AA0**		1	1 unit	250
• Length 2 000 mm	A	**6ES7 194-4GD20-0AA0**		1	1 unit	250
Backplane bus modules 110 mm[2]	B	**3RK1 922-2BA00**		1	1 unit	42D
Backplane bus modules for Safety local isolator modules	B	**3RK1 922-2BA01**		1	1 unit	42D
RS 232 interface cables	B	**3RK1 922-2BP00**		1	1 unit	42D
Handheld devices For ET 200pro motor starter, (also for ET 200S High-Feature and ECOFAST), for local operation. A serial interface cable must be ordered separately.	B	**3RK1 922-3BA00**		1	1 unit	42D
Sealing caps (for power supply) (1 pack contains 10 units)	B	**3RK1 902-0CJ00**		1	10 units	42D
Dismantling tools for HAN Q4/2	C	**3RK1 902-0AB00**		1	1 unit	42D
Crimping tools for pins/sockets 4 mm^2 and 6 mm^2	C	**3RK1 902-0CW00**		1	1 unit	42D
Crimping tools for male contacts and sockets up to 4.0 mm^2 (HAN Q8/0)	B	**3RK1 902-0CT00**		1	1 unit	42D
Dismantling tools for male contacts and sockets (HAN Q8/0)	B	**3RK1 902-0AJ00**		1	1 unit	42D
M12 sealing caps For sealing unused input and output sockets (one set contains ten sealing caps)	►	**3RX9 802-0AA00**		100	10 units	42C


3RK1 922-3BA00

1) The wide module rack can accommodate all ET 200pro motor starters and any optional modules (isolator module, Safety local isolator module and 400 V disconnecting module).

2) The backplane bus module is a prerequisite for operation of the ET 200pro motor starter and the optional module.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Interface modules IM 154-1 and IM 154-2						
IM 154-1 interface modules For ET 200pro; for communication between ET 200pro and higher-level masters over PROFIBUS DP	A	**6ES7 154-1AA01-0AB0**		1	1 unit	250
IM 154-2 High Feature interface modules For ET 200pro; for communication between ET 200pro and higher-level masters over PROFIBUS DP; support of PROFIsafe	A	**6ES7 154-2AA01-0AB0**		1	1 unit	250
Accessories						
CM IM DP ECOFAST connection modules For connection of PROFIBUS DP and 24 V power supply to PROFIBUS interface modules, two ECOFAST Cu connections	A	**6ES7 194-4AA00-0AA0**		1	1 unit	250
CM IM DP Direct connection modules For direct connection of PROFIBUS DP and 24 V power supply to PROFIBUS interface modules, up to six M20 screwed cable glands	A	**6ES7 194-4AC00-0AA0**		1	1 unit	250
CM IM DP M12 7/8" connection modules For connection of PROFIBUS DP and 24 V power supply to PROFIBUS interface modules, 2 x M12 and 2 x 7/8"	A	**6ES7 194-4AD00-0AA0**		1	1 unit	250
Accessories for CM IM DP ECOFAST						
PROFIBUS ECOFAST hybrid cables, assembled With 2 ECOFAST connectors, trailing cable With 2 x Cu 0.64 mm^2 and 4 x Cu 1.5 mm^2						
• Length 1.5 m	A	**6XV1 830-7BH15**		1	1 unit	5K2
• Length 3.0 m	A	**6XV1 830-7BH30**		1	1 unit	5K2
• Length 5.0 m	A	**6XV1 830-7BH50**		1	1 unit	5K2
• Length 10 m	A	**6XV1 830-7BN10**		1	1 unit	5K2
• Length 15 m	A	**6XV1 830-7BN15**		1	1 unit	5K2
• Length 20 m	A	**6XV1 830-7BN20**		1	1 unit	5K2
• Length 25 m	A	**6XV1 830-7BN25**		1	1 unit	5K2
• Length 30 m	A	**6XV1 830-7BN30**		1	1 unit	5K2
• Length 35 m	A	**6XV1 830-7BN35**		1	1 unit	5K2
• Length 40 m	A	**6XV1 830-7BN40**		1	1 unit	5K2
• Length 45 m	D	**6XV1 830-7BN45**		1	1 unit	5K2
• Length 50 m	D	**6XV1 830-7BN50**		1	1 unit	5K2
PROFIBUS ECOFAST hybrid cables GP, assembled With 2 ECOFAST connectors, trailing cable With 2 x Cu 0.64 mm^2 and 4 x Cu 1.5 mm^2						
• Length 1.5 m	A	**6XV1 860-3PH15**		1	1 unit	5K2
• Length 3.0 m	A	**6XV1 860-3PH30**		1	1 unit	5K2
• Length 5.0 m	D	**6XV1 860-3PH50**		1	1 unit	5K2
• Length 10 m	A	**6XV1 860-3PN10**		1	1 unit	5K2
• Length 15 m	A	**6XV1 860-3PN15**		1	1 unit	5K2
• Length 20 m	A	**6XV1 860-3PN20**		1	1 unit	5K2
• Length 25 m	A	**6XV1 860-3PN25**		1	1 unit	5K2
• Length 30 m	A	**6XV1 860-3PN30**		1	1 unit	5K2
• Length 35 m	A	**6XV1 860-3PN35**		1	1 unit	5K2
• Length 40 m	A	**6XV1 860-3PN40**		1	1 unit	5K2
• Length 45 m	A	**6XV1 860-3PN45**		1	1 unit	5K2
• Length 50 m	A	**6XV1 860-3PN50**		1	1 unit	5K2
PROFIBUS ECOFAST hybrid cables, non-assembled Trailing cable with 2 x Cu 0.64 mm^2 and 4 x Cu 1.5 mm^2						
• Length 50 m	A	**6XV1 830-7AN50**		1	1 unit	5K2
• Length 100 m	A	**6XV1 830-7AT10**		1	1 unit	5K2
PROFIBUS ECOFAST hybrid cables GP, non-assembled Trailing cable with 2 x Cu 0.64 mm^2 and 4 x Cu 1.5 mm^2						
• Length 50 m	B	**6XV1 860-4PN50**		1	1 unit	5K2
• Length 100 m	A	**6XV1 860-4PT10**		1	1 unit	5K2
PROFIBUS ECOFAST hybrid connectors 180 ECOFAST Cu, 2 x Cu, 4 x 1.5 mm^2, HANBRID connectors						
• With pin insert, pack of 5	A	**6GK1 905-0CA00**		1	1 unit	5K2
• With female insert, pack of 5	A	**6GK1 905-0CB00**		1	1 unit	5K2
PROFIBUS ECOFAST hybrid connectors, angled ECOFAST Cu, 2 x Cu, 4 x 1.5 mm^2, HANBRID connectors						
• With pin insert, pack of 5	A	**6GK1 905-0CC00**		1	1 unit	5K2
• With female insert, pack of 5	A	**6GK1 905-0CD00**		1	1 unit	5K2

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Illustrations are approximate

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ET 200pro – interface modules

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
IM 154-1 and IM 154-2 interface modules (continued)						
Accessories for CM IM DP Direct						
PROFIBUS trailing cables Max. acceleration 4 m/s², at least 3 000 000 bending cycles, bending radius at least 60 mm, 2-core, shielded, sold by the meter, minimum order quantity 20 m, maximum order quantity 1 000 m	A	**6XV1 830-3EH10**		1	1 m	5K2
PROFIBUS FC Food bus cables With PE outer sheath for operation in the food and beverage industry, 2-core, shielded, sold by the meter, minimum order quantity 20 m, maximum order quantity 1 000 m	A	**6XV1 830-0GH10**		1	1 m	5K2
PROFIBUS FC Robust bus cables With PUR outer sheath for operation in environments exposed to chemicals and mechanical loads, 2-core, shielded, sold by the meter, minimum order quantity 20 m, maximum order quantity 1 000 m	A	**6XV1 830-0JH10**		1	1 m	5K2
Power cables 5-core, 5 x 1.5 mm², trailing, sold by the meter, minimum order quantity 20 m, maximum order quantity 1 000 m	A	**6XV1 830-8AH10**		1	1 m	5K2
Accessories for CM IM DP M12 7/8"						
PROFIBUS M12 connecting cables Preassembled with two M12 plugs, 5-pole						
• Length 1.5 m	A	**6XV1 830-3DH15**		1	1 unit	5K1
• Length 2.0 m	A	**6XV1 830-3DH20**		1	1 unit	5K1
• Length 3.0 m	A	**6XV1 830-3DH30**		1	1 unit	5K1
• Length 5.0 m	A	**6XV1 830-3DH50**		1	1 unit	5K1
• Length 10 m	A	**6XV1 830-3DN10**		1	1 unit	5K1
• Length 15 m	A	**6XV1 830-3DN15**		1	1 unit	5K1
7/8" connecting cables for power supply 5-core, 5 x 1.5 mm², trailing, preassembled with two 7/8" plugs, 5-pole						
• Length 1.5 m	A	**6XV1 822-5BH15**		1	1 unit	5K1
• Length 2.0 m	A	**6XV1 822-5BH20**		1	1 unit	5K1
• Length 3.0 m	A	**6XV1 822-5BH30**		1	1 unit	5K1
• Length 5.0 m	A	**6XV1 822-5BH50**		1	1 unit	5K1
• Length 10 m	A	**6XV1 822-5BN10**		1	1 unit	5K1
• Length 15 m	A	**6XV1 822-5BN15**		1	1 unit	5K1
M12 connectors For ET 200eco, with axial cable feeder						
• With pin insert, pack of 5	A	**6GK1 905-0EA00**		1	1 unit	5K2
• With female insert, pack of 5	A	**6GK1 905-0EB00**		1	1 unit	5K2
PROFIBUS M12 bus termination plugs With pin insert	A	**6GK1 905-0EC00**		1	1 unit	5K2
7/8" connectors For ET 200eco, with axial cable feeder						
• With pin insert, pack of 5	A	**6GK1 905-0FA00**		1	1 unit	5K2
• With female insert, pack of 5	A	**6GK1 905-0FB00**		1	1 unit	5K2
M12 sealing caps For protection of unused M12 terminals on ET 200pro	►	**3RX9 802-0AA00**		100	10 units	42C
7/8" sealing caps For protection of unused 7/8" terminals on ET 200pro; pack of 10 units per packing unit	A	**6ES7 194-3JA00-0AA0**		1	1 unit	250
General accessories						
ET 200pro module racks						
• Narrow, for interface, solid-state and power modules						
- 500 mm	A	**6ES7 194-4GA00-0AA0**		1	1 unit	250
- 1 000 mm	A	**6ES7 194-4GA60-0AA0**		1	1 unit	250
- 2 000 mm, can be cut to size	A	**6ES7 194-4GA20-0AA0**		1	1 unit	250
• Compact, for interface, solid-state and power modules						
- 500 mm	A	**6ES7 194-4GC70-0AA0**		1	1 unit	250
- 1 000 mm	A	**6ES7 194-4GC60-0AA0**		1	1 unit	250
- 2 000 mm, can be cut to size	A	**6ES7 194-4GC20-0AA0**		1	1 unit	250
• Wide, for interface, solid-state, power modules and motor starters						
- 500 mm	A	**6ES7 194-4GB00-0AA0**		1	1 unit	250
- 1 000 mm	A	**6ES7 194-4GB60-0AA0**		1	1 unit	250
- 2 000 mm, can be cut to size	A	**6ES7 194-4GB20-0AA0**		1	1 unit	250
• Wide, compact, for I/O modules and motor starters						
- 500 mm	A	**6ES7 194-4GD00-0AA0**		1	1 unit	250
- 1 000 mm	A	**6ES7 194-4GD10-0AA0**		1	1 unit	250
- 2 000 mm	A	**6ES7 194-4GD20-0AA0**		1	1 unit	250
Spare fuses 12.5 A quick, for interface and power modules, pack of 10	A	**6ES7 194-4HB00-0AA0**		1	1 unit	250
PROFIBUS Fast Connect bus cables Standard type with special design for fast installation, 2-core, shielded, sold by the meter; delivery unit max. 1 000 m; minimum order quantity 20 m	A	**6XV1 830-0EH10**		1	1 m	5K1

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Illustrations are approximate

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Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
IM 154-1 and IM 154-2 interface modules (continued)						
General accessories *(continued)*						
PROFIBUS hybrid standard cables GP Standard PROFIBUS hybrid cable with 2 power cores (1.5 mm²) for supplying data and power to the ET 200pro	A	**6XV1 860-2R**		1	1 m	5K2
Technical product specifications For CAX applications, one off license	A	**6ES7 991-0CD01-0YX0**		1	1 unit	266
SIMATIC Manual Collection Electronic manuals on DVD, several languages: S7-200, TD 200, S7-300, M7-300, C7, S7-400, M7-400, STEP 7, Engineering Tools, Runtime Software, SIMATIC DP (Distributed I/O), SIMATIC HMI (Human Machine Interface), SIMATIC NET (Industrial Communication)	A	**6ES7 998-8XC01-8YE0**		1	1 unit	230
SIMATIC Manual Collection – Update service for 1 year Scope of supply: The current DVD S7 Manual Collection as well as the three subsequent updates	X	**6ES7 998-8XC01-8YE2**		1	1 unit	230
IM 154-4 PN interface modules						
IM 154-4 PN High-Feature interface modules For communication between ET 200pro and higher-level controller over PROFINET IO; support of PROFIsafe	A	**6ES7 154-4AB10-0AB0**		1	1 unit	250
Accessories						
CM IM PN M12 connection modules, 7/8" For connection of PROFIBUS PN and 24 V power supply to PROFINET interface modules, 2 x M12 and 2 x 7/8"	A	**6ES7 194-4AJ00-0AA0**		1	1 unit	250
CM IM PN 2xRJ45 connection modules For connection of PROFINET PN and 24 V power supply to PROFINET interface modules, 2 x RJ45 and 2 x push-pull power connector	A	**6ES7 194-4AF00-0AA0**		1	1 unit	250
CM IM PN 2xSCRJ FO connection modules For connection of PROFINET PN and 24 V power supply to PROFINET interface modules, 2 x SCRJ FO and 2 x push-pull power connector	A	**6ES7 194-4AG00-0AA0**		1	1 unit	250
M12 sealing caps For protection of unused M12 terminals on ET 200pro	►	**3RX9 802-0AA00**		100	10 units	42C
IE M12 connecting cables Preassembled with two M12 plugs, up to max. 85 m						
• Length 0.3 m	A	**6XV1 870-8AE30**		1	1 unit	5K1
• Length 0.5 m	A	**6XV1 870-8AE50**		1	1 unit	5K1
• Length 1.0 m	A	**6XV1 870-8AH10**		1	1 unit	5K1
• Length 1.5 m	A	**6XV1 870-8AH15**		1	1 unit	5K1
• Length 2.0 m	A	**6XV1 870-8AH20**		1	1 unit	5K1
• Length 3.0 m	A	**6XV1 870-8AH30**		1	1 unit	5K1
• Length 5.0 m	A	**6XV1 870-8AH50**		1	1 unit	5K1
• Length 10 m	A	**6XV1 870-8AN10**		1	1 unit	5K1
• Length 15 m	A	**6XV1 870-8AN15**		1	1 unit	5K1
• More special lengths with 90° or 180° cable feeder see http://support.automation.siemens.com/WW/view/en/26999294						
7/8" connecting cables for power supply 5-core, 5 x 1.5 mm², trailing, preassembled with two 7/8" plugs, 5-pole						
• Length 1.5 m	A	**6XV1 822-5BH15**		1	1 unit	5K1
• Length 2.0 m	A	**6XV1 822-5BH20**		1	1 unit	5K1
• Length 3.0 m	A	**6XV1 822-5BH30**		1	1 unit	5K1
• Length 5.0 m	A	**6XV1 822-5BH50**		1	1 unit	5K1
• Length 10 m	A	**6XV1 822-5BN10**		1	1 unit	5K1
• Length 15 m	A	**6XV1 822-5BN15**		1	1 unit	5K1
• More special lengths with 90° or 180° cable feeder see http://support.automation.siemens.com/WW/view/en/26999294						
7/8" sealing caps 1 pack = 10 units	A	**6ES7 194-3JA00-0AA0**		1	1 unit	250
Power cables 5-core, 5 x 1.5 mm², trailing, sold by the meter, minimum order quantity 20 m, maximum order quantity 1 000 m	A	**6XV1 830-8AH10**		1	1 m	5K2
7/8" connectors For ET 200eco, with axial cable feeder						
• With pin insert, pack of 5	A	**6GK1 905-0FA00**		1	1 unit	5K2
• With female insert, pack of 5	A	**6GK1 905-0FB00**		1	1 unit	5K2

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ET 200pro – interface modules

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
IM 154-4 PN interface modules (continued)						
Industrial Ethernet Fast Connect installation cables						
• **IE FC TP standard cables GP 2 x 2**; sold by the meter, delivery unit max. 1 000 m; minimum order quantity 20 m	A	**6XV1 840-2AH10**		1	1 m	5K1
• **IE FC TP trailing cables 2 x 2**; sold by the meter, delivery unit max. 1 000 m; minimum order quantity 20 m	A	**6XV1 840-3AH10**		1	1 m	5K1
• **IE FC TP trailing cables GP 2 x 2**; sold by the meter, delivery unit max. 1 000 m; minimum order quantity 20 m	A	**6XV1 870-2D**		1	1 m	5K2
• **IE TP torsion cables GP 2 x 2**; sold by the meter, delivery unit max. 1 000 m; minimum order quantity 20 m	A	**6XV1 870-2F**		1	1 m	5K2
• **IE FC TP marine cables 2 x 2**; sold by the meter, delivery unit max. 1 000 m; minimum order quantity 20 m	A	**6XV1 840-4AH10**		1	1 m	5K1
IE RJ45 Plug PRO RJ45 plug-in connector for field assembly in degree of protection IP65/IP67, plastic enclosure, insulation displacement method, for SCALANCE X-200IRT PRO and ET 200pro: 1 pack = 1 unit	A	**6GK1 901-1BB10-6AA0**		1	1 unit	5K2
IE SC RJ POF Plug PRO SC RJ- plug-in connector for field assembly for POF fibers in degree of protection IP65/IP67, plastic enclosure, for SCALANCE X-200IRT PRO and ET 200pro 1 pack = 1 unit	A	**6GK1 900-0MB00-6AA0**		1	1 unit	5K2
IE SC RJ PCF Plug PRO SC RJ- plug-in connector for field assembly for PCF fibers in degree of protection IP65/IP67, plastic enclosure, for SCALANCE X-200IRT PRO 1 pack = 1 unit	A	**6GK1 900-0NB00-6AA0**		1	1 unit	5K2
Power Plug PRO 5-pole power plug-in connector for field assembly for 2 x 24 V power supply in degree of protection IP65/IP67, plastic enclosure, for SCALANCE X-200IRT PRO and ET 200 pro 1 pack = 1 unit	A	**6GK1 907-0AB10-6AA0**		1	1 unit	5K2
IE Panel Feedthrough Control cabinet gland for transition from M12 connection method (D-coded, IP65) to RJ45 connection method (IP20) 1 pack = 5 units	A	**6GK1 901-0DM20-2AA5**		1	1 unit	5K2
Push-pull connectors For 1L+/ 2L+, non-assembled	A	**6GK1 907-0AB10-6AA0**		1	1 unit	5K2
Covers for RJ45 push-pull sockets 5 units per pack	A	**6ES7 194-4JD50-0AA0**		1	1 unit	250
General accessories						
ET 200pro module racks						
• Narrow, for interface, solid-state and power modules						
- 500 mm	A	**6ES7 194-4GA00-0AA0**		1	1 unit	250
- 1 000 mm	A	**6ES7 194-4GA60-0AA0**		1	1 unit	250
- 2 000 mm, can be cut to size	A	**6ES7 194-4GA20-0AA0**		1	1 unit	250
• Compact, for interface, solid-state and power modules						
- 500 mm	A	**6ES7 194-4GC70-0AA0**		1	1 unit	250
- 1 000 mm	A	**6ES7 194-4GC60-0AA0**		1	1 unit	250
- 2 000 mm, can be cut to size	A	**6ES7 194-4GC20-0AA0**		1	1 unit	250
• Wide, for interface, solid-state, power modules and motor starters						
- 500 mm	A	**6ES7 194-4GB00-0AA0**		1	1 unit	250
- 1 000 mm	A	**6ES7 194-4GB60-0AA0**		1	1 unit	250
- 2 000 mm, can be cut to size	A	**6ES7 194-4GB20-0AA0**		1	1 unit	250
• Wide, for I/O modules and motor starters						
- 500 mm	A	**6ES7 194-4GD00-0AA0**		1	1 unit	250
- 1 000 mm	A	**6ES7 194-4GD10-0AA0**		1	1 unit	250
- 2 000 mm	A	**6ES7 194-4GD20-0AA0**		1	1 unit	250
Spare fuses 12.5 A quick, for interface and power modules, pack of 10	A	**6ES7 194-4HB00-0AA0**		1	1 unit	250
SIMATIC Manual Collection Electronic manuals on DVD, several languages: S7-200, TD 200, S7-300, M7-300, C7, S7-400, M7-400, STEP 7, Engineering Tools, Runtime Software, SIMATIC DP (Distributed I/O), SIMATIC HMI (Human Machine Interface), SIMATIC NET (Industrial Communication)	A	**6ES7 998-8XC01-8YE0**		1	1 unit	230
SIMATIC Manual Collection – Update service for 1 year Scope of supply: The current DVD S7 Manual Collection as well as the three subsequent updates	X	**6ES7 998-8XC01-8YE2**		1	1 unit	230

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Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
IM 154-6 PN IWLAN interface modules						
IM 154-6 PN HF IWLAN interface modules						
For communication between ET 200pro and higher-level controllers through industrial wireless LAN (IWLAN) networks; support of PROFIsafe						
• With diverse country approvals; see current approvals list	A	**6ES7 154-6AB00-0AB0**		1	1 unit	250
• With USA country approval	A	**6ES7 154-6AB50-0AB0**		1	1 unit	250
Antennas with omnidirectional characteristic						
Mounting directly on IM 154-6 PN HF IWLAN						
• ANT IM 154-6 IWLAN; 2 units	A	**6ES7 194-4MA00-0AA0**		1	1 unit	250
For wall or mast mounting						
• ANT 792-6MN; N-Connect Female 2.4 GHz bar antenna; 1 unit	A	**6GK5 792-6MN00-0AA6**		1	1 unit	5W1
• ANT 793-6MN; N-Connect Female 5 GHz bar antenna; 1 unit	A	**6GK5 793-6MN00-0AA6**		1	1 unit	5W1
For operation with the RCoax antenna system						
• ANT 792-4DN; RCoax N-Connect Female 2.4 GHz; 1 unit	A	**6GK5 792-4DN00-0AA6**		1	1 unit	5W1
• ANT 793-4MN; RCoax N-Connect Female 5 GHz; 1 unit	A	**6GK 5793-4MN00-0AA6**		1	1 unit	5W1
IWLAN Rcoax antenna cables; N-Connect / R-SMA						
• Length 1 m	A	**6XV1 875-5CH10**		1	1 unit	5W1
• Length 2 m	A	**6XV1 875-5CH20**		1	1 unit	5W1
• Length 5 m	A	**6XV1 875-5CH50**		1	1 unit	5W1
• Length 10 m	A	**6XV1 875-5CN10**		1	1 unit	5W1
IWLAN terminating resistor, 50 Ω, for second R-SMA antenna socket, 3 units	A	**6GK5 795-1TR10-0AA6**		1	1 unit	5W1
Accessories						
7/8" connecting cables for power supply						
5-core, 5 x 1.5 mm^2, trailing, preassembled with two 7/8" plugs, 5-pole						
• Length 1.5 m	A	**6XV1 822-5BH15**		1	1 unit	5K1
• Length 2.0 m	A	**6XV1 822-5BH20**		1	1 unit	5K1
• Length 3.0 m	A	**6XV1 822-5BH30**		1	1 unit	5K1
• Length 5.0 m	A	**6XV1 822-5BH50**		1	1 unit	5K1
• Length 10 m	A	**6XV1 822-5BN10**		1	1 unit	5K1
• Length 15 m	A	**6XV1 822-5BN15**		1	1 unit	5K1
• More special lengths with 90° or 180° cable feeder see http://support.automation.siemens.com/WW/view/en/26999294						
Power cables 5-core, 5 x 1.5 mm^2, trailing, sold by the meter, minimum order quantity 20 m, maximum order quantity 1 000 m	A	**6XV1 830-8AH10**		1	1 m	5K2
7/8" connectors For ET 200eco, with axial cable feeder; with female insert, pack of 5	A	**6GK1 905-0FB00**		1	1 unit	5K2
Twisted pair connecting cables 4x2 with RJ45 connectors						
• Length 0.5 m	A	**6XV1 870-3QE50**		1	1 unit	5K1
• Length 1 m	A	**6XV1 870-3QH10**		1	1 unit	5K1
• Length 2 m	A	**6XV1 870-3QH20**		1	1 unit	5K1
• Length 6 m	A	**6XV1 870-3QH60**		1	1 unit	5K1
• Length 10 m	A	**6XV1 870-3QN10**		1	1 unit	5K1
Crossed twisted pair connecting cables 4x2 with RJ45 connectors						
• Length 0.5 m	A	**6XV1 870-3RE50**		1	1 unit	5K1
• Length 1 m	A	**6XV1 870-3RH10**		1	1 unit	5K1
• Length 2 m	A	**6XV1 870-3RH20**		1	1 unit	5K1
• Length 6 m	A	**6XV1 870-3RH60**		1	1 unit	5K1
• Length 10 m	A	**6XV1 870-3RN10**		1	1 unit	5K1
IE FC RJ45 Plug 180						
180° cable feeder; for network components and CPs/CPUs with Industrial Ethernet interface						
• 1 pack = 1 unit	A	**6GK1 901-1BB10-2AA0**		1	1 unit	5K1
• 1 pack = 10 units	A	**6GK1 901-1BB10-2AB0**		1	1 unit	5K1
IE FC RJ45 Plug 90						
90° cable feeder; e.g. for ET 200						
• 1 pack = 1 unit	A	**6GK1 901-1BB20-2AA0**		1	1 unit	5K1
• 1 pack = 10 units	A	**6GK1 901-1BB20-2AB0**		1	1 unit	5K1

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ET 200pro – interface modules

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
IM 154-6 PN IWLAN interface modules (continued)						
General accessories						
ET 200pro module racks						
• Narrow, for interface, solid-state and power modules						
- 500 mm	A	**6ES7 194-4GA00-0AA0**		1	1 unit	250
- 1 000 mm	A	**6ES7 194-4GA60-0AA0**		1	1 unit	250
- 2 000 mm, can be cut to size	A	**6ES7 194-4GA20-0AA0**		1	1 unit	250
• Compact, for interface, solid-state and power modules						
- 500 mm	A	**6ES7 194-4GC70-0AA0**		1	1 unit	250
- 1 000 mm	A	**6ES7 194-4GC60-0AA0**		1	1 unit	250
- 2 000 mm, can be cut to size	A	**6ES7 194-4GC20-0AA0**		1	1 unit	250
• Wide, for interface, solid-state, power modules and motor starters						
- 500 mm	A	**6ES7 194-4GB00-0AA0**		1	1 unit	250
- 1 000 mm	A	**6ES7 194-4GB60-0AA0**		1	1 unit	250
- 2 000 mm, can be cut to size	A	**6ES7 194-4GB20-0AA0**		1	1 unit	250
• Wide, compact, for I/O modules and motor starters						
- 500 mm	A	**6ES7 194-4GD00-0AA0**		1	1 unit	250
- 1 000 mm	A	**6ES7 194-4GD10-0AA0**		1	1 unit	250
- 2 000 mm	A	**6ES7 194-4GD20-0AA0**		1	1 unit	250
Spare fuses, 12.5 A quick For interface and power modules (pack of 10)	A	**6ES7 194-4HB00-0AA0**		1	1 unit	250
Labels 20 x 7, pastel turquoise, pack of 340	D	**3RT1 900-1SB20**		100	340 units	41B
SIMATIC micro memory cards[1]						
• 64 KB	A	**6ES7 953-8LF20-0AA0**		1	1 unit	230
• 128 KB	A	**6ES7 953-8LG20-0AA0**		1	1 unit	230
• 512 KB	A	**6ES7 953-8LJ30-0AA0**		1	1 unit	2AP
[1] A micro memory card is needed to operate the CPU.						
SIMATIC Manual Collection Electronic manuals on DVD, several languages: S7-200, TD 200, S7-300, M7-300, C7, S7-400, M7-400, STEP 7, Engineering Tools, Runtime Software, SIMATIC DP (Distributed I/O), SIMATIC HMI (Human Machine Interface), SIMATIC NET (Industrial Communication)	A	**6ES7 998-8XC01-8YE0**		1	1 unit	230
SIMATIC Manual Collection – Update service for 1 year Scope of supply: The current DVD S7 Manual Collection as well as the three subsequent updates	X	**6ES7 998-8XC01-8YE2**		1	1 unit	230
IM 154-8 PN/DP CPU interface modules						
IM 154-8 PN/DP CPU interface modules PROFINET IO Controller for operating distributed I/Os on PROFINET, with integrated PLC functionality	A	**6ES7 154-8AB01-0AB0**		1	1 unit	250
Accessories						
MMC 64 Kbyte[2] For program backups	A	**6ES7 953-8LF20-0AA0**		1	1 unit	230
MMC 128 Kbyte[2] For program backups	A	**6ES7 953-8LG20-0AA0**		1	1 unit	230
MMC 512 Kbyte[2] For program backups	A	**6ES7 953-8LJ30-0AA0**		1	1 unit	2AP
MMC 2 MByte[2] For program backups and/or the firmware update	A	**6ES7 953-8LL20-0AA0**		1	1 unit	230
MMC 4 MByte[2] For program backups	A	**6ES7 953-8LM20-0AA0**		1	1 unit	230
MMC 8 MByte[2] For program backups	A	**6ES7 953-8LP20-0AA0**		1	1 unit	230
[2] For operation of the CPU, an MMC is essential.						
Connection modules For CPU IM154-8 PN/DP, with 4 x M12 and 2 x 7/8", for connection of PROFINET and PROFIBUS DP	A	**6ES7 194-4AN00-0AA0**		1	1 unit	250
SCALANCE X-200 Industrial Ethernet switches With integrated SNMP access, web diagnostics, copper cable diagnostics and PROFINET diagnostics, SCALANCE X208PRO for configuring line, star and ring structures, in degree of protection IP65, with eight 10/100 Mbit/s M12 ports, including eleven M12 dust covers	B	**6GK5 208-0HA00-2AA6**		1	1 unit	5N2
Industrial Ethernet FC RJ45 Plug 90 RJ45 plug-in connector for Industrial Ethernet, with robust metal enclosure and integrated cutting and clamping contacts for connection of Industrial Ethernet FC installation cables; with 90° cable feeder						
• 1 unit	A	**6GK1 901-1BB20-2AA0**		1	1 unit	5K1
• 10 units	A	**6GK1 901-1BB20-2AB0**		1	1 unit	5K1

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
IM 154-8 PN/DP CPU interface modules (continued)						
Industrial Ethernet FC RJ45 Plug 180 RJ45 plug-in connector for Industrial Ethernet, with robust metal enclosure and integrated cutting and clamping contacts for connection of Industrial Ethernet FC installation cables; with 180° cable feeder						
• 1 unit	A	**6GK1 901-1BB10-2AA0**		1	1 unit	5K1
• 10 units	A	**6GK1 901-1BB10-2AB0**		1	1 unit	5K1
• 50 units	A	**6GK1 901-1BB10-2AE0**		1	1 unit	5K1
Industrial Ethernet Fast Connect installation cables						
• Fast Connect standard cables	A	**6XV1 840-2AH10**		1	1 m	5K1
• Fast Connect trailing cables	A	**6XV1 840-3AH10**		1	1 m	5K1
• Fast Connect marine cables	A	**6XV1 840-4AH10**		1	1 m	5K1
• IE FC TP trailing cables GP 2 x 2; sold by the meter, delivery unit max. 1 000 m; minimum order quantity 20 m	A	**6XV1 870-2D**		1	1 m	5K2
• IE TP torsion cables GP 2 x 2; sold by the meter, delivery unit max. 1 000 m; minimum order quantity 20 m	A	**6XV1 870-2F**		1	1 m	5K2
Industrial Ethernet Fast Connect Stripping tools	A	**6GK1 901-1GA00**		1	1 unit	5K2
IE connecting cables M12-180/M12-180 Factory-fitted IE FC TP trailing cables GP 2 x 2 (PROFINET type C) with two 4-pole M12 plugs (4-pole, D-coded), degree of protection IP65/IP67						
• Length 0.3 m	A	**6XV1 870-8AE30**		1	1 unit	5K1
• Length 0.5 m	A	**6XV1 870-8AE50**		1	1 unit	5K1
• Length 1.0 m	A	**6XV1 870-8AH10**		1	1 unit	5K1
• Length 1.5 m	A	**6XV1 870-8AH15**		1	1 unit	5K1
• Length 2.0 m	A	**6XV1 870-8AH20**		1	1 unit	5K1
• Length 3.0 m	A	**6XV1 870-8AH30**		1	1 unit	5K1
• Length 5.0 m	A	**6XV1 870-8AH50**		1	1 unit	5K1
• Length 10 m	A	**6XV1 870-8AN10**		1	1 unit	5K1
• Length 15 m	A	**6XV1 870-8AN15**		1	1 unit	5K1
PROFINET M12 connecting cables, trailing, preassembled at both ends with M12 plugs, angled (pin)						
• Length 3.0 m	C	**3RK1 902-2NB30**		1	1 unit	42D
• Length 5.0 m	C	**3RK1 902-2NB50**		1	1 unit	42D
• Length 10 m	C	**3RK1 902-2NC10**		1	1 unit	42D
PROFINET M12 connecting cables, trailing, preassembled at one end with M12 plugs, angled (one end with pin, one end open)						
• Length 3.0 m	C	**3RK1 902-2HB30**		1	1 unit	42D
• Length 5.0 m	C	**3RK1 902-2HB50**		1	1 unit	42D
• Length 10 m	C	**3RK1 902-2HC10**		1	1 unit	42D
IE FC M12 Plug PRO PROFINET M12 connectors, D-coded with quick-connect technology, axial outgoing feeder						
• 1 unit	A	**6GK1 901-0DB20-6AA0**		1	1 unit	5K1
• 8 units	A	**6GK1 901-0DB20-6AA8**		1	1 unit	5K1
PROFINET M12 connectors, D-coded, angled	C	**3RK1 902-2DA00**		1	1 unit	42D
IE Panel Feedthrough						
Control cabinet gland for transition from M12 connection method (D-coded, IP65/IP67) to RJ45 connection method (IP20), 1 pack = 5 units	A	**6GK1 901-0DM20-2AA5**		1	1 unit	5K2
7/8" connecting cables for power supply 5-core, 5 x 1.5 mm^2, trailing, preassembled with two 7/8" plugs, 5-pole						
• Length 1.5 m	A	**6XV1 822-5BH15**		1	1 unit	5K1
• Length 2.0 m	A	**6XV1 822-5BH20**		1	1 unit	5K1
• Length 3.0 m	A	**6XV1 822-5BH30**		1	1 unit	5K1
• Length 5.0 m	A	**6XV1 822-5BH50**		1	1 unit	5K1
• Length 10 m	A	**6XV1 822-5BN10**		1	1 unit	5K1
• Length 15 m	A	**6XV1 822-5BN15**		1	1 unit	5K1
• More special lengths with 90° or 180° cable feeder see http://support.automation.siemens.com/WW/view/en/26999294						
Trailing power cables, 5 x 1.5 mm^2, preassembled at both ends with 7/8" connectors, angled (one end with socket, one end with pin)						
• Length 3.0 m	C	**3RK1 902-3NB30**		1	1 unit	42D
• Length 5.0 m	C	**3RK1 902-3NB50**		1	1 unit	42D
• Length 10 m	C	**3RK1 902-3NC10**		1	1 unit	42D
Trailing power cables, 5 x 1.5 mm^2, preassembled at one end with 7/8" connector with female insert, angled (one end with socket, one end open)						
• Length 3.0 m	C	**3RK1 902-3GB30**		1	1 unit	42D
• Length 5.0 m	C	**3RK1 902-3GB50**		1	1 unit	42D
• Length 10 m	C	**3RK1 902-3GC10**		1	1 unit	42D
Power cables 5-core, 5 x 1.5 mm^2, trailing, sold by the meter, minimum order quantity 20 m, maximum order quantity 1 000 m	A	**6XV1 830-8AH10**		1	1 m	5K2

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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ET 200pro – interface modules

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
IM 154-8 PN/DP CPU interface modules (continued)						
7/8" connectors						
For ET 200eco, with axial cable feeder						
• With pin insert, pack of 5	A	**6GK1 905-0FA00**		1	1 unit	5K2
• With female insert, pack of 5	A	**6GK1 905-0FB00**		1	1 unit	5K2
• Angled, with female insert, 1 unit	C	**3RK1 902-3DA00**		1	1 unit	42D
• Angled with pin insert, 1 unit	C	**3RK1 902-3BA00**		1	1 unit	42D
7/8" covers, pack of 10	A	**6ES7 194-3JA00-0AA0**		1	1 unit	250
Twisted pair connecting cables 4 x 2 with RJ45 connectors						
• Length 0.5 m	A	**6XV1 870-3QE50**		1	1 unit	5K1
• Length 1 m	A	**6XV1 870-3QH10**		1	1 unit	5K1
• Length 2 m	A	**6XV1 870-3QH20**		1	1 unit	5K1
• Length 6 m	A	**6XV1 870-3QH60**		1	1 unit	5K1
• Length 10 m	A	**6XV1 870-3QN10**		1	1 unit	5K1
Crossed twisted pair connecting cables 4 x 2 with RJ45 connectors						
• Length 0.5 m	A	**6XV1 870-3RE50**		1	1 unit	5K1
• Length 1 m	A	**6XV1 870-3RH10**		1	1 unit	5K1
• Length 2 m	A	**6XV1 870-3RH20**		1	1 unit	5K1
• Length 6 m	A	**6XV1 870-3RH60**		1	1 unit	5K1
• Length 10 m	A	**6XV1 870-3RN10**		1	1 unit	5K1
M12 sealing caps	►	**3RX9 802-0AA00**		100	10 units	42C
For protection of unused M12 terminals on ET 200pro						
M12 sealing caps with female thread (5 units)	A	**6ES7 194-4JD60-0AA0**		1	1 unit	250
PROFIBUS M12 connecting cables						
Preassembled with two 5-pole M12 plugs/sockets, up to max. 100 m						
• Length 1.5 m	A	**6XV1 830-3DH15**		1	1 unit	5K1
• Length 2 m	A	**6XV1 830-3DH20**		1	1 unit	5K1
• Length 3 m	A	**6XV1 830-3DH30**		1	1 unit	5K1
• Length 5 m	A	**6XV1 830-3DH50**		1	1 unit	5K1
• Length 10 m	A	**6XV1 830-3DN10**		1	1 unit	5K1
• Length 15 m	A	**6XV1 830-3DN15**		1	1 unit	5K1
• More special lengths with 90° or 180° cable feeder see http://support.automation.siemens.com/WW/view/en/26999294						
PROFIBUS M12 bus termination plugs, female inserts	A	**6GK1 905-0ED00**		1	1 unit	5K2
PROFIBUS M12 bus termination plugs, pin inserts	A	**6GK1 905-0EC00**		1	1 unit	5K2
M12 connectors, axial outgoing feeder, with pin insert	A	**6GK1 905-0EA00**		1	1 unit	5K2
PROFIBUS FC standard cables GP	A	**6XV1 830-0EH10**		1	1 m	5K1
Standard type with special design for fast installation, 2-core, shielded Sold by the meter: Delivery unit max. 1 000 m, minimum order quantity 20 m						
PROFIBUS FC trailing cables 2-core, shielded Sold by the meter: Delivery unit max. 1 000 m, minimum order quantity 20 m	A	**6XV1 830-3EH10**		1	1 m	5K2
PROFIBUS FC food cables 2-core, shielded Sold by the meter: Delivery unit max. 1 000 m, minimum order quantity 20 m	A	**6XV1 830-0GH10**		1	1 m	5K2
PROFIBUS FC robust cables 2-core, shielded Sold by the meter: Delivery unit max. 1 000 m, minimum order quantity 20 m	A	**6XV1 830-0JH10**		1	1 m	5K2
PROFIBUS M12 connectors 5-pole, B-coded, metal enclosure, female insert 1 pack = 5 units	A	**6GK1 905-0EB00**		1	1 unit	5K2
IM 154-8 F PN/DP CPU interface modules						
IM 154-8 F PN/DP CPU interface modules, V3.2 Failsafe PROFINET IO Controller for operating distributed I/Os on PROFINET, with integrated PLC functionality	A	**6ES7 154-8FB01-0AB0**		1	1 unit	241
Distributed Safety V5.4 programming tools						
Task: Configuration software for configuring failsafe user programs for SIMATIC S7-300F, S7-400F and ET 200S Requirements: STEP 7 V5.3 SP3 and higher						
• Floating license	A	**6ES7 833-1FC02-0YA5**		1	1 unit	241
• Software Update Service	B	**6ES7 833-1FC00-0YX2**		1	1 unit	241
Distributed Safety upgrade From V5.3 to V5.4; floating license for 1 user	B	**6ES7 833-1FC02-0YE5**		1	1 unit	241
Accessories						
MMC 64 Kbyte[1)] For program backups	A	**6ES7 953-8LF20-0AA0**		1	1 unit	230
MMC 128 Kbyte[1)] For program backups	A	**6ES7 953-8LG20-0AA0**		1	1 unit	230
MMC 512 Kbyte[1)] For program backups	A	**6ES7 953-8LJ30-0AA0**		1	1 unit	2AP
MMC 2 MByte[1)] For program backups and/or the firmware update	A	**6ES7 953-8LL20-0AA0**		1	1 unit	230
MMC 4 MByte[1)] For program backups	A	**6ES7 953-8LM20-0AA0**		1	1 unit	230
MMC 8 MByte[1)] For program backups	A	**6ES7 953-8LP20-0AA0**		1	1 unit	230

[1)] For operation of the CPU, an MMC is essential.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
IM 154-8 F PN/DP CPU interface modules (continued)						
Connection modules For CPU IM154-8 PN/DP, with 4 x M12 and 2 x 7/8", for connection of PROFINET and PROFIBUS DP	A	**6ES7 194-4AN00-0AA0**		1	1 unit	250
SCALANCE X-200 Industrial Ethernet switches With integrated SNMP access, web diagnostics, copper cable diagnostics and PROFINET diagnostics, SCALANCE X208PRO for configuring line, star and ring structures, in degree of protection IP65, with eight 10/100 Mbit/s M12 ports, including eleven M12 dust covers	B	**6GK5 208-0HA00-2AA6**		1	1 unit	5N2
Industrial Ethernet FC RJ45 Plug 90 RJ45 plug-in connector for Industrial Ethernet, with robust metal enclosure and integrated cutting and clamping contacts for connection of Industrial Ethernet FC installation cables; with 90° cable feeder						
• 1 unit	A	**6GK1 901-1BB20-2AA0**		1	1 unit	5K1
• 10 units	A	**6GK1 901-1BB20-2AB0**		1	1 unit	5K1
Industrial Ethernet FC RJ45 Plug 180 RJ45 plug-in connector for Industrial Ethernet, with robust metal enclosure and integrated cutting and clamping contacts for connection of Industrial Ethernet FC installation cables; with 180° cable feeder						
• 1 unit	A	**6GK1 901-1BB10-2AA0**		1	1 unit	5K1
• 10 units	A	**6GK1 901-1BB10-2AB0**		1	1 unit	5K1
• 50 units	A	**6GK1 901-1BB10-2AE0**		1	1 unit	5K1
Industrial Ethernet Fast Connect installation cables						
• Fast Connect standard cables	A	**6XV1 840-2AH10**		1	1 m	5K1
• Fast Connect trailing cables	A	**6XV1 840-3AH10**		1	1 m	5K1
• Fast Connect marine cables	A	**6XV1 840-4AH10**		1	1 m	5K1
• IE FC TP trailing cables GP 2 x 2; sold by the meter, delivery unit max. 1 000 m; minimum order quantity 20 m	A	**6XV1 870-2D**		1	1 m	5K2
• IE TP torsion cables GP 2 x 2; sold by the meter, delivery unit max. 1 000 m; minimum order quantity 20 m	A	**6XV1 870-2F**		1	1 m	5K2
Industrial Ethernet Fast Connect Stripping tools	A	**6GK1 901-1GA00**		1	1 unit	5K2
IE connecting cables M12-180/M12-180 Factory-fitted IE FC TP trailing cables GP 2 x 2 (PROFINET type C) with two 4-pole M12 plugs (4-pole, D-coded), degree of protection IP65/IP67						
• Length 0.3 m	A	**6XV1 870-8AE30**		1	1 unit	5K1
• Length 0.5 m	A	**6XV1 870-8AE50**		1	1 unit	5K1
• Length 1.0 m	A	**6XV1 870-8AH10**		1	1 unit	5K1
• Length 1.5 m	A	**6XV1 870-8AH15**		1	1 unit	5K1
• Length 2.0 m	A	**6XV1 870-8AH20**		1	1 unit	5K1
• Length 3.0 m	A	**6XV1 870-8AH30**		1	1 unit	5K1
• Length 5.0 m	A	**6XV1 870-8AH50**		1	1 unit	5K1
• Length 10 m	A	**6XV1 870-8AN10**		1	1 unit	5K1
• Length 15 m	A	**6XV1 870-8AN15**		1	1 unit	5K1
PROFINET M12 connecting cables, trailing, preassembled at both ends with M12 plugs, angled (pin)						
• Length 3.0 m	C	**3RK1 902-2NB30**		1	1 unit	42D
• Length 5.0 m	C	**3RK1 902-2NB50**		1	1 unit	42D
• Length 10 m	C	**3RK1 902-2NC10**		1	1 unit	42D
PROFINET M12 connecting cables, trailing, preassembled at one end with M12 plugs, angled (one end with pin, one end open)						
• Length 3.0 m	C	**3RK1 902-2HB30**		1	1 unit	42D
• Length 5.0 m	C	**3RK1 902-2HB50**		1	1 unit	42D
• Length 10 m	C	**3RK1 902-2HC10**		1	1 unit	42D
IE FC M12 Plug PRO PROFINET M12 connectors, D-coded with quick-connect technology, axial outgoing feeder						
• 1 unit	A	**6GK1 901-0DB20-6AA0**		1	1 unit	5K1
• 8 units	A	**6GK1 901-0DB20-6AA8**		1	1 unit	5K1
PROFINET M12 connectors, D-coded, angled	C	**3RK1 902-2DA00**		1	1 unit	42D
IE Panel Feedthrough						
Control cabinet gland for transition from M12 connection method (D-coded, IP65/IP67) to RJ45 connection method (IP20), 1 pack = 5 units	A	**6GK1 901-0DM20-2AA5**		1	1 unit	5K2
7/8" connecting cables for power supply 5-core, 5 x 1.5 mm^2, trailing, preassembled with two 7/8" plugs (axial outgoing feeder), 5-pole, up to max. 50 m						
• Length 1.5 m	A	**6XV1 822-5BH15**		1	1 unit	5K1
• Length 2.0 m	A	**6XV1 822-5BH20**		1	1 unit	5K1
• Length 3.0 m	A	**6XV1 822-5BH30**		1	1 unit	5K1
• Length 5.0 m	A	**6XV1 822-5BH50**		1	1 unit	5K1
• Length 10 m	A	**6XV1 822-5BN10**		1	1 unit	5K1
• Length 15 m	A	**6XV1 822-5BN15**		1	1 unit	5K1
• More special lengths with 90° or 180° cable feeder see http://support.automation.siemens.com/WW/view/en/26999294						

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ET 200pro – interface modules

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
IM 154-8 F PN/DP CPU interface modules (continued)						
Trailing power cables, 5 x 1.5 mm^2, preassembled at both ends with 7/8" connectors, angled (one end with socket, one end with pin)						
• Length 3.0 m	C	**3RK1 902-3NB30**		1	1 unit	42D
• Length 5.0 m	C	**3RK1 902-3NB50**		1	1 unit	42D
• Length 10 m	C	**3RK1 902-3NC10**		1	1 unit	42D
Trailing power cables, 5 x 1.5 mm^2, preassembled at one end with 7/8" connector with female insert, angled (one end with socket, one end open)						
• Length 3.0 m	C	**3RK1 902-3GB30**		1	1 unit	42D
• Length 5.0 m	C	**3RK1 902-3GB50**		1	1 unit	42D
• Length 10 m	C	**3RK1 902-3GC10**		1	1 unit	42D
Power cables 5-core, 5 x 1.5 mm^2, trailing, sold by the meter, minimum order quantity 20 m, maximum order quantity 1 000 m	A	**6XV1 830-8AH10**		1	1 m	5K2
7/8" connectors for ET 200eco, with axial cable feeder						
• With pin insert, pack of 5	A	**6GK1 905-0FA00**		1	1 unit	5K2
• With female insert, pack of 5	A	**6GK1 905-0FB00**		1	1 unit	5K2
• Angled, with female insert, 1 unit	C	**3RK1 902-3DA00**		1	1 unit	42D
• Angled with pin insert, 1 unit	C	**3RK1 902-3BA00**		1	1 unit	42D
7/8" covers, pack of 10	A	**6ES7 194-3JA00-0AA0**		1	1 unit	250
Twisted pair connecting cables 4 x 2 with RJ45 connectors						
• Length 0.5 m	A	**6XV1 870-3QE50**		1	1 unit	5K1
• Length 1 m	A	**6XV1 870-3QH10**		1	1 unit	5K1
• Length 2 m	A	**6XV1 870-3QH20**		1	1 unit	5K1
• Length 6 m	A	**6XV1 870-3QH60**		1	1 unit	5K1
• Length 10 m	A	**6XV1 870-3QN10**		1	1 unit	5K1
Crossed twisted pair connecting cables 4 x 2 with RJ45 connectors						
• Length 0.5 m	A	**6XV1 870-3RE50**		1	1 unit	5K1
• Length 1 m	A	**6XV1 870-3RH10**		1	1 unit	5K1
• Length 2 m	A	**6XV1 870-3RH20**		1	1 unit	5K1
• Length 6 m	A	**6XV1 870-3RH60**		1	1 unit	5K1
• Length 10 m	A	**6XV1 870-3RN10**		1	1 unit	5K1
M12 sealing caps for protection of unused M12 terminals on ET 200pro	►	**3RX9 802-0AA00**		100	10 units	42C
M12 sealing caps with female thread 5 units	A	**6ES7 194-4JD60-0AA0**		1	1 unit	250
PROFIBUS M12 connecting cables Preassembled with two 5-pole M12 plugs/sockets, up to max. 100 m						
• Length 1.5 m	A	**6XV1 830-3DH15**		1	1 unit	5K1
• Length 2 m	A	**6XV1 830-3DH20**		1	1 unit	5K1
• Length 3 m	A	**6XV1 830-3DH30**		1	1 unit	5K1
• Length 5 m	A	**6XV1 830-3DH50**		1	1 unit	5K1
• Length 10 m	A	**6XV1 830-3DN10**		1	1 unit	5K1
• Length 15 m	A	**6XV1 830-3DN15**		1	1 unit	5K1
• More special lengths with 90° or 180° cable feeder see http://support.automation.siemens.com/WW/view/en/26999294						
PROFIBUS M12 bus termination plugs, female inserts	A	**6GK1 905-0ED00**		1	1 unit	5K2
PROFIBUS M12 bus termination plugs, pin inserts	A	**6GK1 905-0EC00**		1	1 unit	5K2
M12 connectors, axial outgoing feeder, with pin insert	A	**6GK1 905-0EA00**		1	1 unit	5K2
PROFIBUS FC standard cables GP Standard type with special design for fast installation, 2-core, shielded Sold by the meter: Delivery unit max. 1 000 m, minimum order quantity 20 m	A	**6XV1 830-0EH10**		1	1 m	5K1
PROFIBUS FC trailing cables 2-core, shielded Sold by the meter: Delivery unit max. 1 000 m, minimum order quantity 20 m	A	**6XV1 830-3EH10**		1	1 m	5K2
PROFIBUS FC food cables 2-core, shielded Sold by the meter: Delivery unit max. 1 000 m, minimum order quantity 20 m	A	**6XV1 830-0GH10**		1	1 m	5K2
PROFIBUS FC robust cables 2-core, shielded Sold by the meter: Delivery unit max. 1 000 m, minimum order quantity 20 m	A	**6XV1 830-0JH10**		1	1 m	5K2
PROFIBUS M12 connectors 5-pole, B-coded, metal enclosure, female insert 1 pack = 5 units	A	**6GK1 905-0EB00**		1	1 unit	5K2

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Digital expansion modules						
8 DI digital input modules 24 V DC, with module diagnostics, including bus module. Connection module must be ordered separately.	A	**6ES7 141-4BF00-0AA0**		1	1 unit	250
8 DI High-Feature digital input modules 24 V DC, with channel diagnostics, including bus module Connection module must be ordered separately.	A	**6ES7 141-4BF00-0AB0**		1	1 unit	250
16 DI digital input modules 24 V DC, with module diagnostics, including bus module. 6ES7 194-4CB50-0AA0 connection modules must be ordered separately.	A	**6ES7 141-4BH00-0AA0**		1	1 unit	250
4 DO digital output modules 24 V DC, 2 A, with module diagnostics, including bus module. Connection module must be ordered separately.	A	**6ES7 142-4BD00-0AA0**		1	1 unit	250
4 DO High-Feature digital output modules 24 V DC, 2 A, with channel diagnostics, including bus module. Connection module must be ordered separately.	A	**6ES7 142-4BD00-0AB0**		1	1 unit	250
8 DO digital output modules 24 V DC, 0.5 A, with module diagnostics, including bus module. Connection module must be ordered separately.	A	**6ES7 142-4BF00-0AA0**		1	1 unit	250
Digital input and output modules 4 DIO / 4 DO 24 V DC, 0.5 A, with module diagnostics, including bus module. Connection module must be ordered separately.	A	**6ES7 143-4BF00-0AA0**		1	1 unit	250
Accessories						
CM IO 4 x M12 connection modules 4 M12 sockets for connection of digital or analog sensors of actuators to ET 200pro	A	**6ES7 194-4CA00-0AA0**		1	1 unit	250
CM IO 4 x M12 Invers connection modules 4 M12 sockets for connection of digital actuators to ET 200pro (4 DO and 4 DO HF); 2 x M12 with single assignment, 2 x M12 with double assignment	A	**6ES7 194-4CA50-0AA0**		1	1 unit	250
CM IO 8 x M12 connection modules 8 M12 sockets for connection of digital sensors or actuators to ET 200pro	A	**6ES7 194-4CB00-0AA0**		1	1 unit	250
CM IO 8 x M8 connection modules 8 M8 sockets for connection of digital sensors or actuators to ET 200pro	A	**6ES7 194-4EB00-0AA0**		1	1 unit	250
CM IO 2 x M12 connection modules 2 M12 8-pole sockets; to be used with: EM 8 DI 24 V DC and 8 DO 24 V DC/0.5 A	A	**6ES7 194-4FB00-0AA0**		1	1 unit	250
CM IO 1 x M23 connection modules 1 M23 socket, to be used with: EM 8 DI 24 V DC and 8 DO 24 V DC/0.5 A	A	**6ES7 194-4FA00-0AA0**		1	1 unit	250
Termination modules For 16 DI digital input modules	A	**6ES7 194-4CB50-0AA0**		1	1 unit	250
Module labeling plates For color coding of CM IOs in the colors white, red, blue and green; pack of 100	A	**6ES7 194-4HA00-0AA0**		1	1 unit	250
M12 sealing caps For protection of unused M12 terminals on ET 200pro	►	**3RX9 802-0AA00**		100	10 units	42C
Labels 20 x 7, pastel turquoise, pack of 340	D	**3RT1 900-1SB20**		100	340 units	41B
M12 Y-shaped coupler plugs For double connection of sensors with a single cable, 5-pole; cannot be used for F-DI4/8	A	**6ES7 194-1KA01-0XA0**		1	1 unit	250
M12 Y-cables For double connection of I/Os with a single cable to ET 200, 5-pole	A	**6ES7 194-6KA00-0XA0**		1	1 unit	250
M8 sealing caps For IP67 modules	A	**3RK1 901-1PN00**		100	10 units	42C
Analog expansion modules						
4AI U analog input modules High-Feature, ±10 V; ±5 V; 0 ... 10 V; 1 ... 5 V, channel diagnostics, including bus module. Connection module must be ordered separately.	A	**6ES7 144-4FF00-0AB0**		1	1 unit	250
4AI I analog input modules High-Feature, ±20 mA; 0 ... 20 mA; 4 ... 20 mA, channel diagnostics, including bus module. Connection module must be ordered separately.	A	**6ES7 144-4GF00-0AB0**		1	1 unit	250
4AI RTD analog input modules High-Feature; resistors: 150, 300, 600 and 3 000 Ω; resistance thermometers: Pt100, Pt200, Pt500, Pt1000, Ni100, Ni120, Ni200, Ni500 and Ni1000; channel diagnostics, including bus module. Connection module must be ordered separately.	A	**6ES7 144-4JF00-0AB0**		1	1 unit	250
4AI TC analog input modules High-Feature; thermoelements: Type B, E, J, K, L, N, R, S, T; voltage measurement: ±80 mV ; channel diagnostics, including bus module. Connection module must be ordered separately.	A	**6ES7 144-4PF00-0AB0**		1	1 unit	250
4AO U analog output modules High-Feature, ±10 V; 0 ... 10 V; 1 ... 5 V, channel diagnostics, including bus module. Connection module must be ordered separately.	A	**6ES7 145-4FF00-0AB0**		1	1 unit	250

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Illustrations are approximate

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ET 200pro – I/O modules

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Analog expansion modules (continued)						
4AO I analog output modules High-Feature, ±20 mA; 0 ... 20 mA; 4 ... 20 mA, channel diagnostics, including bus module. Connection module must be ordered separately.	A	**6ES7 145-4GF00-0AB0**		1	1 unit	250
Accessories						
CM IO 4 x M12 connection modules 4 M12 sockets for connection of digital or analog sensors of actuators to ET 200pro	A	**6ES7 194-4CA00-0AA0**		1	1 unit	250
M12 compensation plugs With integrated Pt100 for reference point compensation when connection thermoelements	A	**6ES7 194-4AB00-0AA0**		1	1 unit	250
Module labeling plates For color coding of CM IOs in the colors white, red, blue and green; pack of 100	A	**6ES7 194-4HA00-0AA0**		1	1 unit	250
M12 sealing caps For protection of unused M12 terminals on ET 200pro	►	**3RX9 802-0AA00**		100	10 units	42C
Failsafe digital expansion modules						
8/16 F-DI PROFIsafe failsafe digital input modules 24 V DC, including bus module. Connection module must be ordered separately.	A	**6ES7 148-4FA00-0AB0**		1	1 unit	241
4/8 F-DI, 4 F-DO 2 A failsafe digital input/output modules 24 V DC, including bus module. Connection module must be ordered separately.	A	**6ES7 148-4FC00-0AB0**		1	1 unit	241
F-Switch PROFIsafe failsafe solid-state modules Three failsafe PP-switching outputs for safe switching of the backplane busbars (2L+, F0, F1); two fail-safe digital inputs, 45 mm; usable up to Cat. 4 (EN 954)/SIL3 (IEC 61508)	A	**6ES7 148-4FS00-0AB0**		1	1 unit	241
Accessories						
Connection modules For F-Switch PROFIsafe failsafe solid-state modules	A	**6ES7 194-4DA00-0AA0**		1	1 unit	241
Connection modules For the 4/8 F-DI/4 -DO, 24 V DC/2 A failsafe solid-state module	A	**6ES7 194-4DC00-0AA0**		1	1 unit	241
Connection modules For the 8/16 F-DI, 24 V DC/2 A failsafe solid-state module	A	**6ES7 194-4DD00-0AA0**		1	1 unit	241
PROFIBUS DP IM154-2 interface modules Including termination module	A	**6ES7 154-2AA01-0AB0**		1	1 unit	250
PROFINET IM154-4 PN interface modules Including termination module	A	**6ES7 154-4AB10-0AB0**		1	1 unit	250
M12 sealing cap For protection of unused M12 terminals on ET 200pro	►	**3RX9 802-0AA00**		100	10 units	42C
PM-E power modules						
PM-E power modules 24 V DC For resupply and group formation of the 24 V DC load voltage for solid-state modules within an ET 200pro station.	A	**6ES7 148-4CA00-0AA0**		1	1 unit	250
Accessories						
CM PM-E ECOFAST connection modules For resupply of 24 V load voltage, one ECOFAST Cu terminal	A	**6ES7 194-4BA00-0AA0**		1	1 unit	250
CM PM-E Direct connection modules For resupply of 24 V load voltage, up to two M20 screwed cable glands	A	**6ES7 194-4BC00-0AA0**		1	1 unit	250
CM PM-E 7/8" connection modules For resupply of 24 V load voltage, 1 x 7/8"	A	**6ES7 194-4BD00-0AA0**		1	1 unit	250
CM PM-E PP connection modules For resupply of 24 V load voltage, 2 x push-pull, with spare fuse	A	**6ES7 194-4BE00-0AA0**		1	1 unit	250
Spare fuses 12.5 A quick, for interface and power modules, pack of 10	A	**6ES7 194-4HB00-0AA0**		1	1 unit	250

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
PM-E power modules (continued)						
PROFIBUS ECOFAST hybrid cables – copper Trailing cables (PUR sheath) with two copper conductors, shielded, for PROFIBUS DP and four copper cores with 1.5 mm^2						
Non-assembled						
• Length 50 m	A	**6XV1 830-7AN50**		1	1 unit	5K2
• Length 100 m	A	**6XV1 830-7AT10**		1	1 unit	5K2
Assembled With ECOFAST plug and socket						
• Length 1.5 m	A	**6XV1 830-7BH15**		1	1 unit	5K2
• Length 3 m	A	**6XV1 830-7BH30**		1	1 unit	5K2
• Length 5 m	A	**6XV1 830-7BH50**		1	1 unit	5K2
• Length 10 m	A	**6XV1 830-7BN10**		1	1 unit	5K2
• Length 15 m	A	**6XV1 830-7BN15**		1	1 unit	5K2
• Length 20 m	A	**6XV1 830-7BN20**		1	1 unit	5K2
• Length 25 m	A	**6XV1 830-7BN25**		1	1 unit	5K2
• Length 30 m	A	**6XV1 830-7BN30**		1	1 unit	5K2
• Length 35 m	A	**6XV1 830-7BN35**		1	1 unit	5K2
• Length 40 m	A	**6XV1 830-7BN40**		1	1 unit	5K2
• Length 45 m	D	**6XV1 830-7BN45**		1	1 unit	5K2
• Length 50 m	D	**6XV1 830-7BN50**		1	1 unit	5K2
PROFIBUS ECOFAST hybrid cables GP Trailing cable with 4 x Cu and 2 x Cu, shielded with UL approval						
Non-assembled						
• Length 50 m	B	**6XV1 860-4PN50**		1	1 unit	5K2
• Length 100 m	A	**6XV1 860-4PT10**		1	1 unit	5K2
Assembled With ECOFAST plug and socket						
• Length 1.5 m	A	**6XV1 860-3PH15**		1	1 unit	5K2
• Length 3 m	A	**6XV1 860-3PH30**		1	1 unit	5K2
• Length 5 m	D	**6XV1 860-3PH50**		1	1 unit	5K2
• Length 10 m	A	**6XV1 860-3PN10**		1	1 unit	5K2
• Length 15 m	A	**6XV1 860-3PN15**		1	1 unit	5K2
• Length 20 m	A	**6XV1 860-3PN20**		1	1 unit	5K2
• Length 25 m	A	**6XV1 860-3PN25**		1	1 unit	5K2
• Length 30 m	A	**6XV1 860-3PN30**		1	1 unit	5K2
• Length 35 m	A	**6XV1 860-3PN35**		1	1 unit	5K2
• Length 40 m	A	**6XV1 860-3PN40**		1	1 unit	5K2
• Length 45 m	A	**6XV1 860-3PN45**		1	1 unit	5K2
• Length 50 m	A	**6XV1 860-3PN50**		1	1 unit	5K2
ECOFAST plug connectors, can be preassembled Sockets; Order unit 5 units	A	**6GK1 905-0CB00**		1	1 unit	5K2
PROFIBUS ECOFAST hybrid plugs, angled With 2 x Cu shielded and 4 x Cu 1.5 mm^2; 5 units; with mounting instructions; female insert	A	**6GK1 905-0CD00**		1	1 unit	5K2
Push-pull connectors For 1L+/ 2L+, non-assembled	A	**6GK1 907-0AB10-6AA0**		1	1 unit	5K2
Covers for push-pull sockets 5 units	A	**6ES7 194-4JA50-0AA0**		1	1 unit	250

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ET 200pro – I/O modules

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
PM-E power modules (continued)						
Accessories for CM PM-E Direct						
Power cables 5-core, 5 x 1.5 mm^2, trailing, sold by the meter, minimum order quantity 20 m, maximum order quantity 1 000 m	A	**6XV1 830-8AH10**		1	1 m	5K2
Accessories for CM PM-E 7/8"						
7/8" connecting cables for power supply 5-core, 5 x 1.5 mm^2, trailing, preassembled With two 7/8" plugs, 5-pole						
• Length 1.5 m	A	**6XV1 822-5BH15**		1	1 unit	5K1
• Length 2.0 m	A	**6XV1 822-5BH20**		1	1 unit	5K1
• Length 3.0 m	A	**6XV1 822-5BH30**		1	1 unit	5K1
• Length 5.0 m	A	**6XV1 822-5BH50**		1	1 unit	5K1
• Length 10 m	A	**6XV1 822-5BN10**		1	1 unit	5K1
• Length 15 m	A	**6XV1 822-5BN15**		1	1 unit	5K1
7/8" connectors With axial cable feeder						
• With female insert, pack of 5	A	**6GK1 905-0FB00**		1	1 unit	5K2
PM-O power module outputs						
PM-O power modules 2 x 24 V DC For tapping the 24 V load voltage 2L+ and the solid-state/sensor supply voltage 1L+ within an ET 200pro station.	A	**6ES7 148-4CA60-0AA0**		1	1 unit	250
Accessories						
CM PM-O PP connection modules For tapping 24 V load voltage and solid-state/sensor supply voltage, 2 x push-pull plug-in connectors	A	**6ES7 194-4BH00-0AA0**		1	1 unit	250
Push-pull connectors For 1L+/ 2L+, non-assembled	A	**6GK1 907-0AB10-6AA0**		1	1 unit	5K2
Covers for push-pull sockets 5 units	A	**6ES7 194-4JA50-0AA0**		1	1 unit	250
ET 200pro pneumatic interfaces						
EM 148-P pneumatic interfaces						
• DO 16 x P/CPV 10 for direct connection of the FESTO valve terminals CPV 10 16 DO x P	A	**6ES7 148-4EA00-0AA0**		1	1 unit	250
• DO 16 x P/CPV 14 for direct connection of the FESTO valve terminals CPV 14 16 DO x P	A	**6ES7 148-4EB00-0AA0**		1	1 unit	250
• FESTO valve terminals CPV 10		Available from the company Festo				
• FESTO valve terminals CPV 14		Available from the company Festo, see Chapter 16 "Appendix" → "External Partners"				

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
ET 200pro FC frequency converters						
3 AC 380 ... 480 V, +10 %/-10 % 47 ... 63 Hz Overload: 150 %, 60 s, 200 %, 3 s Rating: 1.1 kW (0 ... 55 °C) 1.5 kW (0 ... 45 °C)						
• **ET 200pro FC standard frequency converters**	C	**6SL3 235-0TE21-1RB0**		1	1 unit	337
• **ET 200pro FC frequency converters with integrated safety functions**	C	**6SL3 235-0TE21-1SB0**		1	1 unit	337
Accessories for ET 200pro FC frequency converters						
Backplane bus modules for accommodating the frequency converter	D	**6SL3 260-2TA00-0AA0**		1	1 unit	337
Connector sets for energy supply, HAN Q4/2						
• 2.5 mm²	C	**3RK1 911-2BE50**		1	1 unit	42D
• 4.0 mm²	B	**3RK1 911-2BE10**		1	1 unit	42D
• 6.0 mm²	B	**3RK1 911-2BE30**		1	1 unit	42D
Motor cables preassembled at one end For motors with brake and temperature sensor with HAN Q8 connector, shielded Cross-section 1 mm²						
• Length 1.5 m		**ZKT: 70018601000150**		.		
• Length 3 m		**ZKT: 70018601000300**				
• Length 5 m		**ZKT: 70018601000500**				
• Length 10 m		**ZKT: 70018601001000**				
		ZKT: Available from the company KnorrTec see Chapter 16 "Appendix" → "External Partners"				
Cross-section 1.5 mm²						
• Length 1.5 m		**HTG: 61 88 201 0288**				
• Length 3 m		**HTG: 61 88 201 0289**				
• Length 5 m		**HTG: 61 88 201 0290**				
• Length 10 m		**HTG: 61 88 201 0299**				
		HTG: Available from the company Harting see Chapter 16 "Appendix" → "External Partners"				

More selected supplementary products
can be found at "Siemens Solution Partners Automation"
www.siemens.com/automation/partnerfinder
under "Distributed Field Installation System" technology.

Frequency converter plugs For motor cable, shielded, HAN Q8	A	**6ES7 194-1AB01-0XA0**		1	1 unit	2AP
Power jumper plugs For 400 V power loop-through connection to the following 400 V modules	B	**3RK1 922-2BQ00**		1	1 unit	42D
USB interface cables For communication with a PC (length 2.5 m)	D	**6SL3 555-0PA00-2AA0**		1	1 unit	346
RS232 interface cables For parameterization of the converter with the STARTER tool via a direct point-to-point connection	B	**3RK1 922-2BP00**		1	1 unit	42D
IOP handhelds For use with SINAMICS G120, SINAMICS G110D, SINAMICS G120D, SIMATIC ET 200S FC or SIMATIC ET 200pro FC Included in the scope of supply: • IOP • Handheld enclosure • Batteries (4 × AA) • Charger (international) • RS232 connection cable (length 3 m, may only be used for SINAMICS G120 and SIMATIC ET 200S FC) • USB cable (length 1 m)	D	**6SL3 255-0AA00-4HA0**		1	1 unit	343
Memory cards (MMC) For the ET 200S FC and ET 200pro FC parameter settings. If required there is space on the memory card (MMC) for the complete parameterization of the frequency converter. For service purposes the system is immediately ready for use after replacement of the frequency converter and acceptance of the memory card.	C	**6SL3 254-0AM00-0AA0**		1	1 unit	343

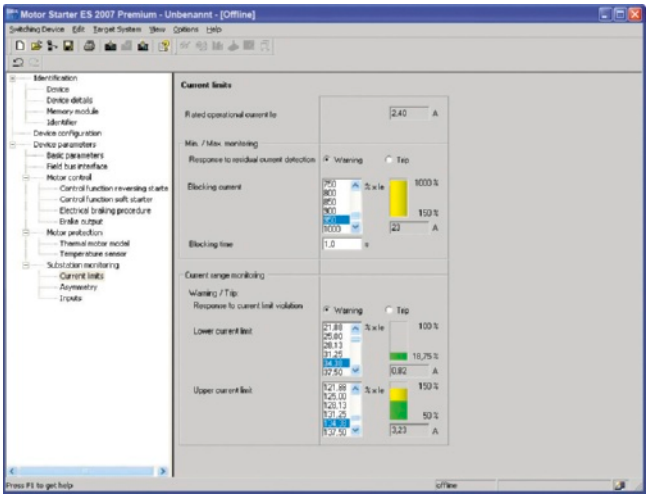
* You can order this quantity or a multiple thereof.
Illustrations are approximate

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ET 200pro software
Motor Starter ES

Overview

Motor Starter ES



Motor Starter ES for parameterization, monitoring, diagnostics and testing of motor starters

Motor Starter ES is used for start-up, parameterization, diagnostics, documentation and the preventative maintenance of the motor starters in the SIMATIC ET 200pro, SIMATIC ET 200S, ECOFAST and SIRIUS M200D product families.

Detailed information on the Motor Starter ES Software see Chapter 14 "Parametrization, Configuration and Visualization with SIRIUS".

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Overview



SIRIUS M200D AS-i Basic motor starters with manual on-site operation

The intelligent, highly flexible SIRIUS M200D motor starters for distributed configurations are designed to start, monitor and protect motors and loads up to 5.5 kW.

The M200D motor starters are available in four versions:

M200D AS-i Basic	M200D AS-i Standard	M200D PROFIBUS	M200D PROFINET
Motor control with AS-i Communication		PROFIBUS	PROFINET
Mechanical or electronic switching			
✓	✓	✓	✓
Electronic switching with soft starter functionality			
--	✓	✓	✓

✓ Function is available
-- Function is not available

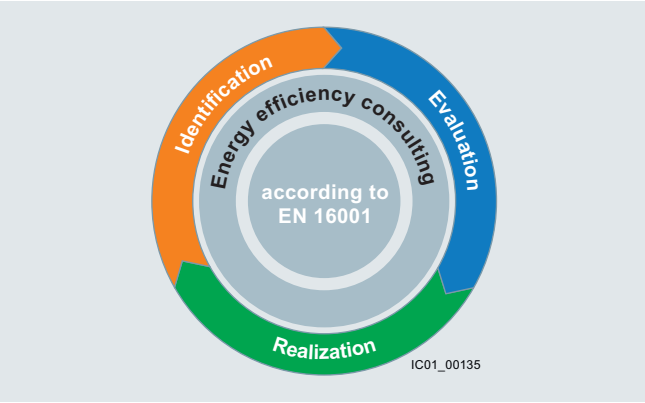
Basic functionality

All M200D motor starter versions have the following functions:

- Available as direct-on-line and reversing starters in a rugged design
- Electromechanical or solid-state switching version
- Little variance – only 2 device versions up to 5.5 kW thanks to wide range setting
- All versions have the same enclosure dimensions
- Degree of protection IP65
- Quick and failsafe wiring of system and motor cables using ISO 23570 plug-in connector technology (Q4/2 and Q8/0)
- Robust and widely used M12 connection method for digital inputs and outputs
- Integrated feeder connector monitoring
- Full motor protection through overload protection and a temperature sensor (PTC, TC)
- Short-circuit and overload protection integrated
- Integrated repair switch lockable with 3 locks (multi-level service)
- Uniform wiring to the G110D/G120D frequency converters and to the ET200pro distributed peripherals system
- Extensive diagnostics concept using LEDs
- Optional integrated manual on-site controller with key-operated switch (ordering option)
- Optionally available brake actuation with voltages from 180 V DC (no rectifier needed in motor) or 230/400 V AC (order versions)

Benefits

Advantages through energy efficiency



Overview of the energy management process

We offer you a unique portfolio for industrial energy management, using an energy management system that helps to optimally define your energy needs. We split up our industrial energy management into three phases – Identification, Evaluation and Realization – and we support you with the appropriate hardware and software solutions in every process phase.

The innovative products of the SIRIUS industrial controls portfolio can also make a substantial contribution to a plant's energy efficiency (see www.siemens.com/sirius/energysaving).

M200D motor starters contribute to energy efficiency as follows:

- Energy management
  Provision of energy data (current) by bus to higher-level systems using PROFIenergy (see "PROFINET M200D Motor Starters", page 9/40)
- Elimination of energy consumption in dead times through disconnection using PROFIenergy (see "PROFINET M200D Motor Starters", page 9/40)
- Current management
  With solid-state soft starters, avoidance of current peaks and therefore reduction of the load on the grid and the mechanical system
- Technology-reduced inherent power loss as speed-controlled drive systems
- Solid-state modules equipped with soft start technology with bypass contactor, resulting in lower power losses than with conventional soft starters after start-up

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General data

Product advantages

M200D motor starters provide the following advantages for customers:

- High plant availability through plug-in capability of the main circuit, communication and IOs – relevant for installing and replacing devices
- Cabinet-free construction and near-motor installation thanks to the high degree of protection IP65
- The motor starters record the actual current flow for the parameterizable electronic motor overload protection. Reliable messages concerning the overshooting or undershooting of setpoint values for comprehensive motor protection. All motor protection functions can be defined by simple parameterization
- Low stock levels and low order costs through a wide setting range for the current or a wide setting range for the electronic motor protection of 1:10 (only 2 device versions up to 5.5 kW)
- The integrated wide range for the current enables a single device to cover numerous standard motors of different sizes
- Comprehensive offering of accessories, including ready-assembled cables
- The M200D motor starters can be installed with a few manual steps The integrated plug-in technology enables far lower wiring outlay:
  Preassembled cables can be plugged directly onto the motor starter module
- Easy and user-friendly installation because all versions have the same enclosure dimensions
- Fast and user-friendly commissioning using an optional manual on-site controller
- Increase of process speed through integrated functions such as "Quick-Stop" and "Disable Quick-Stop", e.g. at points and crossings
- Optional manual on-site controller with momentary-contact and latching operation for easier start-up and easier service

Application

The high degree of protection IP65 makes the M200D motor starters suitable in particular for use on extensive conveying systems such as are found in mail sorting centers, airports, automotive factories and the packing industry.

For simple operating mechanism tasks, particularly in conveyor applications, the new SINAMICS G110D frequency converter series with a performance range from 0.75 kW to 7.5 kW and degree of protection IP65 is the ideal partner for the M200D motor starters.

The SINAMICS G110D frequency converters permit continuous speed control of three-phase asynchronous motors and meet the requirements of conveyor applications with frequency control (for more information see Catalog D 11.1 "SINAMICS G110, G120 ... ").

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Overview

For motor control using AS-Interface there are the following M200D motor starter versions: SIRIUS M200D AS-i Basic and SIRIUS M200D AS-i Standard (basic functionality see page 9/31 "SIRIUS M200D Motor Starters" → "General Data" → "Overview").

SIRIUS M200D AS-i Basic

Functionality

- Easy and fast on-site start-up through parameterization of local setting knobs (DIP switches) and rotary coding switches for adjusting the rated operational current. The rotary coding switch has an OFF position for deactivating the overload protection with the help of the thermal motor model when using a temperature sensor.

Communications

- AS-i communication with A/B addressing according to Spec V2.1
- The AS-i bus is connected cost-effectively using an M12 connection on the device. Of the 4 digital inputs, 2 are contained in the process image and can therefore be used in the PLC program. The other 2 inputs are locally effective and permanently assigned with functions.
- The LEDs can provide comprehensive diagnostics of the device on the spot. In addition to diagnostics using the PAE process image, the device can create up to 15 different diagnostic signals per slave. The message with the highest priority can be read out through the AS-i communication. This is yet another new development which distinguishes the M200D AS-i Basic motor starter from the rest of the market and adds innovative technology, maximum availability and transparency to the system.

SIRIUS M200D AS-i Standard

The intelligent, highly flexible M200D AS-i Standard motor starters in A/B technology are designed to start and protect motors and loads up to 5.5 kW. They are available in direct-on-line or reversing starter versions, in a mechanical version and also an electronic version (the latter with soft start function).

The M200D AS-i Standard motor starter is the most functional member of the SIRIUS motor starter family in the high degree of protection IP65 for AS-i Communication. Consistency with other products of the SIRIUS M200D motor starter range and with the frequency converter and ET200pro I/O system is assured.

Functionality

- AS-i communication with A/B addressing according to Spec 3.0
- Electronic version also with soft start function
- AS-i slave profile 7AE/7A5 with process image 6E/4A
- Full TIA integration: All digital inputs and outputs exist in the cyclic process image and are visible through AS-i, providing maximum flexibility and best adaptability to the application.
- Additionally expanded diagnostics using data record through AS-i bus
- Complete plant monitoring using statistics data record and current value monitoring by means of data records
- Parameterization through AS-i bus with the help of data records or an expanded process image from the user program
- Control of the motor starter using a command data record from the user program
- Flexible assignment of the digital inputs and outputs with all available assignable input actions
- Parameterization using Motor Starter ES at the local interface (ordering option for start-up software)
- Diagnostics with the help of Motor Starter ES (ordering option for start-up software)

Mounting and installation

The M200D motor starters can be installed with a few manual steps. The integrated plug-in technology enables far lower wiring outlay. Connecting cables can be plugged directly onto the motor starter module. Swapping of the connecting wires and malfunctions within the plant are prevented by preassembled cables. The AS-i bus is connected cost-effectively using an M12 connection on the device. All versions have identical enclosure dimensions for easier system design and conversion.

Parameterization and configuration

The particularly robust M200D AS-i Standard motor starter is characterized by numerous functions which can be flexibly parameterized. It enables highly flexible parameterization through the AS-i bus using data records from the user program as well as user-friendly local parameterization using the Motor Starter ES start-up software through the local point-to-point interface.

Functions can be flexibly assigned to the digital inputs and outputs, adapting them to all possible conveyor applications. All motor protection functions, limit values and reactions can be defined by parameterization. The AS-i Standard is unique. In its 6E/4A process image the motor starter sends all 4 digital inputs and the digital output via the process image to the PLC in cyclic mode. System configuration and system documentation are facilitated not least by a number of CAX data.

Operation

The new motor starter generation is characterized by high functionality, maximum flexibility and the highest level of automation.

All digital inputs and outputs exist in the cyclic process image. All limit values for monitoring functions and their reactions are parameterizable and therefore adaptable to the application. The motor starters record the actual current flow. Evaluating the current of the parameterizable solid-state overload protection increases the availability of the drives, as do reliable messages concerning the overshooting or undershooting of setpoint values.

Diagnostics and maintenance

The M200D sets new standards for diagnostics. In addition to diagnostics using the PAE process image and diagnostics by "parameter echo" (up to 15 different diagnostic signals per slave can be read out via AS-i Communication), the possibility of reading out diagnostic data records is unique on the market.

The AS-i Standard is recommended in particular for expansive and highly automated system components because the possibility of monitoring devices and systems with data records (statistical data, measured values and device diagnostics) provides an in-depth view of the plant from the control room, guaranteeing the monitoring process and increasing plant availability.

The integrated maintenance timer can be used to implement preventative maintenance and avoid plant downtimes through look-ahead servicing.

Local on-site control of a drive is possible using the ordering option with integrated manual operation. This is yet another new development which distinguishes the M200D AS-i Standard motor starter from the rest of the market and adds innovative technology, maximum availability and transparency to the plant.

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M200D motor starters for AS-Interface





	SIRIUS M200D AS-i Basic	SIRIUS M200D AS-i Standard
Device functions (firmware features)		
Slave on the bus		
Fieldbus	✓ AS-i	
Slave type	✓ A/B acc. to Spec 2.1	✓ A/B acc. to Spec 3.0
Profile	✓ 7.A.E	✓ 7.A.E & 7.A.5
Number of assigned AS-i addresses on the bus	✓ 1	✓ 2
Number of stations per AS-i master	✓ Maximum 62 devices	✓ Maximum 31 devices
AS-i master profile	✓ M3 and higher	✓ M4 and higher
Parameterization		
DIP switches	✓	--
Potentiometer for rated operational current	✓	--
ES Motor Starter	--	✓
Data records through AS-i	--	✓
Diagnostics		
Diagnostics through parameter channel	✓	
Acyclic through data records	--	✓
Expanded process image PAE 4 bytes	--	✓
Process image		
Process image	✓ 4E/3A	✓ 6E/4A
Data channels		
Local optical interface (manual on-site)	✓	
AS-i bus	✓	
Motor Starter ES through local interface	--	✓
Motor Starter ES through bus	--	
Data records[1] (acyclic)		
Parameterization	--	✓
Diagnostics	--	✓
Measured values	--	✓
Statistics	--	✓
Commands	--	✓
Inputs		
Number	✓ 4	
• Of these in the process image	✓ 2 through AS-i	✓ 4 through AS-i
Input action	✓ Permanently assigned functions, see manual	✓ Parameterizable: Flexible
Quick-Stop	✓ Permanent function: latching, edge-triggered	✓ Parameterizable function: latching (edge-triggered), non-latching (level-triggered)
Outputs		
Number	✓ 1	
Output action	✓ Permanent function: assigned with group fault	✓ Parameterizable: Function, see manual
Brake output		
180 V DC/ 230/400 V AC / none	✓	
Motor protection		
Overload protection	✓ Electronic, wide range 1:10	
Short-circuit protection	✓	
Full motor protection	✓	
Temperature sensor	✓ Parameterizable using DIP switches: PTC or Thermoclick or deactivated	✓ Parameterizable using ES Motor Starter, data record: PTC or Thermoclick or deactivated

✓ Function is available

-- Function not available

[1] The data records are a reduced selection compared with PROFIBUS / PROFINET.

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	SIRIUS M200D AS-i Basic	SIRIUS M200D AS-i Standard
Device functions (firmware features)		
Device functions		
Repair switch	✓	
Current limit monitoring bottom	--	✓ Parameterizable
Current limit monitoring top	--	✓ Parameterizable
Zero current detection	✓ Permanent function: disconnection, less than 18.75 % of the rated operational current I_e	✓ Parameterizable
Blocking current	✓ Permanent function: Starting up of the motor: tripping limit at 800 % of the rated operational current I_e for 10 s Active operation: Threshold for tripping "blocking current" at 400 % of the rated operational current I_e	✓ Parameterizable
Unbalance	✓ Permanent function: at 30 % of the rated operational current I_e (only mechanical MS)	✓ Parameterizable
Load type	✓ Permanent function: 3-phase	✓ Parameterizable: 1- and 3-phase
Shutdown class	✓ Parameterizable using DIP switches: CLASS 10/deactivated	Parameterizable using ES Motor Starter, data record: CLASS 5, 10, 15, 20
Protection against voltage failure	✓	✓ Parameterizable: Activated/deactivated
Soft starter control functions		
Soft start function	--	✓ Only electronic version
Bypass function	--	✓ Only electronic version

✓ Function is available
-- Function not available

Application

The M200D AS-i standard is particularly suitable for highly automated applications in conveyor systems, which require that devices and systems be monitored to prevent or limit plant downtime. The option of planning the functions of the motor starter or its interfaces also makes fine-adjustment to the function of the motor starter in the application possible and hence, provides for extreme flexibility.

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M200D motor starters for AS-Interface

Technical specifications

Type		M200D motor starters			
		AS-i Basic electromechanical switching	AS-i Basic electronic switching	AS-i Standard electromechanical switching	AS-i Standard electronic switching
Technology designation[1]		DSte / RSte	sDSte / sRSte	DSte / RSte	sDSSte / sRSSte
Mechanics and environment					
Mounting dimensions (W x H x D)	mm	294 x 215 x 159			
Permissible ambient temperature					
• During operation	°C	-25 ... +55			
• During storage	°C	-40 ... +70			
Weight	g	2 880 / 3 130	3 220 / 3 420	2 880 / 3 130	3 220 / 3 420
Permissible mounting positions		Vertical, horizontal, lying			
Vibration resistance acc. to IEC 60068 Part 2-6	*g*	2			
Shock resistance					
• Acc. to IEC 60068 Part 2-27	*g*/ms	12/11 half-sine			
• Without influencing the contact position	*g*/ms	9.8/5 or 5.9/10			
Degree of protection according to IEC 529		IP65			
Installation altitude					
• Up to 1 000 m		No derating			
• Up to 2 000 m		1 % per 100 m			
Cooling		Convection			
Protection class IEC 536 (VDE 0106-1)		1			
Electrical specifications					
Control circuits					
Operational voltage U_{As-i}	V DC	26.5 ... 31.6			
Control supply voltage U_{aux}	V DC	20.4 ... 28.8			
Power consumption from AS-i (incl. 200 mA sensor supply)	mA	< 300			
Power consumption from U_{aux} (without digital output)					
• Max.	mA	155	15 (direct-on-line)/175 (reversing)	155	15 (direct-on-line)/175 (reversing)
• Typ.	mA	75	10 (direct-on-line)/75 (reversing)	75	10 (direct-on-line)/75 (reversing)
Main circuit					
Maximum power of induction motors at 400 V AC	kW	5.5	4	5.5	5.5
Rated operational voltage U_e					
• Approval acc. to EN 60947-1	V AC	400 (50/60 Hz)			
• Approval acc. to UL and CSA	V AC	600 (50/60 Hz)	480 (50/60 Hz)	600 (50/60 Hz)	480 (50/60 Hz)
• Rated operational current range	A	0.15 ... 2 / 1.5 ... 12	--	0.15 ... 2 / 1.5 ... 12	--
• Rated operational current range for soft start	A	--			0.15 ... 2 / 1.5 ... 12
• Rated operational current range for direct start	A	--	0.15 ... 2 /1.5 ... 9	--	0.15 ... 2 /1.5 ... 9
Rated operational current for starters I_e at 400 V AC					
• 400 V at AC-1 / 2 / 3	A	12	--	12	--
• 500 V at AC-1 / 2 / 3	A	9	--	9	--
• 400 V at AC-4	A	4	--	4	--
• 400 V at AC-53a	A	--	9	--	12 for soft starting 9 for direct-in-line starting
Mechanical endurance of contactor	Operating cycles	30 million	--	30 million	--
Trip class		CLASS 10		CLASS 5, 10, 15, 20	
Type of coordination acc. to IEC 60947-4-1		1 (2 for device version 2A)	1	1 (2 for device version 2A)	1
Reliable switching frequency		See manual			
Rated ultimate short-circuit breaking capacity I_q					
• At 400 V AC	kA	50			
• At 500 V AC	kA	50[2]	20[2]	50	20[2]
Short-circuit protection					
• At I_{emax} = 2 A		Integrated, 2 x13 I_e = 26 A			
• At I_{emax} = 9 /12 A		Integrated, 2 x13 I_e = 208 A			
Brake version (option)					
Designation		400 V / 230 V AC	180 V DC	400 V / 230 V AC	180 V DC
Operational voltage	V	400 / 230 AC	180 DC	400 / 230 AC	180 DC
Uninterrupted current	A	< 0.5	< 0.8	< 0.5	< 0.8
Short-circuit protection		Yes, 1 A melting fuse			

[1] DS .... direct-on-line starter
RS .... reversing starter
DSS .. direct-on-line soft starter
RSS .. reversing soft starter
te ..... full motor protection (thermal + electronic)
s ..... electronic switching with semiconductor.

[2] Only systems with grounded neutral point permitted

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Selection and ordering data



M200D AS-i Basic without manual on-site operation



M200D AS-i Basic with manual on-site operation

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Electromechanical starters (with integrated contactor)						
	C	**3RK1 315-6□S41-□AA□**		1	1 unit	42D
Setting range for rated operational current / A			***Additional price***			
• 0.15 ... 2		**K**	None			
• 1.5 ... 12		**L**	x			
Direct-on-line starters/reversing starters						
• Direct-on-line starters		**0**	None			
• Reversing starters		**1**	x			
• Direct-on-line starters with manual local operation		**2**	x			
• Reversing starters with manual local operation		**3**	x			
Brake actuation						
• Without brake actuation		**0**	None			
• Brake actuation (230/400 V AC)		**3**	x			
• Brake actuation (180 V DC)		**5**	x			
Electronic starters (with thyristors)						
	C	**3RK1 315-6□S71-□AA□**		1	1 unit	42D
Setting range for rated operational current / A			***Additional price***			
• 0.15 ... 2		**K**	None			
• 1.5 ... 9		**N**	x			
Direct-on-line starters/reversing starters						
• Direct-on-line starters		**0**	None			
• Reversing starters		**1**	x			
• Direct-on-line starters with manual local operation		**2**	x			
• Reversing starters with manual local operation		**3**	x			
Brake actuation						
• Without brake actuation		**0**	None			
• Brake actuation (230/400 V AC)		**3**	x			
• Brake actuation (180 V DC)		**5**	x			

x = Additional price

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Selection and ordering data



M200D AS-i Standard without manual on-site operation



M200D AS-i Standard with manual on-site operation

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Electromechanical starters (with integrated contactor)						
	C	**3RK1 325-6□S41-□AA□**		1	1 unit	42D
Setting range for rated operational current / A			***Additional price***			
• 0.15 ... 2		**K**	None			
• 1.5 ... 12		**L**	x			
Direct-on-line starters/reversing starters						
• Direct-on-line starters		**0**	None			
• Reversing starters		**1**	x			
• Direct-on-line starters with manual local operation		**2**	x			
• Reversing starters with manual local operation		**3**	x			
Brake actuation						
• Without brake actuation		**0**	None			
• Brake actuation (230/400 V AC)		**3**	x			
• Brake actuation (180 V DC)		**5**	x			
Electronic starters (with thyristors)						
	C	**3RK1 325-6□S71-□AA□**		1	1 unit	42D
Setting range for rated operational current / A			***Additional price***			
• 0.15 ... 2		**K**	None			
• 1.5 ... 12		**L**	x			
Direct-on-line starters/reversing starters						
• Direct-on-line starters		**0**	None			
• Reversing starters		**1**	x			
• Direct-on-line starters with manual local operation		**2**	x			
• Reversing starters with manual local operation		**3**	x			
Brake actuation						
• Without brake actuation		**0**	None			
• Brake actuation (230/400 V AC)		**3**	x			
• Brake actuation (180 V DC)		**5**	x			

x = Additional price

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

The intelligent, highly flexible M200D PROFIBUS / PROFINET motor starters are the most functional motor starters of the SIRIUS motor starter family in the high degree of protection IP65 for PROFIBUS / PROFINET communication.

They start and protect motors and loads up to 5.5 kW. Direct-online and reversing starter versions are available, in a mechanical version and also an electronic version (the latter with soft start function).

The particularly robust M200D PROFIBUS / PROFINET motor starters are characterized by numerous functions which can be flexibly parameterized. Their modular design comprises a motor starter module and a communication module.

The M200D PROFINET motor starters enable TIA-integrated parameterization through PROFINET from STEP 7 – in familiar, user-friendly manner with the same look-and-feel as PROFIBUS.

Functionality

- Basic functionality see page 9/31 "M200D Motor Starters" → "General Data" → "Overview"
- Electronic version also with soft start function
- Robust and widely used M12 connection method for the digital inputs and outputs and the PROFIBUS / PROFINET bus connection
- All four digital inputs and two digital outputs exist in the cyclic process image. This provides complete transparency of the process on the control level
- Full TIA integration: All digital inputs and outputs exist in the cyclic process image and are visible through the bus, providing maximum flexibility and excellent adaptability to the application.
- Flexible assignment of the digital inputs and outputs with all available assignable input actions
- Extensive diagnostics concept using LEDs and through the bus with the TIA-compatible mechanisms
- Expanded diagnostics using data records
- Complete plant monitoring using statistics data record and current value monitoring by means of data records
- Parameterization through PROFIBUS / PROFINET bus with the help of data records from the user program
- Control of the motor starter using a command data record from the user program
- Removable modular control unit – quicker device replacement and therefore lower costs when device outages occur – since existing wiring is on the control unit and only one device needs to be replaced
- Parameterization in STEP 7 HW config using Motor Starter ES (ordering option for start-up software)
- Start-up and diagnostics with the help of Motor Starter ES (ordering option for start-up software)
- Trace function through Motor Starter ES for optimized start-up and tracking of process and device values

Only with PROFINET:

- Just one bus system from the MES level to the devices - no routers
- More stations on the bus and possible configuration of flexible bus structures
- Automatic re-parameterization in case of device replacement thanks to proximity detection
- Wireless integration of plant segments in difficult environments using WLAN
- Easier expansion of the system thanks to a higher number of stations on the bus and elimination of terminating resistors



M200D motor starter modules for PROFIBUS / PROFINET (without communication module)



M200D communication modules for PROFIBUS



M200D communication modules for PROFINET

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M200D motor starters for PROFIBUS / PROFINET

Mounting and installation

The M200D PROFINET / PROFINET motor starter is comprised of a communication module and a motor starter module. Only the motor starter module has to be replaced therefore when replacing devices. This saves time and money. The communication module remains as an active station on the bus and all other system components continue running. This prevents downtimes.

The integrated plug-in technology enables far lower wiring outlay: Connecting cables can be plugged directly onto the motor starter module. The PROFINET bus is connected cost-effectively using an M12 connection on the device. All versions have identical enclosure dimensions for easier system design and conversion.

Parameterization and configuration

All motor protection functions, limit values and reactions can be defined by parameterization.

The user has several user-friendly options for the parameterization. In addition to parameterization directly from STEP 7, which also permits automatic re-parameterization in case of device replacement, it is possible to use the user-friendly Motor Starter ES start-up software. By connecting a programming device directly to PROFIBUS / PROFINET and the Motor Starter ES start-up software, the devices can also be conveniently programmed from a central point through the bus. Also, parameters can be changed during operation from the user program using the data record mechanism so that the function of the motor starter is adapted to the process when required. With the help of a PC and the Motor Starter ES software it is also possible to perform the parameterization through the local point-to-point interface on-site.

Functions can be flexibly assigned to the digital inputs and outputs, adapting them to all possible conveyor applications. All digital inputs and outputs exist in the cyclic process image. All limit values for monitoring functions and their reactions are parameterizable and therefore adaptable to the application. Consistency with other products of the SIRIUS M200D motor starter range and with the frequency converter and ET 200pro peripherals system is assured.

Only with the M200D PROFINET motor starter

Thanks to the integrated proximity detection, the device name does not need to be issued manually when a device is replaced. The name is issued automatically by the neighboring devices which note the "names" of the devices in their proximity. No additional start-up measures are required therefore when replacing a device.

The new motor starter generation is characterized by high functionality, maximum flexibility and the highest level of automation. The PROFINET is recommended in particular for expansive and highly automated system components because the possibility of monitoring devices and systems with data records (statistical data, measured values and device diagnostics) guarantees an in-depth view of the plant from the control room and therefore increases plant availability.

Operation

The motor starters record the actual current flow. Evaluating the current of the parameterizable solid-state overload protection increases the availability of the drives, as do reliable signals concerning the overshooting or undershooting of setpoint values.

Diagnostics and maintenance

Diagnostics is provided through numerous mechanisms - and can be used as the customer prefers.

The motor starter is TIA-diagnostics compatible, which means that when a fault is identified, a diagnostics alarm is distributed, which invokes the diagnostics-OB with a SIMATIC control. The fault can be evaluated as usual in the user program.

The M200D motor starter offers a large variety of diagnostics data through data records. Its functionality is without equal on the market. There are extensive options for reading out data from the motor starter for monitoring devices, systems or processes.

The motor starter is equipped internally with 3 logbooks for device faults, motor starter trips and events, which are issued with a time stamp. These logbooks can be read out of the motor starter at any time in the form of data records and provide the plant operator with plenty of information about the state of his plant and process which he can use to carry out improvements.

With the slave pointer and statistical data functions it is possible to read out, for example, the maximum internal current values or the number of motor starter connection operations for plant monitoring purposes. This enables process deviations to be monitored or commissioning to be optimized. The user can draw conclusions about the actual load conditions of the devices in his process and on this basis can optimize his plant maintenance intervals.

The device diagnostics data record contains details of all the states of the motor starter, the device configuration and the communication as a basis for central device and plant monitoring.

With installation and maintenance functions (I&M), information (I&M) on modules employed is stored in the motor starter on the one hand, and on the other, data (I&M), which can be specified by the user during configuration, such as location designations. I&M functions serve for troubleshooting faults and localizing changes in hardware at a plant or checking the system configuration. Reordering a device is particularly easy as the result.

The integrated maintenance timer can be used to implement preventative maintenance and avoid plant downtimes through look-ahead servicing.

Another new feature is the integrated TRACE function with the Motor Starter ES software. It can be used to record measured values as a function of time following a trigger event. This enables process flows to be recorded and their timing optimized.

Local control of a drive is possible using the ordering option with integrated manual operation. This is yet another new development which distinguishes the M200D PROFIBUS / PROFINET motor starter from the rest of the market and adds innovative technology, maximum availability and transparency to the system.

M200D PROFINET motor starters with PROFIenergy

Increasing energy prices, far-reaching ecological problems worldwide and the threat of climate change make it necessary for you to be more conscious about your use of energy.

Active and effective energy management is possible with PROFIenergy.

PROFIenergy is a manufacturer-independent profile on PROFINET, which can be used by all manufacturers, has been standardized by PNO[1)] and supports the switching off of electrical devices during dead time and the measurement of energy flow.

[1)] In the PNO (PROFIBUS Nutzerorganisation e. V. - PROFIBUS User Organization), manufacturers and users have come together to agree on the standardized communication technologies PROFIBUS and PROFINET.

Switching off during dead times

PROFIenergy supports the targeted switching-off of loads during dead time.

These can be planned short breaks of a few minutes (such as lunch breaks), longer periods of dead time (such as nights) or unplanned dead time. Energy is always saved when no power is required.

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M200D motor starters for PROFIBUS / PROFINET

Measuring and visualizing the energy flow as a basis of energy management

The objective of energy management is to optimize the use of energy in a company – from the purchasing of energy through to the consumption of energy – economically and ecologically.

Analyses of energy consumption over time can be used to control energy flows, avoid energy peaks, improve ratings and thus save costs.

PROFIenergy enables consumption data to be read off from the devices in a unified form. This is recorded during operation and can be displayed on a control panel, for example, or on overlying energy management software packages. This ensures that the measured variables are in a uniform manufacturer-independent form and structure that is available to the user for further processing. These PROFIenergy functions thus provide the basis for active load and energy management during operation.

PROFIenergy in the M200D PROFINET motor starter

The M200D PROFINET motor starter supports "switching during dead time" and "current measurement values" of the motor current using PROFIenergy. These are called commands, because they trigger a reaction in the M200D motor starter.





	SIRIUS M200D PROFIBUS	SIRIUS M200D PROFINET
Device functions (firmware features)		
Slave on the bus		
Fieldbus	✓ PROFIBUS to M12	✓ PROFINET to M12
Adjustable number of stations	✓ 1 ... 125	✓ 1 ... 128 with CPU 315, CPU 317 1 ... 1256 with CPU 319
Parameterization		
DIP switches	✓ For address setting and terminating resistor	--
ES Motor Starter	✓ Through bus, optical interface	
PROFIBUS / PROFINET data records	✓	
From STEP 7 / HW config	✓	
Diagnostics		
Acyclic through data records	✓	
Support of diagnostics alarm	✓	
Process image		
Process image	✓ 2Byte PAE/ 2Byte PAA	
Data channels		
Local optical interface (manual on-site)	✓	
Through Motor Starter ES local interface	✓	
Using Motor Starter ES through bus	✓	
Data records (acyclic)		
Parameterization	✓ Using DS 131 (DS = data record)	
Diagnostics	✓ Device-specific DS 92	
Measured values	✓ Measured values DS 94	
Statistics	✓ Statistical data DS 95	
Commands	✓ Using DS 93	
Slave pointer	✓ Slave pointer DS 96	
Logbook	✓ Using Motor Starter ES and data records: Device faults DS 72, tripping operation DS 73, events DS 75	
Device identification	✓ Using DS 100	
I&M data	✓ Using DS 231 ... 234	✓ Using data records 0xAFF0 ... 0xAFF3
Inputs		
Number	✓ 4	
• Of these in the process image	✓ 4	
Input action	✓ Parameterizable: flexibly assignable action see manual	
Quick-Stop	✓ Parameterizable: latching, non-latching	

✓ Function is available
-- Function not available

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M200D motor starters for PROFIBUS / PROFINET





	SIRIUS M200D PROFIBUS	SIRIUS M200D PROFINET
Device functions (firmware features)		
Outputs		
Number	✓ 2	
• Of these in the process image	✓ 2	
Output action	✓ Parameterizable: flexibly assignable action see manual	
Brake output		
180 V DC/ 230/400 V AC / none	✓	
Motor protection		
Overload protection	✓ Electronic, wide range 1:10	
Short-circuit protection	✓	
Full motor protection	✓	
Temperature sensor	✓ Parameterizable using ES Motor Starter, data record: PTC or Thermoclick or deactivated	
Device functions		
Repair switch	✓	
Current limit monitoring bottom	✓ Parameterizable	
Current limit monitoring top	✓ Parameterizable	
Zero current detection	✓ Parameterizable: tripping, warning	
Blocking current	✓ Parameterizable	
Unbalance	✓ Parameterizable	
Load type	✓ Parameterizable: 1- and 3-phase	
Shutdown class	✓ Parameterizable using ES Motor Starter, data record: CLASS 5, 10, 15, 20	
Protection against voltage failure	✓ Parameterizable: Activated/deactivated	
Support for PROFIenergy profile		
Switching during dead times	--	✓
Measured current values of the motor current	--	✓
Soft starter control function		
Soft start function	✓	
Bypass function	✓ Only electronic version	

✓ Function is available
-- Function not available

Benefits

M200D PROFINET motor starters with PROFIenergy

Both standards and laws are making environmental protection and energy management increasingly important, as is the desire to cut energy costs in production facilities and thus ensure a sustainable competitive advantage.

It is thus an objective within industry to save energy and actively reduce CO_2 emissions. By the careful use of valuable resources, the manufacturer-independent PROFIenergy profile on PROFINET can make an active contribution to environmental protection.

Application

The M200D PROFIBUS / PROFINET motor starters are particularly suitable for fully TIA-integrated, highly automated conveyor applications which meet all needs with regard to the monitoring of devices and systems and preventative maintenance.

Adaptability of the motor starter functions and maximum flexibility of the device enable a broad range of application without any limits. The PROFINET-specific expansions are the best assurance of a future-proof investment.

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Selection and ordering data



M200D motor starter modules
PROFIBUS / PROFINET
(without communication module)



Motor starters
M200D PROFIBUS



Motor starters
M200D PROFINET

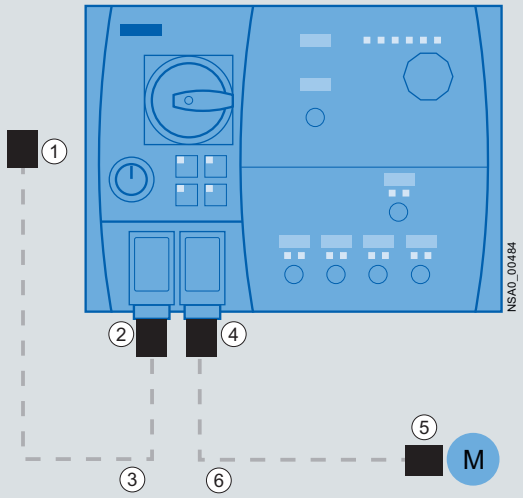
Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
M200D communication modules for PROFIBUS						
Communication modules for PROFIBUS M12 termination 7/8"	C	**3RK1 305-0AS01-0AA0**		1	1 unit	42D
M200D communication modules for PROFINET						
Communication modules for PROFINET M12 termination 7/8"	C	**3RK1 335-0AS01-0AA0**		1	1 unit	42D
M200D motor starter modules for PROFIBUS / PROFINET						
Electromechanical starters (with integrated contactor)						
	C	**3RK1 395-6□S41-□AD□**		1	1 unit	42D
Setting range for rated operational current / A			***Additional price***			
• 0.15 ... 2		**K**	None			
• 1.5 ... 12		**L**	x			
Direct-on-line starters/reversing starters						
• Direct-on-line starters		**0**	None			
• Reversing starters		**1**	x			
• Direct-on-line starters with manual local operation		**2**	x			
• Reversing starters with manual local operation		**3**	x			
Brake actuation						
• Without brake actuation		**0**	None			
• Brake actuation (230/400 V AC)		**3**	x			
• Brake actuation (180 V DC)		**5**	x			
Electronic starters (with thyristors)						
	C	**3RK1 395-6□S71-□AD□**		1	1 unit	42D
Setting range for rated operational current / A			***Additional price***			
• 0.15 ... 2		**K**	None			
• 1.5 ... 12		**L**	x			
Direct-on-line starters/reversing starters						
• Direct-on-line starters		**0**	None			
• Reversing starters		**1**	x			
• Direct-on-line starters with manual local operation		**2**	x			
• Reversing starters with manual local operation		**3**	x			
Brake actuation						
• Without brake actuation		**0**	None			
• Brake actuation (230/400 V AC)		**3**	x			
• Brake actuation (180 V DC)		**5**	x			

x = Additional price

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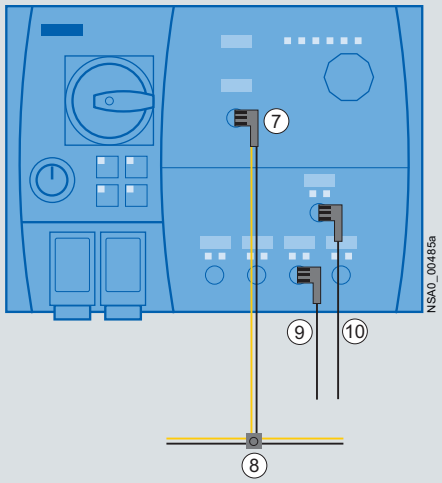
Accessories

Overview



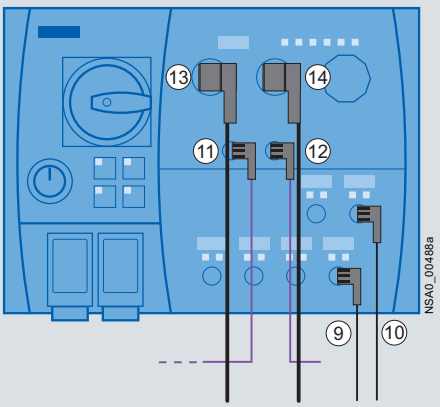
1 Power feeder plug
2 Power connection plug
3 Incoming energy supply cable
4 Motor connection plug
5 Motor plug
6 Motor cable

Power and motor connection on the M200D motor starter (in this example: M200D for AS-i)



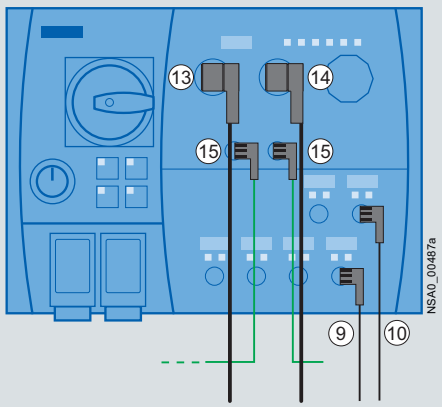
7 Connection for motor control with AS-i communication
8 AS-Interface M12 feeder
9 Connection for digital input (IO communication, 5-pole)
10 Connection for digital output (IO communication, 4 or 5-pole)

Communication connection using AS-Interface and digital inputs and outputs



9 Connection for digital input (IO communication, 5-pole)
10 Connection for digital output (IO communication, 4- or 5-pole)
11 PROFIBUS connection (input)
12 PROFIBUS connection (loop)
13 Connection for 24 V supply (infeed)
14 Connection for 24 V supply (loop)

Communication connection using PROFIBUS and digital inputs and outputs



9 Connection for digital input (IO communication, 5-pole)
10 Connection for digital output (IO communication, 4- or 5-pole)
13 Connection for 24 V supply (infeed)
14 Connection for 24 V supply (loop)
15 Connection with PROFINET (input on the left, loop on the right)

Communication connection using PROFINET and digital inputs and outputs

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Selection and ordering data

The accessories listed below represent a basic selection sorted by:

- Accessories for all M200D motor starters
- Accessories for M200D motor starters for AS-interface
- Accessories for M200D motor starters for PROFIBUS
- Accessories for M200D motor starters for PROFINET

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Mountable accessories						
M200D protective brackets	C	**3RK1 911-3BA00**		1	1 unit	42D
Incoming energy supply						
① **Power feeder plugs** Connector set for energy supply, e.g.for connecting to T terminal connectors, comprising a coupling enclosure, straight outgoing feeder (with bracket), pin insert for HAN Q4/2, incl. gland						
• 5 male contacts 2.5 mm^2	B	**3RK1 911-2BS60**		1	1 unit	42D
• 5 male contacts 4 mm^2	B	**3RK1 911-2BS20**		1	1 unit	42D
• 5 male contacts 6 mm^2	B	**3RK1 911-2BS40**		1	1 unit	42D
② **Power connection plugs** Connector set for energy supply for connection to M200D motor starters, comprising a cable-end connector hood, angular outgoing feeder, female insert for HAN Q4/2, incl. gland						
• 5 female contacts 2.5 mm^2 2 female contacts 0.5 mm^2	C	**3RK1 911-2BE50**		1	1 unit	42D
• 5 female contacts 4 mm^2 2 female contacts 0.5 mm^2	B	**3RK1 911-2BE10**		1	1 unit	42D
• 5 female contacts 6 mm^2 2 female contacts 0.5 mm^2	B	**3RK1 911-2BE30**		1	1 unit	42D
② + ③ **Power connection cables** Assembled at one end with "N" and jumper pin 11 and 12 for plug monitoring, with HAN Q4/2, angular; open at one end; 5 x 4 mm^2						
• Length 1.5 m	C	**3RK1 911-0DC13**		1	1 unit	42D
• Length 5.0 m	C	**3RK1 911-0DC33**		1	1 unit	42D
Motor cables						
④ **Motor connection plugs** Connector set for motor cable for connection to M200D motor starters, comprising a cable-end connector hood, angular outgoing feeder, pin insert for HAN Q8/0, incl. gland						
• 8 male contacts 1.5 mm^2	B	**3RK1 902-0CE00**		1	1 unit	42D
• 6 male contacts 2.5 mm^2	B	**3RK1 902-0CC00**		1	1 unit	42D
⑤ **Motor plugs** Connector set for motor cable for connection to motors, comprising a cable-end connector hood, straight outgoing feeder, female insert for HAN 10e, incl. star jumper, incl. gland						
• 7 female contacts 1.5 mm^2	C	**3RK1 911-2BM21**		1	1 set	42D
• 7 female contacts 2.5 mm^2	C	**3RK1 911-2BM22**		1	1 set	42D
④ + ⑥ **Motor cables, assembled at one end** For connection to M200D motor starter, HAN Q8/0, angled, length 5 m						
• Motor cables for motor with brake, 4 x 1.5 mm^2	C	**3RK1 911-0EB31**		1	1 unit	42D
• Motor cables for motor without brake with thermistor, 6 x 1.5 mm^2	C	**3RK1 911-0EF31**		1	1 unit	42D
• Motor cables for motor with brake actuation, braking voltage 400 V AC or 180 V DC, 6 x 1.5 mm^2	C	**3RK1 911-0ED31**		1	1 unit	42D
• Motor cables for motor with brake actuation, braking voltage 400 V AC or 180 V DC and thermistor, 8 x 1.5 mm^2	C	**3RK1 911-0EG31**		1	1 unit	42D
• Motor cables for motor with brake actuation, braking voltage 230 V AC, 6 x 1.5 mm^2	C	**3RK1 911-0EH31**		1	1 unit	42D
• Motor cables for motor with brake actuation, braking voltage 230 V AC and thermistor, 8 x 1.5 mm^2	C	**3RK1 911-0EE31**		1	1 unit	42D

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Accessories for all M200D motor starters

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Motor control with IO communication [1]							
 3RK1 902-4BA00-5AA0	**M12 plugs** Screw fixing, 5-pole screw terminals, max. 0.75 mm², A-coded, max. 4 A	C	**3RK1 902-4BA00-5AA0**		1	1 unit	42D
 3RK1 902-4DA00-5AA0	⑩ **M12 plugs, angled** Screw fixing, 5-pole screw terminals, max. 0.75 mm², A-coded, max. 4 A	C	**3RK1 902-4DA00-5AA0**		1	1 unit	42D
 3RK1 902-4H...-5AA0	⑨, ⑩ **Control cables, assembled at one end** M12 plugs, angled, screw fixing, 5-pole, 5 x 0.34 mm², A-coded, black PUR sheath, max. 4 A						
	• Cable length 1.5 m	C	**3RK1 902-4HB15-5AA0**		1	1 unit	42D
	• Cable length 5 m	C	**3RK1 902-4HB50-5AA0**		1	1 unit	42D
	• Cable length 10 m	C	**3RK1 902-4HC01-5AA0**		1	1 unit	42D
 3RK1 902-4PB15-3AA0	**Control cables, assembled at both ends** Straight M12 plug, straight M12 socket, screw fixing, 3-pole, 3 x 0.34 mm², A-coded, black PUR sheath, max. 4 A						
	• Cable length 1.5 m	C	**3RK1 902-4PB15-3AA0**		1	1 unit	42D

[1] More plug-in connections see Catalogs FS 10 and IK PI.

Further accessories							
 3RK1 922-3BA00	**Handheld devices** For M200D motor starter, (also for ET 200pro, ET 200S High Feature and ECOFAST), for on-site operation. A 3RK1 922-2BP00 serial interface cable must be ordered separately.	B	**3RK1 922-3BA00**		1	1 unit	42D
	RS 232 interface cables For serial data circuit	B	**3RK1 922-2BP00**		1	1 unit	42D
	Dismantling tools for HAN Q4/2	C	**3RK1 902-0AB00**		1	1 unit	42D
	Crimping tools for pins/sockets 4 mm² and 6 mm²	C	**3RK1 902-0CW00**		1	1 unit	42D
	Crimping tools for male contacts and sockets up to 4 mm² (HAN Q8/0)	B	**3RK1 902-0CT00**		1	1 unit	42D
	Dismantling tools for male contacts and sockets (HAN Q8/0)	B	**3RK1 902-0AJ00**		1	1 unit	42D
	USB interface cables, 2.5 m long	D	**6SL3555-0PA00-2AA0**		1	1 unit	346
	7/8" sealing caps	A	**6ES7194-3JA00-0AA0**		1	1 unit	250
 3RK1 901-1KA00	**AS-Interface sealing caps M12** For sealing unused input and output sockets – not for M12-AS-i connections (one set contains 10 sealing caps)	▶	**3RK1 901-1KA00**		100	10 units	42C

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Motor control with AS-i communication[1)]							
 3RK1 902-4GB50-4AA0	⑦ **Control cables, assembled at one end** Angular M12 socket, screw fixing, 4-pole, 4 x 0.34 mm², A-coded, black PUR sheath, max. 4 A						
	• Cable length 5 m	C	**3RK1 902-4GB50-4AA0**		1	1 unit	42D
 3RK1 902-4CA00-4AA0	⑦ **M12 sockets, angled** Screw fixing, 4-pole screw terminal, max. 0.75 mm², A-coded, max. 4 A	C	**3RK1 902-4CA00-4AA0**		1	1 unit	42D
 3RK1 901-1NR21	⑧ **AS-Interface M12 feeder**						
	For flat cable: AS-i / U_{aux}; For: M12 socket; Cable length: --; Cable end in feeder: Not available	A	**3RK1 901-1NR20**		1	1 unit	42C
	For flat cable: AS-i / U_{aux}; For: M12 cable box; Cable length: 1 m; Cable end in feeder: Not available	A	**3RK1 901-1NR21**		1	1 unit	42C
	For flat cable: AS-i / U_{aux}; For: M12 cable box; Cable length: 2 m; Cable end in feeder: Not available	A	**3RK1 901-1NR22**		1	1 unit	42C
 3RK1 901-1MN00	**Cable terminating pieces** For sealing of open cable ends (shaped AS-Interface cable) in IP67	►	**3RK1 901-1MN00**		1	10 units	42C
Further accessories							
 3RK19 04-2AB02	**AS-Interface addressing unit V 3.0** • For AS-Interface modules and sensors and actuators with integrated AS-Interface in accordance with AS-i Specification V3.0 • For setting the AS-i address of standard slaves, and slaves with extended addressing mode (A/B slaves) • With input/output test function and many other -commissioning functions • Battery operation with 4 batteries type AA (IEC LR6, NEDA 15) • Scope of supply: - Addressing unit with 4 batteries - Addressing cable, with M12 plug to addressing plug (hollow plug), length 1.5 m	►	**3RK1 904-2AB02**		1	1 unit	42C
 3RK1 902-4PB15-3AA0	**M12 addressing cables to M12** • Standard M12 cable for addressing slaves with M12 connection, e.g. K60R modules • When using the current version of the 3RK1 904-2AB01 addressing unit • 1.5 m	C	**3RK1 902-4PB15-3AA0**		1	1 unit	42D

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Accessories for M200D motor starters for PROFIBUS

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Motor control with PROFIBUS							
 3RK1 902-1DA00	**M12 plugs, angled** Screw fixing, 5-pole screw terminals, max. 0.75 mm², B-coded, no terminating resistor						
	• ⑪ 5 female contacts	C	**3RK1 902-1DA00**		1	1 unit	42D
 3RK1 902-1BA00	• ⑫ 5 male contacts	C	**3RK1 902-1BA00**		1	1 unit	42D
 3RK1 902-1G.	**Control cables, assembled at one end** M12, screw fixing, angled, B-coded, no terminating resistor						
	• ⑪ 5 female contacts, 3 m	C	**3RK1 902-1GB30**		1	1 unit	42D
	• ⑪ 5 female contacts, 5 m	C	**3RK1 902-1GB50**		1	1 unit	42D
	• ⑪ 5 female contacts, 10 m	C	**3RK1 902-1GC10**		1	1 unit	42D
 3RK1 902-1N.	⑪ ⑫ **Control cables, assembled at both ends** M12, screw fixing, angled, pin/socket 5-pole, B-coded, no terminating resistor						
	• 3.0 m	C	**3RK1 902-1NB30**		1	1 unit	42D
	• 5.0 m	C	**3RK1 902-1NB50**		1	1 unit	42D
	• 10.0 m	C	**3RK1 902-1NC10**		1	1 unit	42D
Further accessories							
	PROFIBUS trailing cables Max. acceleration 4 m/s², at least 3 000 000 bending cycles, bending radius at least 60 mm, 2-core, shielded, sold by the meter, minimum order quantity 20 m, maximum order quantity 1 000 m	A	**6XV1 830-3EH10**		1	1 m	5K2
	PROFIBUS FC Food bus cables With PE outer sheath for operation in the food and beverage industry, 2-core, shielded, sold by the meter, minimum order quantity 20 m, maximum order quantity 1 000 m	A	**6XV1 830-0GH10**		1	1 m	5K2
	PROFIBUS FC Robust bus cables With PUR outer sheath for operation in environments exposed to chemicals and mechanical loads, 2-core, shielded, sold by the meter, minimum order quantity 20 m, maximum order quantity 1 000 m	A	**6XV1 830-0JH10**		1	1 m	5K2
	Power cables 5-core, 5 x 1.5 mm², trailing, sold by the meter, minimum order quantity 20 m, maximum order quantity 1 000 m	A	**6XV1 830-8AH10**		1	1 m	5K2
Connection for 24-V power supply of the M200D PROFIBUS / PROFINET			See page 9/49				

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Motor control with PROFINET							
	⑮ **M12 plugs, angled** Screw fixing, 4-pole screw terminals, max. 0.75 mm², angled, D-coded						
	• 4 male contacts	C	**3RK1 902-2DA00**		1	1 unit	42D
 3RK1 902-2H.	⑮ **Control cables, assembled at one end** M12 for screw fixing, angled, 4-pole, D-coded,						
	• 4 male contacts, 3 m	C	**3RK1 902-2HB30**		1	1 unit	42D
	• 4 male contacts, 5 m	C	**3RK1 902-2HB50**		1	1 unit	42D
	• 4 male contacts, 10 m	C	**3RK1 902-2HC10**		1	1 unit	42D
 3RK1 902-2N.	⑮ **Control cables, assembled at both ends** M12 for screw fixing, angled at both ends, 4-pole, D-coded, male contacts at both ends						
	• 3 m	C	**3RK1 902-2NB30**		1	1 unit	42D
	• 5 m	C	**3RK1 902-2NB50**		1	1 unit	42D
	• 10 m	C	**3RK1 902-2NC10**		1	1 unit	42D
Further accessories							
	PROFINET IE FC TP Standard Cable GP 2 x 2 sold by the meter	A	**6XV1 840-2AH10**		1	1 m	5K1
	PROFINET IE FC TP Trailing Cable 2 x 2 sold by the meter	A	**6XV1 840-3AH10**		1	1 m	5K1
	PROFINET IE FC TP Trailing Cable GP 2 x 2 sold by the meter	A	**6XV1 870-2D**		1	1 m	5K2
	PROFINET IE FC TP Torsion Cable 2 x 2 sold by the meter	A	**6XV1 870-2F**		1	1 m	5K2
	PROFINET IE FC TP Marine Cable, 4-core sold by the meter	A	**6XV1 840-4AH10**		1	1 m	5K1
	Power cables 5-core, 5 x 1.5 mm², trailing, sold by the meter, minimum order quantity 20 m, maximum order quantity 1 000 m	A	**6XV1 830-8AH10**		1	1 m	5K2

More connection technology products
can be found at "Siemens Solution Partners Automation"
www.siemens.com/automation/partnerfinder
under "Distributed Field Installation System" technology.

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Connection for 24-V power supply of the M200D PROFIBUS / PROFINET							
	Plugs On M200D, 7/8" for screw fixing, angled, 1.5 mm² screw connection						
 3RK1 902-3DA00	• ⑬ 5 female contacts	C	**3RK1 902-3DA00**		1	1 unit	42D
	• ⑭ 5 male contacts	C	**3RK1 902-3BA00**		1	1 unit	42D
 3RK1 902-3BA00							
	⑬ **Supply lines, assembled at one end** 7/8" for screw fixing, angled, 1.5 mm²						
	• 5 female contacts, 3 m	C	**3RK1 902-3GB30**		1	1 unit	42D
	• 5 female contacts, 5 m	C	**3RK1 902-3GB50**		1	1 unit	42D
 3RK1 902-3G.	• 5 female contacts, 10 m	C	**3RK1 902-3GC10**		1	1 unit	42D
	⑬ ⑭ **Supply lines, assembled at both ends** 7/8" for screw fixing, angled at both ends, 5-pole pin/socket, 1.5 mm²						
 3RK1 902-3N.	• 3 m	C	**3RK1 902-3NB30**		1	1 unit	42D
	• 5 m	C	**3RK1 902-3NB50**		1	1 unit	42D
	• 10 m	C	**3RK1 902-3NC10**		1	1 unit	42D

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General data

Overview



ECOFAST soft starter

Distributed motor starters are used for switching and protecting loads locally. Versions with graded functional scope and with different installation possibilities ensure that both the functional requirements of the process and the constructional boundary conditions of the machine or installation are taken into account.

The following are available

- Single devices for geographically distributed motors and
- Isolated solutions (ET 200pro) for operating mechanisms installed close together.

ECOFAST motor starters are available as reversing starters (mechanical switching) and reversing soft starters (electronic switching), in each case for PROFIBUS DP and AS-Interface.

The ECOFAST motor starters can be installed close to the motor or mounted on the motor.

Brake contacts are available as an option for the starters. Two or four integrated digital inputs enable sensors to be scanned locally.

All starters are equipped throughout with standardized interfaces for data and energy according to the ECOFAST specification:

- HanBrid for PROFIBUS DP and insulation piercing method for AS-Interface
- Han Q4/2 for the power supply
- Han 10e for motor connection

The starters can be connected using T pieces for data and T terminal connectors for power to prevent interruption.

More information on ECOFAST, the field and power bus technologies for decentral installation in IP65, see page 9/66, "Energy Communication Field Installation System".

The 3RK1 922-3BA00 handheld device is available for local operation.

Detailed technical specifications of the ECOFAST motor starters can be found in the manual "ECOFAST Motor Starters".

Motor Starter ES software

The Motor Starter ES software serves for the parameterization, monitoring, diagnostics and testing of motor starters.
It can be used in graded power versions for ECOFAST motor starters and for the PROFIBUS DP and AS-Interface versions (see Chapter 14 "Parametrization, Configuration and Visualization with SIRIUS").

Type		3RK1 3 ECOFAST motor starters
General data		
Mounting dimensions (W x H x D)		
• Reversing starters	mm	130 x 250 x 91
• Reversing soft starters	mm	130 x 250 x 107
Location		On the plant
• Wall mounting		Near the motor
• Mounting directly on the motor		Motor plugged on
Mounting position		Any
Degree of protection		IP65
Protection class		
According to IEC 536 (VDE 0106-1)		1, supply with protective extra-low voltage
Cooling		Convection, no addition cooling necessary
Weight		
• Reversing starters	kg	1.4
• Reversing soft starters	kg	1.9
Permissible ambient temperature		
• Operation	°C	-20 ... +40; condensation not permitted!
- Reversing starters and reversing soft starters up to max. +55 °C		Over 40 °C: Reduction of I_e by 1.5 %/K
• Storage/transport	°C	-40 ... +80
Relative air humidity	%	5 ... 95, condensation not permitted!
Installation altitude, max.		2 000 m; above 1 000 m: Reduction of I_e by 1 %/100 m
Vibratory load		f = 5 ... 26 Hz; d = 0.75 mm: 10 cycles f = 26 ... 150 Hz; a = 2 *g*
Shock		a = 150 m/s^2 (15 *g*) with 11 ms, for every 3 shocks in all axes (=18)
ESD		
• Air discharge, according to IEC 1000-4-2, degree of severity 3	kV	8
• Contact discharge	kV	6
Electromagnetic fields	V/m	10
IEC 1000-4-3, degree of severity 3		
BURST		
• Control supply voltage, IEC 1000-4-4, degree of severity 3	kV/kHz	2/5
• Data lines	kV/kHz	1/5
• Process lines	kV/kHz	2/5
Emitted interference, according to EN 55011		Limit class A

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		Unswitched voltage 24 V DC (AS-i)	Switched voltage 24 V DC (AUX PWR)
Auxiliary power			
External auxiliary power			
• PROFIBUS DP	V DC	20.4 ... 28.8 standard power supply unit according to DIN 19240	
• AS-Interface	V DC	23.0 ... 31.5 (AS-i)	20.4 ... 28.8 standard power supply unit according to DIN 19240 (PELV must be grounded)
Power consumption			
• Typical, inputs not connected	mA	80 (PROFIBUS DP)	--
	mA	60 (AS-Interface)	--
• Typical, switching element (contactor) activated	mA	--	75
• Typical, switching element (contactor) deactivated	mA	--	15
Pole reversal protection		Yes	
Short-circuit protection/overload protection		Yes Multifuse 0.5 A, self-restoring fuse Reset by Power-OFF	
Undervoltage detection (USP)	V DC	< 17	
Voltage failure bridging	ms	≤ 20 (device is not affected)	
Insulation voltage	V DC	500 between the auxiliary voltages and PE	

Type		**3RK1 3 ECOFAST motor starters**
Digital inputs		
Input voltage	V DC	20.4 ... 28.8
Power consumption		
• Typical, per input	mA	7
Sensor supply	mA	max. 200
Brake output 400 V AC		
Voltage range	V AC	200 ... 460
• Tolerance	%	±10
Current carrying capacity		
• AC-15	mA	500
Short-circuit protection		
Melting fuse, I_{Cu} = 1 kA	A	aM 1/500 V AC
Primary power		
Rated operational voltage	V AC	400
Tripping times according to IEC 60947-4-1 at 7.2 times I_e		
• CLASS 10	s	8, according to standard 4 ... 10
• CLASS 20	s	16
• CLASS 30	s	24
Rated insulation voltage according to IEC 60947-1	V AC	500
Rated impulse voltage according to IEC 60947-1	kV	4
Protective separation between auxiliary and primary power	V AC	300
Frequency	Hz	50 ... 60
• Tolerance	%	±10
ON period	%	100
Utilization categories		1 (device destroyed after short circuit)

Type		**3RK1 3 ECOFAST motor starters**		
		Mechanical switching Reversing starters	**Solid-state switching Reversing soft starters**	
General data				
Operational voltage	V AC	200 ... 460; 3-phase	200 ... 460; 3-phase	
• Tolerance	%	±10	±10	
Operational current			**Performance class**	
			3	**6**
• CLASS 10	A	0.3 ... 9	0.3 ... 3	2.4 ... 12
• CLASS 20	A	0.3 ... 7.3	0.3 ... 3	2.4 ... 7.3
• CLASS 30	A	0.3 ... 6.7	0.3 ... 3	2.4 ... 6.7
Switching capacity				
• AC-3	A	9.0	--	
• AC-53	A	--	3 (0.3 ... 3)	12 (2.4 ... 12)[1]
• AC-4	A	6.5	3 (0.3 ... 3)	12 (2.4 ... 12)[1]
Switching load		Three-phase with contactor	Two-phase with thyristors	
Max. heat sink temperature	°C	--	+80[2]	
Short-circuit protection		I_{Cu} = 120 kA	I_{Cu} = 120 kA	
Melting fuse	A	aM 16/500 V AC	aM 16/500 V AC	
Endurance of the switching element		See manual		

1) Max. 9 A when soft starter control function is deactivated.

2) The heat sink temperature is monitored; switch-off occurs if the maximum value is exceeded.

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Selection and ordering data

Switching function	Motor protection	Setting range/ performance range	Brake output	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Motor starters for PROFIBUS DP									
Mechanical (for reversing starters)	Thermistor	0.3 ... 9 A / 4 kW[1]	No	B	**3RK1 303-2AS54-1AA0**		1	1 unit	42D
			400 V AC	B	**3RK1 303-2AS54-1AA3**		1	1 unit	42D
	Thermal motor model	0.3 ... 3 A/1.1 kW	No	B	**3RK1 303-5BS44-3AA0**		1	1 unit	42D
			400 V AC	B	**3RK1 303-5BS44-3AA3**		1	1 unit	42D
		2.4 ... 9 A/4 kW	No	B	**3RK1 303-5CS44-3AA0**		1	1 unit	42D
			400 V AC	B	**3RK1 303-5CS44-3AA3**		1	1 unit	42D
Electronic soft (for reversing soft starters)	Full motor protection	0.3 ... 3 A/1.1 kW	No	B	**3RK1 303-6BS74-3AA0**		1	1 unit	42D
			400 V AC	B	**3RK1 303-6BS74-3AA3**		1	1 unit	42D
		2.4 ... 12 A/5.5 kW	No	B	**3RK1 303-6DS74-3AA0**		1	1 unit	42D
			400 V AC	B	**3RK1 303-6DS74-3AA3**		1	1 unit	42D
Motor starters for AS-Interface									
Mechanical (for reversing starters)	Thermistor	0.3 ... 9 A / 4 kW[1]	No	B	**3RK1 323-2AS54-1AA0**		1	1 unit	42D
			400 V AC	B	**3RK1 323-2AS54-1AA3**		1	1 unit	42D
	Thermal motor model	0.3 ... 3 A/1.1 kW	No	B	**3RK1 323-5BS44-3AA0**		1	1 unit	42D
			400 V AC	B	**3RK1 323-5BS44-3AA3**		1	1 unit	42D
		2.4 ... 9 A/4 kW	No	B	**3RK1 323-5CS44-3AA0**		1	1 unit	42D
			400 V AC	B	**3RK1 323-5CS44-3AA3**		1	1 unit	42D
Electronic soft (for reversing soft starters)	Full motor protection	0.3 ... 3 A/1.1 kW	No	B	**3RK1 323-6BS74-3AA0**		1	1 unit	42D
			400 V AC	B	**3RK1 323-6BS74-3AA3**		1	1 unit	42D
		2.4 ... 12 A/5.5 kW	No	B	**3RK1 323-6DS74-3AA0**		1	1 unit	42D
			400 V AC	B	**3RK1 323-6DS74-3AA3**		1	1 unit	42D

[1] The range 0.3 ... 9 A is fixed (wide range) and cannot be set or modified manually.

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Selection and ordering data

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories							
 3RK1 922-3BA00	**Handheld devices** for ECOFAST motor starters, (also for ET 200pro and ET 200S High Feature for on-site operation.	B	**3RK1 922-3BA00**		1	1 unit	42D
	Serial interface cables for the connection of a programming device/PC with ES motor starter to an ECOFAST starter for AS-Interface for the transmission of configuration data	B	**3RK1 911-0BN20**		1	1 unit	42D
	Test plug sets for testing the motor starter without communication connection (manual operation)	B	**3RK1 911-2AM00**		1	1 unit	42D
	Mounting plates for ECOFAST Retaining bracket on the motor for fixing the mounted motor starter	B	**3RK1 911-3AA00**		1	1 unit	42D

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



3RK43 53-3.R58-0BA0



3RK43 40-3.R51-.BA0



3RK43 20-3.R51-.BA0



3RK43 20-3.Q54-.BA.



3RK43 20-5.Q64-.BA.

Portfolio of the SIRIUS 3RK43 MCU motor starter family

The SIRIUS MCU motor starter family (MCU = Motor Control Unit) rounds off the bottom end of the SIRIUS motor starter range.

This series of motor starters in a high degree of protection is a system solution for the cabinet-free controlling of AC loads in the field.

The MCU product range extends from I/O-controlled motor starters – addressing a central sub-distribution board via I/O stations – in a plastic enclosure for simple applications to motor starters with AS-i communication in a rugged metal enclosure for demanding tasks.

The MCU motor starters are completely pre-wired inside, have a high degree of protection and are designed for switching and protecting any AC loads. They are mostly used on standard induction motors in direct or reversing duty up to 5.5 kW at 400/500 V AC (electromechanical switching) and 400/460 V AC (electronic switching).

The motor and short-circuit protection integrated in the MCUs consists either of an electromechanical controlgear assembly or solid-state overload protection and a motor starter protector unit for short-circuit protection.

MCUs with metal enclosure are designed for the switching of induction motors. Integrated control of the electrically operated motor brake with a braking voltage of 230 V AC or 400 V AC is a standard feature. The braking voltage is routed to the motor over the motor cable.

SIRIUS MCU motor starters have the following main features:

- Direct-on-line or reversing starters
- Up to 5.5 kW
- Plastic or metal enclosure
- Electromechanical or electronic switching
- With brake control 230 V AC or 400 V AC
- Integrated lockable repair switch
- Short-circuit protection with SIRIUS 3RV motor starter protector
- Overload protection with thermal release (bimetal) or solid-state overload relay with wide range setting
- Power and load connection by means of an M screw
- Main power loop possible (daisy chain; max. 2 x 6 mm^2)
- Robust and widely used M12 connection method for the AS-i bus connection and the digital inputs and outputs (on the MCU with metal enclosure)
- The LEDs (for AS-i bus connection) can provide comprehensive diagnostics of the device on the spot.

Locally controlled MCU motor starters in a plastic enclosure

These motor starters are designed for the autonomous operation of any AC loads – preferably induction motors.

Only the infeed needs to be connected (no bus connection or any other connection to a controller).

The motor is protected against short circuits (50 kA) and overloads (thermal overload release) by the integrated motor starter protector. No further measures are required for this function either (such as back-up fuses).

These motor starters have a key-operated switch "MAN-0-AUTO" for selecting Manual, 0 or Automatic mode and preventing unauthorized changes of operating mode.

In automatic mode the motor can be controlled automatically by connected sensors (level, temperature or pressure switches). The reversing starter is designed in addition with connections for 2 sensors so a reversal of direction is possible in accordance with these sensors. On the reversing starter the controls with interlock are pre-wired.

In manual mode a selector button is used by the operator for switching on, switching off and changing the direction of rotation.

I/O-controlled MCU motor starters in a plastic enclosure

These motor starters offer an economical solution for controlling induction motors distributed in the field.

The internal controls (contactors) are operated by external control with 24 V DC.

On the reversing starter, the controls with interlock are pre-wired.

The status of the circuit breaker can be queried through its floating changeover contact. The status can adopt the following positions: activated – the contact is closed – and deactivated or tripped – the contact is open (I/O control).

MCU motor starters with AS-i bus connection in a plastic enclosure

This motor starter version offers an economical solution for controlling and monitoring conveyor belts, pumps, fans or compressors.

On this MCU the control commands and the status queries are sent over the AS-i bus. The yellow cable (bus) and the black AS-i cable for 24 V DC AUX are connected through a M12 plug.

The transparent enclosure top permits monitoring of the status LEDs. These MCUs come completely pre-wired inside.

MCU motor starters with AS-i bus connection in a metal enclosure for electromechanical or electronic switching

These MCUs with their rugged metal enclosure in degree of protection IP54 are ideal in particular for controlling and monitoring induction motors in harsh ambient conditions such as are often found in conveyor systems.

A special feature of this version is the manual local operation of the motor starter.

The key-operated switch "MAN-0-AUTO" for selecting Manual, 0 or Automatic mode prevents unauthorized changes of operating mode. In automatic mode the MCU is controlled through the AS-i bus.

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General data

In manual mode a selector button is used for switching on, switching off and changing the direction of rotation.

The status/diagnostics LEDs fitted to the cover indicate the current operating state of the motor starter.

Unlike the electromechanical starter, the solid-state motor starter has wear-free solid-state switching devices which guarantee a high switching frequency.

Another highlight of the electronic switching version is the solid-state overload relay for motor protection, which has a wide setting range for the motor current.


3RK43 53-3.R58-0BA0


3RK43 40-3.R51-.BA0


3RK43 20-3.R51-.BA0


3RK43 20-3.Q54-.BA.


3RK43 20-5.Q64-.BA.

Type	SIRIUS MCU motor starters				
	Locally controlled	**I/O-controlled**	**For AS-Interface**	**For AS-Interface**	**For AS-Interface**
	Plastic enclosures	**Plastic enclosures**	**Plastic enclosures**	**Metal enclosures**	**Metal enclosures**
	Electromechanical switching	**Electromechanical switching**	**Electromechanical switching**	**Electromechanical switching**	**Electronic switching**
Device functions (software features)					
Slave on the bus					
Fieldbus	--		✓ AS-i		
Bus connection	--		✓ M12		
Slave type	--		✓ AS-i Spec 2.0	✓ A/B acc. to Spec 2.1	
AS-i Slave Profile IO.ID.ID2	--		✓ 3.0.F	✓ 7.A.E	
Number of assigned AS-i addresses on the bus	--		✓ 1		
Number of stations	--		✓ Max. 31 devices	✓ Max. 62 devices	
Diagnostics					
LEDs	--		✓		
Process image					
Process image	--		✓ 2I/2O	✓ 4E/3A	
Data channels					
Manual local operation	✓	--		✓	
Inputs					
Number	✓ 1 on the direct-on-line starter 2 on the reversing starter	--	✓ 1	✓ 2	
• Of these in the process image	--		✓ DI1	✓ DI2 / DI3	
Connection	✓ Screw terminal, internal	--	✓ Screw terminal, internal	✓ M12 - A-coded	
Input signal	✓ NO contacts	--	✓ Switching contact or 2-wire Bero	✓ Switching contact or 2/3-wire Bero	
Input level	✓ 230 V AC	--	✓ AS-i +		
Outputs					
Number	--		✓ 1 on the direct-on-line starter 0 on the reversing starter	✓ 1	
• Of these in the process image	--		✓ DO1	✓ DO2	
Connection	--		✓ Screw terminal, internal	✓ M12 - A-coded	
Output level	--		✓ Relay contact, floating	✓ AUX-PWR+ (24 V DC)	
Motor protection					
Overload protection	✓ Thermal overload release				✓ Electronic overload releases Wide range
Short-circuit protection	✓				
Auto-RESET	--				✓
Temperature sensor	--			✓ TC (Thermoclick)	
Device functions					
Response when repair switch is tripped	Floating contact		✓ Signal through AS-i		
Plug monitoring	--			Possible (with plug option)	

✓ Function is available -- Function not available

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Benefits

- High degree of protection, namely IP55 on MCU motor starters in a plastic enclosure and IP54 on motor starters in a metal enclosure, enables distributed configurations in the field and saves space in the control cabinet
- Comprehensive motor protection thanks to integrated overload and short-circuit protection with SIRIUS 3RV motor starter protectors or integrated solid-state overload relays (solid-state starters)
- Wide range version (motor current) through solid-state overload relay
- Controlled stopping through brake control for motor brake
- Cable connection by means of economical M screw (optionally with plug-in connection)
- Simple mounting for AS-i and external auxiliary voltage (24 V DC) over an M12 connection
- Status/diagnostics displays with built-in LEDs
- Manual operation: An integrated key-operated switch "MAN-0-AUTO" and a selector button for switching on, switching off and changing the direction of rotation for control purposes during commissioning or maintenance
- Easy and user-friendly control and monitoring through AS-Interface bus communication
- Robust and widely used M12 connection method for digital inputs and outputs to connect I/O stations and the AS-i bus connection increase flexibility and prevent errors in the system configuration.

Application

Main areas of use

Controlled by I/Os and AS-i bus:

- Airports
- Automotive industry
- Intralogistics

Locally controlled

- Industrial, commercial and agricultural applications (for autonomously controlled motors such as pumps, fans, etc.)

Technical specifications

Type		SIRIUS MCU motor starters				
		Locally controlled Plastic enclosures Electromechanical switching	I/O-controlled Plastic enclosures Electromechanical switching	For AS-Interface Plastic enclosures Electromechanical switching	For AS-Interface Metal enclosures Electromechanical switching	For AS-Interface Metal enclosures Electronic switching
Mechanics and environment						
Mounting dimensions (W x H x D)	mm	182 x 220 x 145			245 x 215 x 205	
Permissible ambient temperature • During operation	°C	-25 ... +35			-25 ... +50 max. +65 with reduction	
Weight	g	1 300	1 200	1 500 / 1 800	5 800	6 400
Permissible mounting positions	°	On the wall 360, inclination ±30			On the wall 360, inclination ±20	
Degree of protection according to IEC 529		IP54	IP55		IP54	
Cooling		Convection				
Electrical specifications						
Control circuits						
Operational voltage U_{As-i}	V DC	--		26.5 ... 31.6		
Control supply voltage U_{aux}	V DC	--		20.4 ... 26.4	20.4 ... 28.8	
Control supply voltage	V	230 AC, from inside	20.4 ... 26.4 DC	--		
Power consumption from AS-i (incl. 200 mA sensor supply)	mA	--		≤ 250	≤ 270	
Main circuit						
Rating for induction motor at 400 V, 50 Hz, AC-3		See "Selection and ordering data"				
Incoming energy supply		M screw				
Motor feeder		M screw				
Rated operational current for starters I_e at 400 V AC		See "Selection and ordering data"				
Trip class		CLASS 10				
Type of coordination acc. to IEC 60947-4-1		1				
Short-circuit breaking capacity I_{cu} at 400 V AC	kA	50				
Brake version						
Operational voltage	V AC	--			400 or 230	
Uninterrupted current		--			Max. 5 % of I_e	
Short-circuit protection		--			Integrated	

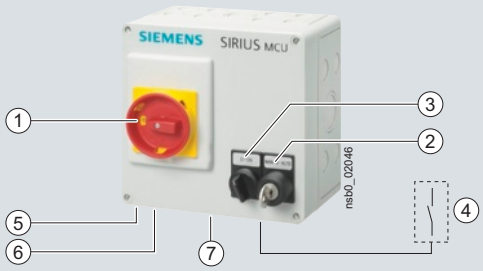
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MCU motor starters, locally controlled
Plastic enclosures, electromechanical switching

Overview

MCU, locally controlled, plastic enclosure

- For manual and automatic mode
- Direct-on-line or reversing starters up to 12 A at 400 V AC (50/60 Hz)
- Main control switch (red/yellow)
- Lockable with padlocks (max. 3 units)
- Integrated overload and short-circuit protection with SIRIUS 3RV motor starter protectors Class 10 with short-circuit breaking capacity I_{cu} = 50 kA at 400 V AC
- Overload protection with thermal release (bimetal)
- Plastic enclosures
- Degree of protection IP54
- Cable connections by means of M screws
- Main power loop possible (daisy chain; max. 2 x 6 mm^2)
- Key-operated switch for manual/automatic mode (MAN-0-AUTO)
- In manual mode the user can operate the motor with the knob-operated control switch using the ON function (0-ON) on the direct-on-line starter or the Forwards/Reverse function (Rev-0-For) on the reversing starter.
- Automatic mode: Through connection of one sensor on the direct-on-line starter or 2 sensors on the reversing starter for e.g. temperature, pressure, level etc., the motor can be controlled in automatic mode by the connected sensors.
- 4 x M20 glands enclosed

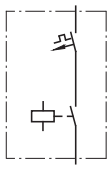
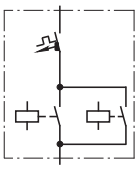


1 Main switch
2 Key-operated switch manual/automatic mode
3 Knob-operated switch manual mode
4 External sensor
5 Main energy supply by means of M screws (max. 6 mm^2)
6 Power loop-through connection possible (daisy chain)
7 Load outgoing feeder by means of M screws

(Feeder positions only examples - feeders can be laid in all directions)

MCU, locally controlled, plastic enclosure, for manual and automatic mode

Selection and ordering data

	Rated current I_e	Suitable for three-phase induction motors[1] with P	Setting range Thermal overload release	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	A	kW	A						
Direct-on-line starters									
 Direct-on-line start	1	0.25	0.7 ... 1	C	**3RK43 53-3CR58-0BA0**		1	1 unit	42E
	1.25	0.37	0.9 ... 1.25	C	**3RK43 53-3DR58-0BA0**		1	1 unit	42E
	1.6	0.55	1.1 ... 1.6	C	**3RK43 53-3ER58-0BA0**		1	1 unit	42E
	2	0.75	1.4 ... 2	C	**3RK43 53-3FR58-0BA0**		1	1 unit	42E
	3.2	1.10	2.2 ... 3.2	C	**3RK43 53-3HR58-0BA0**		1	1 unit	42E
	4	1.50	2.8 ... 4	C	**3RK43 53-3JR58-0BA0**		1	1 unit	42E
	6.3	2.20	4.5 ... 6.3	C	**3RK43 53-3LR58-0BA0**		1	1 unit	42E
	8	3.00	5.5 ... 8	C	**3RK43 53-3MR58-0BA0**		1	1 unit	42E
	10	4.00	7 ... 10	C	**3RK43 53-3NR58-0BA0**		1	1 unit	42E
	12.5	5.50	9 ... 12.5	C	**3RK43 53-3PR58-0BA0**		1	1 unit	42E
Reversing starters									
 Reversing duty	1	0.25	0.7 ... 1	C	**3RK43 53-3CR58-1BA0**		1	1 unit	42E
	1.25	0.37	0.9 ... 1.25	C	**3RK43 53-3DR58-1BA0**		1	1 unit	42E
	1.6	0.55	1.1 ... 1.6	C	**3RK43 53-3ER58-1BA0**		1	1 unit	42E
	2	0.75	1.4 ... 2	C	**3RK43 53-3FR58-1BA0**		1	1 unit	42E
	3.2	1.10	2.2 ... 3.2	C	**3RK43 53-3HR58-1BA0**		1	1 unit	42E
	4	1.50	2.8 ... 4	C	**3RK43 53-3JR58-1BA0**		1	1 unit	42E
	6.3	2.20	4.5 ... 6.3	C	**3RK43 53-3LR58-1BA0**		1	1 unit	42E
	8	3.00	5.5 ... 8	C	**3RK43 53-3MR58-1BA0**		1	1 unit	42E
	10	4.00	7 ... 10	C	**3RK43 53-3NR58-1BA0**		1	1 unit	42E
	12.5	5.50	9 ... 12.5	C	**3RK43 53-3PR58-1BA0**		1	1 unit	42E

[1] Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

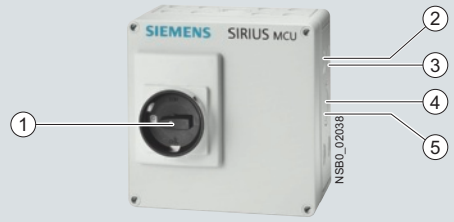
* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

MCU, I/O-controlled, plastic enclosure

- Direct-on-line or reversing starters up to 12 A at 400 V AC (50/60 Hz)
- Repair switches (black/gray) lockable with padlocks (max. 3 units)
- Integrated overload and short-circuit protection with SIRIUS 3RV motor starter protectors Class 10 with short-circuit breaking capacity I_{cu} = 50 kA at 400 V AC
- Overload protection with thermal release (bimetal)
- Plastic enclosures
- Degree of protection IP55
- Cable connections by means of M screws
- Main power loop possible (daisy chain; max. 2 x 6 mm²)
- Control circuit: I/O-wiring; control inputs 24 V DC
- 4 x M20 glands enclosed

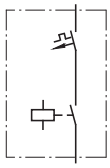
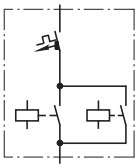


1 Main control switch / repair switch
2 Control inputs (24 V DC)
3 Load outgoing feeder through M screw
4 Main incoming power supply through M screw (max. 6 mm²)
5 Main power loop possible (daisy chain)

(position of outgoing units as example – outgoing units are possible on all sides)

MCU, I/O-controlled, plastic enclosure

Selection and ordering data

	Rated current I_e	Suitable for three-phase induction motors[1] with P	Setting range Thermal overload release	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	A	kW	A						
Direct-on-line starters									
 Direct-on-line start	0.63	0.18	0.45 ... 0.63	C	**3RK43 40-3AR51-0BA0**		1	1 unit	42E
	0.8	0.18	0.55 ... 0.8	C	**3RK43 40-3BR51-0BA0**		1	1 unit	42E
	1	0.25	0.7 ... 1	C	**3RK43 40-3CR51-0BA0**		1	1 unit	42E
	1.25	0.37	0.9 ... 1.25	C	**3RK43 40-3DR51-0BA0**		1	1 unit	42E
	1.6	0.55	1.1 ... 1.6	C	**3RK43 40-3ER51-0BA0**		1	1 unit	42E
	2	0.75	1.4 ... 2	C	**3RK43 40-3FR51-0BA0**		1	1 unit	42E
	2.5	0.75	1.8 ... 2.5	C	**3RK43 40-3GR51-0BA0**		1	1 unit	42E
	3.2	1.10	2.2 ... 3.2	C	**3RK43 40-3HR51-0BA0**		1	1 unit	42E
	4	1.50	2.8 ... 4	C	**3RK43 40-3JR51-0BA0**		1	1 unit	42E
	5	1.50	3.5 ... 5	C	**3RK43 40-3KR51-0BA0**		1	1 unit	42E
	6.3	2.20	4.5 ... 6.3	C	**3RK43 40-3LR51-0BA0**		1	1 unit	42E
	8	3.00	5.5 ... 8	C	**3RK43 40-3MR51-0BA0**		1	1 unit	42E
	10	4.00	7 ... 10	C	**3RK43 40-3NR51-0BA0**		1	1 unit	42E
	12.5	5.50	9 ... 12.5	C	**3RK43 40-3PR51-0BA0**		1	1 unit	42E
Reversing starters									
 Reversing duty	0.63	0.18	0.45 ... 0.63	C	**3RK43 40-3AR51-1BA0**		1	1 unit	42E
	0.8	0.18	0.55 ... 0.8	C	**3RK43 40-3BR51-1BA0**		1	1 unit	42E
	1	0.25	0.7 ... 1	C	**3RK43 40-3CR51-1BA0**		1	1 unit	42E
	1.25	0.37	0.9 ... 1.25	C	**3RK43 40-3DR51-1BA0**		1	1 unit	42E
	1.6	0.55	1.1 ... 1.6	C	**3RK43 40-3ER51-1BA0**		1	1 unit	42E
	2	0.75	1.4 ... 2	C	**3RK43 40-3FR51-1BA0**		1	1 unit	42E
	2.5	0.75	1.8 ... 2.5	C	**3RK43 40-3GR51-1BA0**		1	1 unit	42E
	3.2	1.10	2.2 ... 3.2	C	**3RK43 40-3HR51-1BA0**		1	1 unit	42E
	4	1.50	2.8 ... 4	C	**3RK43 40-3JR51-1BA0**		1	1 unit	42E
	5	1.50	3.5 ... 5	C	**3RK43 40-3KR51-1BA0**		1	1 unit	42E
	6.3	2.20	4.5 ... 6.3	C	**3RK43 40-3LR51-1BA0**		1	1 unit	42E
	8	3.00	5.5 ... 8	C	**3RK43 40-3MR51-1BA0**		1	1 unit	42E
	10	4.00	7 ... 10	C	**3RK43 40-3NR51-1BA0**		1	1 unit	42E
	12.5	5.50	9 ... 12.5	C	**3RK43 40-3PR51-1BA0**		1	1 unit	42E

[1] Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

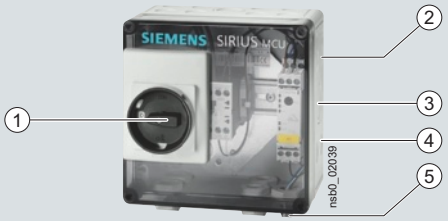
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MCU motor starters for AS-Interface
Plastic enclosures, electromechanical switching

Overview

MCU for AS-i, plastic enclosure

- Direct-on-line or reversing starters up to 12 A at 400 V AC (50/60 Hz)
- Repair switches (black/gray) lockable with padlocks (max. 3 units)
- Integrated overload and short-circuit protection with SIRIUS 3RV motor starter protectors Class 10 with short-circuit breaking capacity I_{cu} = 50 kA at 400 V AC
- Overload protection with thermal release (bimetal)
- Transparent plastic enclosure with LED status displays for monitoring the AS-i status
- Degree of protection IP55
- Cable connections by means of M screws
- Main power loop possible (daisy chain; max. 2 x 6 mm^2)
- AS-Interface through M12 plug-in terminal
- 4 x M20 glands enclosed
- Communication: AS-Interface 2I/2O (standard slaves)

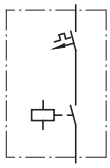
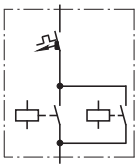


(1) Main control switch / repair switch
(2) Load outgoing feeder through M screw
(3) Main incoming power supply through M screw (max. 6 mm^2)
(4) Main power loop possible (daisy chain)
(5) AS-i communication / U_{aux} (24 V DC) through M12 plug

(position of outgoing units as example – outgoing units are possible on all sides)

MCU for AS-i, plastic enclosure

Selection and ordering data

	Rated current I_e	Suitable for three-phase induction motors[1] with P	Setting range Thermal overload release	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	A	kW	A						
Direct-on-line starters									
 Direct-on-line start	0.63	0.18	0.45 ... 0.63	C	**3RK43 20-3AR51-0BA0**		1	1 unit	42E
	0.8	0.18	0.55 ... 0.8	C	**3RK43 20-3BR51-0BA0**		1	1 unit	42E
	1	0.25	0.7 ... 1	C	**3RK43 20-3CR51-0BA0**		1	1 unit	42E
	1.25	0.37	0.9 ... 1.25	C	**3RK43 20-3DR51-0BA0**		1	1 unit	42E
	1.6	0.55	1.1 ... 1.6	C	**3RK43 20-3ER51-0BA0**		1	1 unit	42E
	2	0.75	1.4 ... 2	C	**3RK43 20-3FR51-0BA0**		1	1 unit	42E
	2.5	0.75	1.8 ... 2.5	C	**3RK43 20-3GR51-0BA0**		1	1 unit	42E
	3.2	1.10	2.2 ... 3.2	C	**3RK43 20-3HR51-0BA0**		1	1 unit	42E
	4	1.50	2.8 ... 4	C	**3RK43 20-3JR51-0BA0**		1	1 unit	42E
	5	1.50	3.5 ... 5	C	**3RK43 20-3KR51-0BA0**		1	1 unit	42E
	6.3	2.20	4.5 ... 6.3	C	**3RK43 20-3LR51-0BA0**		1	1 unit	42E
	8	3.00	5.5 ... 8	C	**3RK43 20-3MR51-0BA0**		1	1 unit	42E
	10	4.00	7 ... 10	C	**3RK43 20-3NR51-0BA0**		1	1 unit	42E
	12.5	5.50	9 ... 12.5	C	**3RK43 20-3PR51-0BA0**		1	1 unit	42E
Reversing starters									
 Reversing duty	0.63	0.18	0.45 ... 0.63	C	**3RK43 20-3AR51-1BA0**		1	1 unit	42E
	0.8	0.18	0.55 ... 0.8	C	**3RK43 20-3BR51-1BA0**		1	1 unit	42E
	1	0.25	0.7 ... 1	C	**3RK43 20-3CR51-1BA0**		1	1 unit	42E
	1.25	0.37	0.9 ... 1.25	C	**3RK43 20-3DR51-1BA0**		1	1 unit	42E
	1.6	0.55	1.1 ... 1.6	C	**3RK43 20-3ER51-1BA0**		1	1 unit	42E
	2	0.75	1.4 ... 2	C	**3RK43 20-3FR51-1BA0**		1	1 unit	42E
	2.5	0.75	1.8 ... 2.5	C	**3RK43 20-3GR51-1BA0**		1	1 unit	42E
	3.2	1.10	2.2 ... 3.2	C	**3RK43 20-3HR51-1BA0**		1	1 unit	42E
	4	1.50	2.8 ... 4	C	**3RK43 20-3JR51-1BA0**		1	1 unit	42E
	5	1.50	3.5 ... 5	C	**3RK43 20-3KR51-1BA0**		1	1 unit	42E
	6.3	2.20	4.5 ... 6.3	C	**3RK43 20-3LR51-1BA0**		1	1 unit	42E
	8	3.00	5.5 ... 8	C	**3RK43 20-3MR51-1BA0**		1	1 unit	42E
	10	4.00	7 ... 10	C	**3RK43 20-3NR51-1BA0**		1	1 unit	42E
	12.5	5.50	9 ... 12.5	C	**3RK43 20-3PR51-1BA0**		1	1 unit	42E

[1] Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

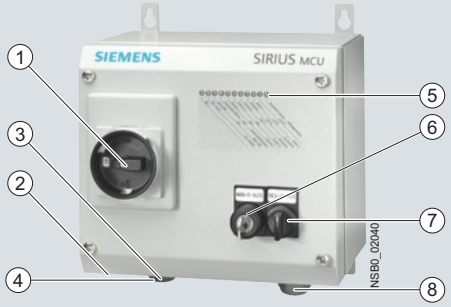
* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

MCU for AS-i, metal enclosure, electromechanical

- Direct-on-line or reversing starters up to 12 A
- Repair switches (black/gray) lockable with padlocks (max. 3 units)
- Short-circuit protection with SIRIUS 3RV motor starter protectors CLASS 10 with short-circuit breaking capacity I_{cu} = 50 kA at AC 400 V
- Overload protection with thermal release (bimetal)
- Manual operation and key-operated switch for operating mode selection
- LED status display of the operating states
- Metal enclosures
- Degree of protection IP54
- Switched brake control 400 V or 230 V
- Cable connections by means of M screws
- Main power loop possible (daisy chain; max. 2 x 6 mm^2)
- 2 x M25 glands
- 1 x M12 plug for AS-i/auxiliary voltage (24 V DC)
- 2 × M12 socket for connection of 2 sensors
- 1 × M12 socket for connection of one actuator
- Communication: AS-Interface 4I/3O (slaves in A/B technology can be addressed)



1 Main control switch / repair switch
2 Main incoming power supply (400 V AC) through M screw
3 AS-i communication / U_{aux} (24 V DC) through M12 plug
4 2 sensor inputs (M12 socket), 1 actuator output (M12 socket)
5 LED status displays of the operating states
6 Key-operated switch: Manual-0-Auto
7 Manual operation: ON/OFF or Left-0-Right (selector button)
8 Load outgoing feeder through M screw

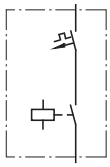
MCU for AS-i, metal enclosure, electromechanical switching

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MCU motor starters for AS-Interface
Metal enclosures, electromechanical switching

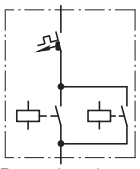
Selection and ordering data

Rated current I_e	Suitable for three-phase induction motors[1] with P	Setting range Thermal overload release	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	kW	A						
Direct-on-line starters								
0.63	0.18	0.45 ... 0.63	C	**3RK43 20-3AQ54- 0BA☐**		1	1 unit	42E
0.8	0.18	0.55 ... 0.8	C	**3RK43 20-3BQ54- 0BA☐**		1	1 unit	42E
1	0.25	0.7 ... 1	C	**3RK43 20-3CQ54- 0BA☐**		1	1 unit	42E
1.25	0.37	0.9 ... 1.25	C	**3RK43 20-3DQ54- 0BA☐**		1	1 unit	42E
1.6	0.55	1.1 ... 1.6	C	**3RK43 20-3EQ54- 0BA☐**		1	1 unit	42E
2	0.75	1.4 ... 2	C	**3RK43 20-3FQ54- 0BA☐**		1	1 unit	42E
2.5	0.75	1.8 ... 2.5	C	**3RK43 20-3GQ54- 0BA☐**		1	1 unit	42E
3.2	1.10	2.2 ... 3.2	C	**3RK43 20-3HQ54- 0BA☐**		1	1 unit	42E
4	1.50	2.8 ... 4	C	**3RK43 20-3JQ54- 0BA☐**		1	1 unit	42E
5	1.50	3.5 ... 5	C	**3RK43 20-3KQ54- 0BA☐**		1	1 unit	42E
6.3	2.20	4.5 ... 6.3	C	**3RK43 20-3LQ54- 0BA☐**		1	1 unit	42E
8	3.00	5.5 ... 8	C	**3RK43 20-3MQ54- 0BA☐**		1	1 unit	42E
10	4.00	7 ... 10	C	**3RK43 20-3NQ54- 0BA☐**		1	1 unit	42E
12.5	5.50	9 ... 12.5	C	**3RK43 20-3PQ54- 0BA☐**		1	1 unit	42E
Brake control / V					***Additional price***			
• 230					**2** None			
• 400					**3** None			



Direct-on-line start

Rated current I_e	Suitable for three-phase induction motors[1] with P	Setting range Thermal overload release	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	kW	A						
Reversing starters								
0.63	0.18	0.45 ... 0.63	C	**3RK43 20-3AQ54- 1BA☐**		1	1 unit	42E
0.8	0.18	0.55 ... 0.8	C	**3RK43 20-3BQ54- 1BA☐**		1	1 unit	42E
1	0.25	0.7 ... 1	C	**3RK43 20-3CQ54- 1BA☐**		1	1 unit	42E
1.25	0.37	0.9 ... 1.25	C	**3RK43 20-3DQ54- 1BA☐**		1	1 unit	42E
1.6	0.55	1.1 ... 1.6	C	**3RK43 20-3EQ54- 1BA☐**		1	1 unit	42E
2	0.75	1.4 ... 2	C	**3RK43 20-3FQ54- 1BA☐**		1	1 unit	42E
2.5	0.75	1.8 ... 2.5	C	**3RK43 20-3GQ54- 1BA☐**		1	1 unit	42E
3.2	1.10	2.2 ... 3.2	C	**3RK43 20-3HQ54- 1BA☐**		1	1 unit	42E
4	1.50	2.8 ... 4	C	**3RK43 20-3JQ54- 1BA☐**		1	1 unit	42E
5	1.50	3.5 ... 5	C	**3RK43 20-3KQ54- 1BA☐**		1	1 unit	42E
6.3	2.20	4.5 ... 6.3	C	**3RK43 20-3LQ54- 1BA☐**		1	1 unit	42E
8	3.00	5.5 ... 8	C	**3RK43 20-3MQ54- 1BA☐**		1	1 unit	42E
10	4.00	7 ... 10	C	**3RK43 20-3NQ54- 1BA☐**		1	1 unit	42E
12.5	5.50	9 ... 12.5	C	**3RK43 20-3PQ54- 1BA☐**		1	1 unit	42E
Brake control / V					***Additional price***			
• 230					**2** None			
• 400					**3** None			



Reversing duty

[1] Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

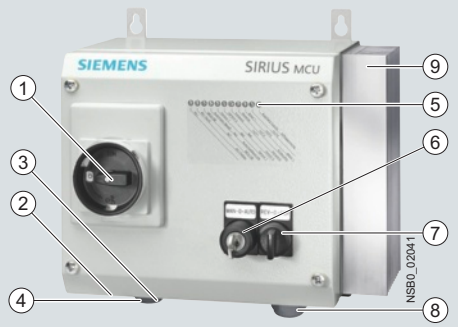
* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

MCU for AS-i, metal enclosure, electronic

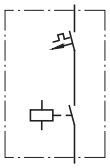
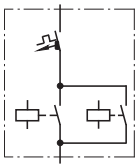
- Direct-on-line or reversing starters up to 12 A
- Switching frequency up to 3 600/h
- Repair switches (black/gray) lockable with padlocks (max. 3 units)
- Short-circuit protection with SIRIUS 3RV motor starter protector
- Overload protection with solid-state overload relay
- Manual operation and key-operated switch for operating mode selection
- LED status display of the operating states
- Metal enclosures
- Degree of protection IP54
- Switched brake control 400 V or 230 V
- Cable connections by means of M screws
- Main power loop possible (daisy chain; max. 2 x 6 mm^2)
- 2 x M25 glands
- 1 x M12 plug for AS-i/auxiliary voltage (24 V DC)
- 2 × M12 plugs for connection of 2 sensors
- 1 × M12 socket for connection of one actuator
- Communication: AS-Interface 4I/3O (slaves in A/B technology can be addressed)



1 Main control switch / repair switch
2 Main incoming power supply (400 V AC) through M screw
3 AS-i communication / U_{aux} (24 V DC) through M12 plug
4 2 sensor inputs (M12 socket), 1 actuator output (M12 socket)
5 LED status displays of the operating states
6 Key-operated switch: Manual-0-Auto
7 Manual operation: ON/OFF or Left-0-Right (selector button)
8 Load outgoing feeder through M screw
9 Heat sink

MCU for AS-i, metal enclosure, electronic switching

Selection and ordering data

	Rating for induction motor Rated value[1]	Current setting value of the inverse-time delayed overload release I_e	Brake control	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	kW	A	V						
Direct-on-line starters									
	0.12 … 0.37	0.32 … 1.25	230	C	**3RK43 20-5DQ64-0BA2**		1	1 unit	42E
	0.55 … 1.5	1 … 4	230	C	**3RK43 20-5JQ64-0BA2**		1	1 unit	42E
	1.1 … 5.5	3 … 12	230	C	**3RK43 20-5PQ64-0BA2**		1	1 unit	42E
	0.12 … 0.37	0.32 … 1.25	400	C	**3RK43 20-5DQ64-0BA3**		1	1 unit	42E
	0.55 … 1.5	1 … 4	400	C	**3RK43 20-5JQ64-0BA3**		1	1 unit	42E
	1.1 … 5.5	3 … 12	400	C	**3RK43 20-5PQ64-0BA3**		1	1 unit	42E
Direct-on-line start									
Reversing starters									
	0.12 … 0.37	0.32 … 1.25	230	C	**3RK43 20-5DQ64-1BA2**		1	1 unit	42E
	0.55 … 1.5	1 … 4	230	C	**3RK43 20-5JQ64-1BA2**		1	1 unit	42E
	1.1 … 5.5	3 … 12	230	C	**3RK43 20-5PQ64-1BA2**		1	1 unit	42E
	0.12 … 0.37	0.32 … 1.25	400	C	**3RK43 20-5DQ64-1BA3**		1	1 unit	42E
	0.55 … 1.5	1 … 4	400	C	**3RK43 20-5JQ64-1BA3**		1	1 unit	42E
	1.1 … 5.5	3 … 12	400	C	**3RK43 20-5PQ64-1BA3**		1	1 unit	42E
Reversing duty									

1) Guide value for 4-pole standard motors at 50 Hz 400 V AC. The actual starting and rated data of the motor to be protected must be considered when selecting the units.

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Accessories

Overview

The MCU motor starters are equipped with standardized interfaces for data and energy (option).

More information about field and power bus technologies for decentral installation in a high degree of protection see also page 9/66, "Energy Communication Field Installation System".

Connection technology products coordinated with the SIRIUS MCU motor starters can be found at "Siemens Solution Partners Automation" www.siemens.com/automation/partnerfinder under "Distributed Field Installation System" technology.

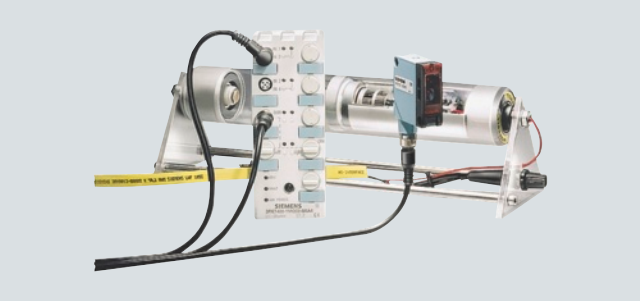
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Overview



AS-Interface 3RK1 400-1MQ01-0AA4 double direct-on-line starter 24 V DC

With the K60 AS-Interface 24 V DC motor starters for the low-end performance range up to 70 W, it is now possible to connect 24 V DC motors and the associated sensors directly to the AS-Interface quickly and easily.



Connection of an actuator roller with integrated DC motor to an AS-Interface 24 V DC motor starter

Three different versions are available:

- Single direct-on-line starters (without brake and reversible quick-stop function)
- Double direct-on-line starters (with brake and reversible quick-stop function)
- Reversing starters (with brake and reversible quick-stop function)

DC motors are connected to the module using M12 plug-in connections. The sensors and the module electronics can be supplied from the yellow AS-Interface cable. An auxiliary voltage (24 V DC) is only required for supplying the outputs, which can be provided via the black AS-Interface cable.

Quick-stop function

All AS-Interface 24 V DC motor starters feature a quick-stop function which can be switched on and off as required using a switch integrated into the module. The quick-stop function allows a connected motor to be disconnected immediately using an applied sensor signal (High). The switch for the quick-stop function is located alongside the input sockets and is protected by an M12 sealing cap.

Brake

The double direct-on-line starter and the single reversing starter versions feature an integrated permanently set brake function, i.e. as soon as the output signal is set to "0", the motor is braked.

Start-up using integrated buttons

Buttons integrated into the module (below the output sockets) can be used to set the motor used. The buttons are protected by an M12 sealing cap.

Note concerning double and reversing starters:

If an input with the quick-stop function receives a "High" signal, the corresponding output (e.g. quick-stop input 1 –> output 1) is switched off within the device (the motor is braked). The manual key function (Key 1/2) for local operation is only permitted to be used during "CPU Stop" in the higher-level PLC.

Note concerning single direct-on-line starters:

If an input with the quick-stop function receives a "High" signal, the corresponding output (e.g. quick-stop input 1 –> output 1) is switched off within the device (the motor runs down without being braked) The manual key function (Key 1) for local operation is only permitted to be used and defined during "CPU Stop" in the higher-level PLC.

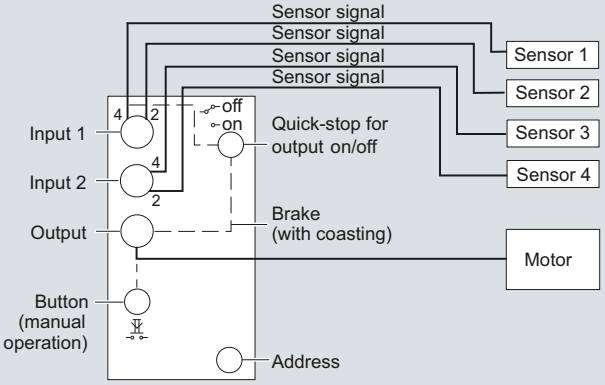
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General data

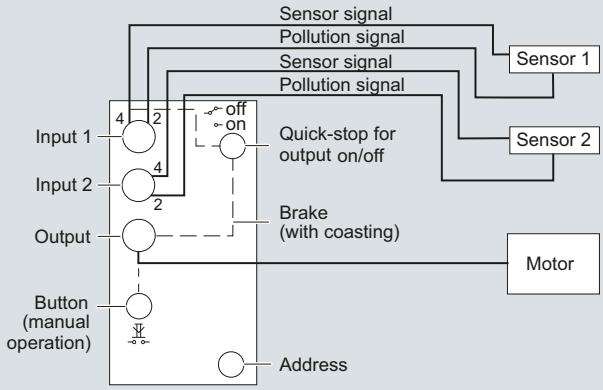
Applications

Single direct starter without brake (with adjustable quick-stop function)

1st possibility: Connection to a maximum of four sensors without pollution indication

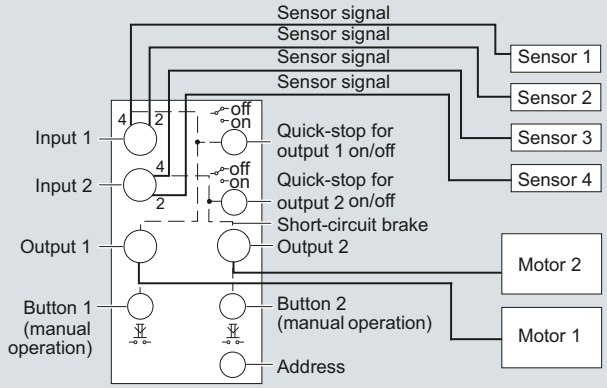


2nd possibility: Connection to a maximum of two sensors with pollution indication

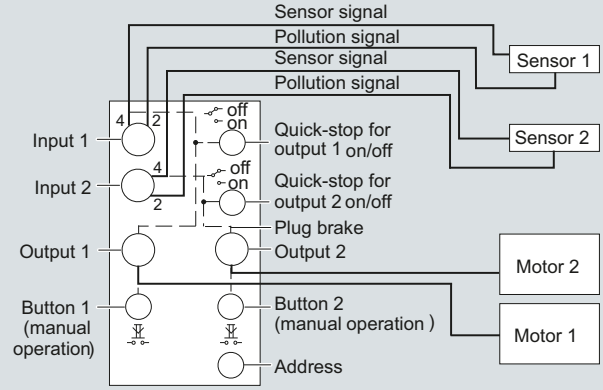


Double direct starter with brake (with adjustable quick-stop function)

1st possibility: Connection to a maximum of four sensors without pollution indication

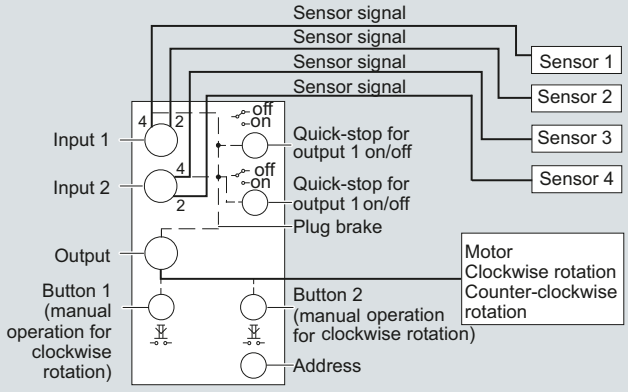


2nd possibility: Connection to a maximum of two sensors with pollution indication

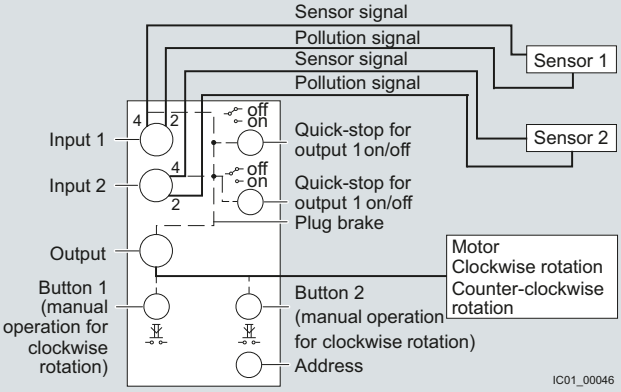


Single reversing starter with brake (with adjustable quick-stop function)

1st possibility: Connection to a maximum of four sensors without pollution indication



2nd possibility: Connection to a maximum of two sensors with pollution indication



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Selection and ordering data

Version	Inputs/ outputs	Current carrying capacity of outputs	Slave type	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		A							
Motor starters (width 60 mm)									
Single direct-on-line starters[1]	4 inputs / 1 output	2	Standard	C	**3RK1 400-1NQ01-0AA4**		1	1 unit	42C
Double direct-on-line starters[1]	4 inputs / 2 outputs	1 x 3 or 2 x 2	Standard	B	**3RK1 400-1MQ01-0AA4**		1	1 unit	42C
Single reversing starters[1]	4 inputs / 1 output	2.5	Standard	C	**3RK1 400-1MQ03-0AA4**		1	1 unit	42C


3RK1 400-1MQ01-0AA4

[1] Modules supplied without mounting plate.

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories						
K60 mounting plates Suitable for all K60 compact modules						
• Wall mounting	▶	**3RK1 901-0CA00**		1	1 unit	42C
• Standard rail mounting	▶	**3RK1 901-0CB01**		1	1 unit	42C
AS-Interface sealing caps M12 For free M12 sockets	▶	**3RK1 901-1KA00**		100	10 units	42C
AS-Interface sealing caps M12, tamper-proof For free M12 sockets	A	**3RK1 901-1KA01**		100	10 units	42C
Sealing sets • For K60 mounting plate and standard distributor • Cannot be used for K45 mounting plate • Set contains one straight and one shaped seal	A	**3RK1 902-0AR00**		100	5 units	42D


3RK1 901-0CA00


3RK1 901-1KA00

3RK1 901-1KA01


3RK1 902-0AR00

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General data

Overview

ECOFAST (Energy and Communication Field Installation System) connects the components of an automation system (such as switching and and control devices, I/O stations, motors and geared motors) using a uniform, standardized connection method for data and power.

ECOFAST is a solution for decentralization outside the control cabinet, with standardized connection methods for all components on a distributed installation basis, consistent for PROFIBUS DP and AS-Interface. ECOFAST sets standards in equipping machines and plants for automation, low-voltage controlgear and drives. ECOFAST is centered on the extensive decentralization and modularization of installations, combined with comprehensive diagnostics down to the component level.

Modern field and power bus technologies open up new possibilities for machinery and plant engineering. Decentrally conceived solutions are flexibly adaptable to the various applications in automated industrial tools.

This gives rise to advantages in terms of overall process costs. The standardized distributed installation technology with a high degree of protection (IP65) produces savings during

- Configuration
- Wiring
- Mounting
- Commissioning
- Operation

Features

- ECOFAST is a solution for a wide range of automation, drive and installation components with a high degree of protection.
- ECOFAST combines the components of an automation system with completely standardized connection methods for data and power according to ISO 23570.
- With ECOFAST, power and information are distributed and transmitted in a line.
- Parameters and control and diagnostics functionality are transmitted through PROFIBUS or AS-Interface for fast operation start-ups and troubleshooting.

Shorter time frames

With ECOFAST it is possible to shorten the time frames for the tendering, planning and configuring of machines and plants:

- Modular planning of machines and plants
- Compiling of tenders from ready-made modules
- Faster construction and mounting
- Cabinet-free construction with a high degree of protection
- Use of prefabricated and tested function units
- Faster installation on site
- Smaller plant footprints

Fast and smooth start-up

ECOFAST enables the fast and smooth start-up of automation and drive systems:

- Minimization of error sources through standardized interfaces and plug-in connectors
- Extensive diagnostics on the device and though the bus
- Improved EMC by direct coupling of switching unit and drive

High plant availability

ECOFAST maintains a high level of plant availability:

- Reduction of downtime thanks to the speedy and safe exchange of devices
- No interruption of the power and field bus while devices are being exchanged
- Automatic parameterizing when devices are exchanged
- Extensive status and diagnostics information
- Transmission of operating parameters (e.g. current values or status messages)

Components connected by ECOFAST

- Switchgear and control devices (direct-on-line starters, reversing starters, soft starters, frequency converters)
  - For near-motor or motor-mounted installation
  - As stand-alone device
  - As isolated solution
- I/O stations
- Motors and geared motors
- For effective connection, installation components (cables, plugs, etc.) are used:
  - For communication
  - For power

ECOFAST in motor starters for use in the field

The ECOFAST connection technology can be used to provide **power supply and communication** for motor starters for use in the field:

- For ET 200pro motor starters (see page 9/3)
- For ECOFAST motor starters (see page 9/50)

The ECOFAST connection technology can be used for **power supply**:

- For M200D motor starters (see page 9/33)
- For MCU motor starters (see page 9/58)

The ECOFAST network topology

All interfaces for communication and power are completely standardized and comply with ISO 23570.

Communication via PROFIBUS DP (see page 9/68)

- Hybrid field bus connections (see page 9/69)
- PROFIBUS DP hybrid field bus cables (see page 9/71)
- Additional components(see page 9/73)
  - Hybrid plugs
  - Data T pieces
  - ECOFAST bus termination plug-in connectors

Communication via AS-Interface (see page 9/76)

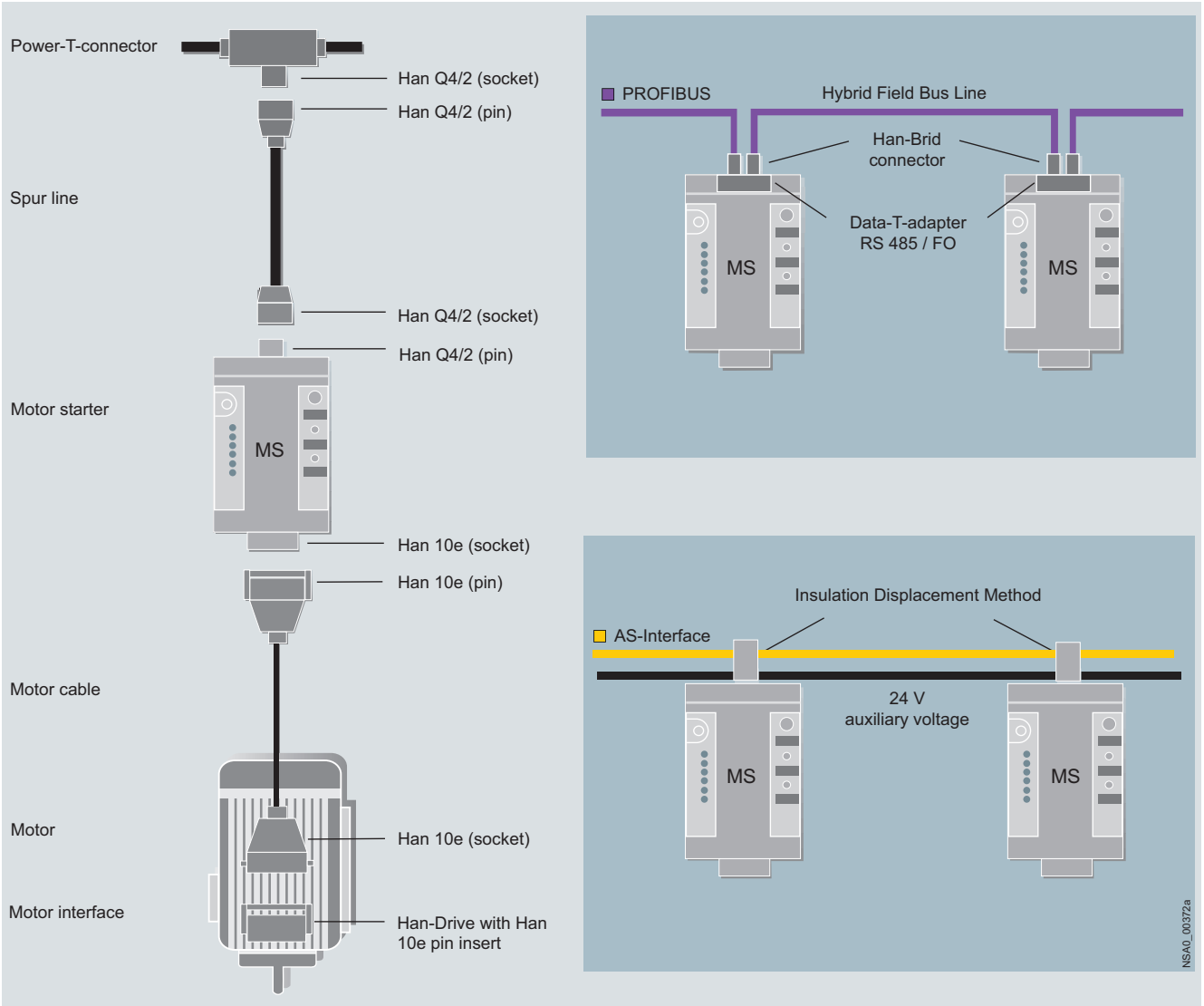
- Yellow and black AS-Interface cable for data transmission (yellow) and auxiliary voltage (black)
- Connection of the AS-Interface cable by insulation piercing method

Power connection technology (see page 9/78)

- Power cables, plugs and power terminal connectors for the power supply (see page see page 9/79)
- Motor connection cables and plugs for the motor connection (see page 9/81)

(See figure "Schematic interface overview for ECOFAST network topology" on page 9/67)

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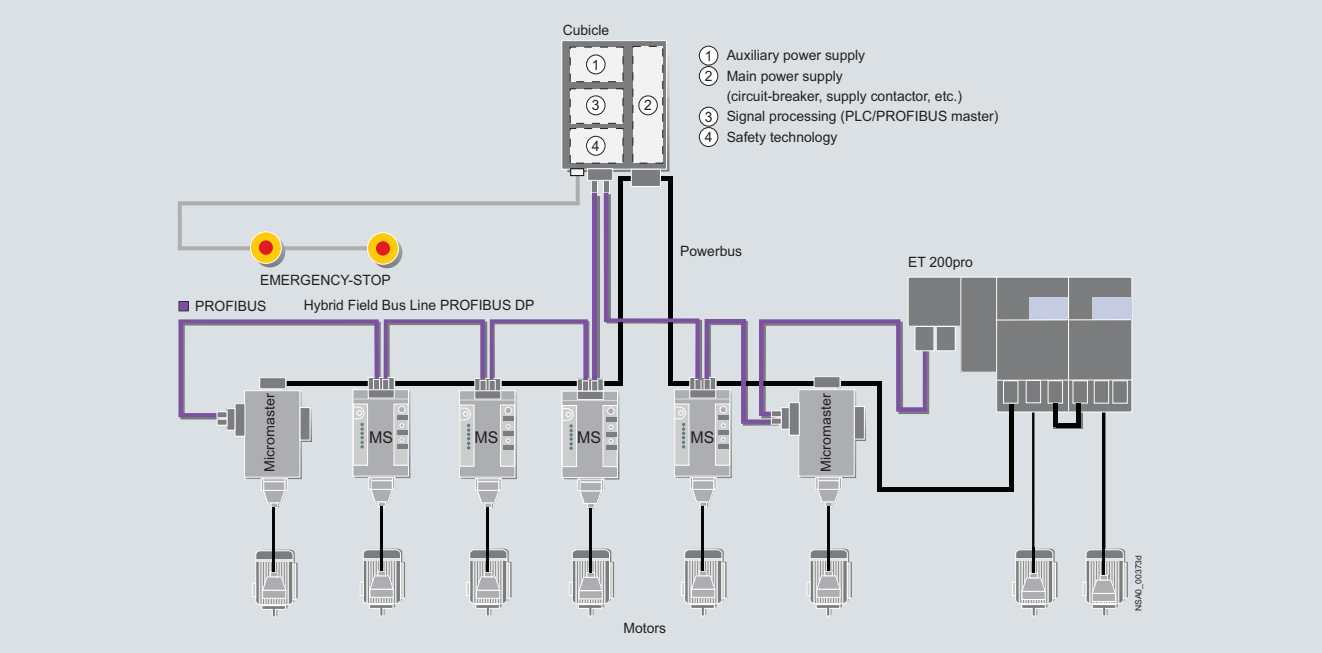


Schematic interface overview for ECOFAST network topology based upon the example of the ECOFAST motor starter:
Left: Power feeder from power bus with spur line to the motor starter and motor cable for connection of the motor
- Connection via Han 10e plug-in connection on the field device
- Connection via HanDrive/10e plug-in connector on the motor
- Motor connection cable as shielded or non-shielded version: Use of a frequency converter requires EMC shielding
Right: Communication bus with PROFIBUS DP (top) or AS-Interface (bottom)

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Communication via PROFIBUS DP

Overview



PROFIBUS DP network topology

Hybrid field bus connections

Hybrid field bus connections configured as control cabinet glands transmit data and power from the control cabinet (IP 20) into the field (IP65). They are the interface for jointly routing PROFIBUS DP and the auxiliary voltages into the hybrid field bus cable. The active hybrid field bus connections with signal refresher function can considerably increase the maximum PROFIBUS cable length when used in the field (see page 9/69).

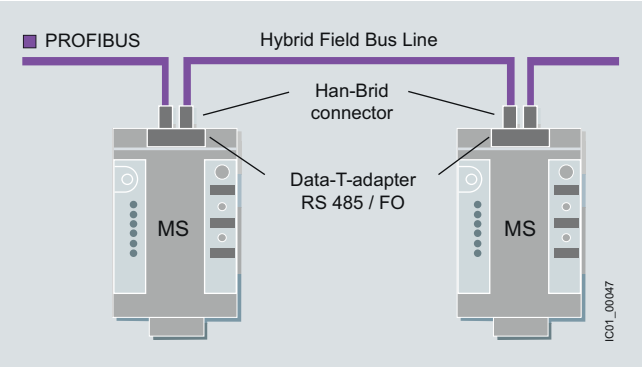
Hybrid field bus cables

Four copper cores are available for the **transmission of voltage** in the hybrid field bus cables.

There are two transmission types for the **data transmission with PROFIBUS DP** in hybrid field bus cables:
- Electrically via two Cu-RS 485 copper cores (see "PROFIBUS DP ECOFAST Hybrid Field Bus Cables in Cu-RS 485", page 9/71)
- Optically via two plastic fiber-optic cables (see "ECOFAST Fiber Optic Hybrid Cable", page 9/74)

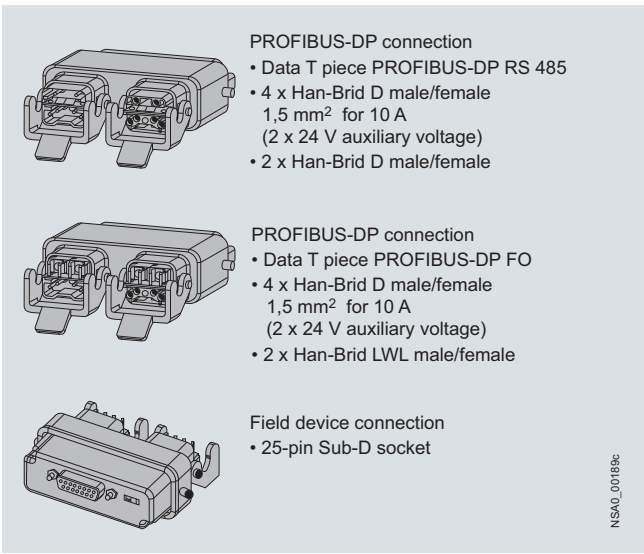
HanBrid plug-in connectors

The hybrid field bus cables are connected to the data T pieces via HanBrid plug-in connections.



Connection of the field devices to PROFIBUS DP

Data T pieces



Data T pieces

The data T pieces connect individual field devices to the ECOFAST hybrid field bus PROFIBUS DP. They ensure the interruption-free operation of the data bus when the field device is unplugged.

There are two T pieces in the ECOFAST system:
- Data T piece for PROFIBUS DP with copper cable (PROFIBUS DP RS 485) and 2 x 24 V auxiliary voltage (switched and non-switched)
- Data T piece for PROFIBUS DP with fiber-optic cable (PROFIBUS DP FO) and 2 x 24 V auxiliary voltage (switched and non-switched)

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Overview



Hybrid field bus connection socket/socket (HanBrid)



Hybrid field bus connection socket/socket (M12)

Hybrid field bus connections configured as control cabinet glands transmit data and power from the control cabinet (IP 20) into the field (IP65). They are the interface for jointly routing PROFIBUS DP and the auxiliary voltages into the hybrid field bus cable.

Passive and active hybrid field bus connections

The hybrid field bus connections are available in two versions which differ in their functionality. They are:

- The passive version
- The active version with signal refresher function to considerably increase the maximum PROFIBUS cable length

Connection methods

The field side is connected using HanBrid or M12 plug-in connectors.

In the case of HanBrid, the following versions are available:

- Socket/socket for infeeding into the field
- Pin/socket for looping in the field

The M12 version is generally configured with socket/socket.

Following connections are available at the rear (cabinet side) in the case of the passive glands:

- Direct connection
- Fast Connect connection

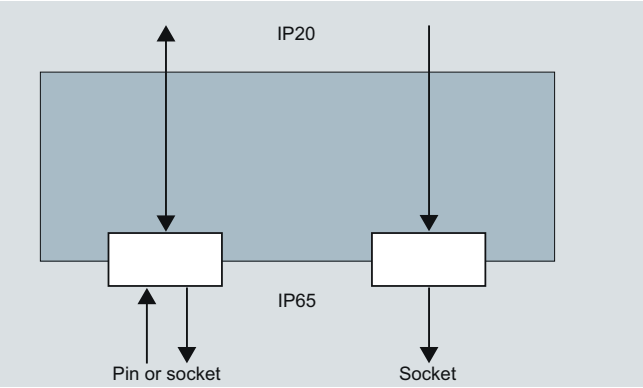
The active gland with refresher function has 9-pole Sub-D sockets for the rear connection.

Auxiliary power infeed

The HanBrid plug-in design offers the possibility of infeeding or looping through not only the PROFIBUS signal but also 2 separate auxiliary voltages of 24 V DC (switched/unswitched) into the field. The terminal block with spring-type terminals at the rear (cabinet side) of the hybrid field bus connection provides a variety of interconnecting operations for these auxiliary voltages.

Passive hybrid field bus connections

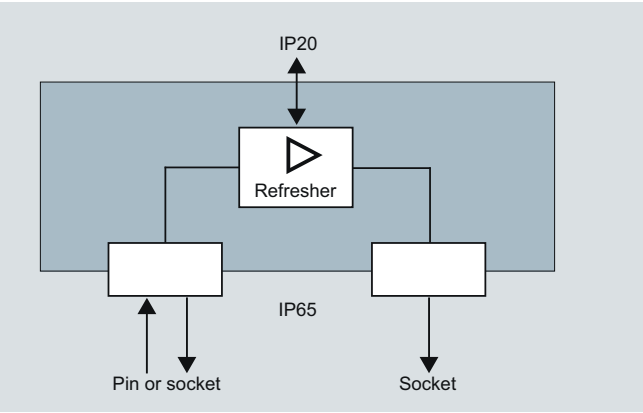
- Gland from the control cabinet (IP20) into the field (IP65)
- HanBrid plug-in design socket/socket or pin/socket
- Direct connection or Fast-Connect connection for PROFIBUS at the rear
- Terminal block with spring-type terminals (0.25 … 2.5 mm^2) for infeeding or looping through the auxiliary voltages



Hybrid field bus connection as passive control cabinet gland

Active hybrid field bus connections with refresher function

- Gland from the control cabinet (IP20) into the field (IP65)
- 3 independent, electrically separated Profibus segments
- Signal refresher function from and to all segments
- Automatic continuous baud rate detection
- Status/diagnostics displays with LEDs
- Cascading depth of a maximum 9 hybrid field bus connections
- HanBrid plug-in design socket/socket and pin/socket
- M12 plug-in design socket/socket
- 9-pole Sub D socket connection for PROFIBUS at the rear
- Terminal block with spring-type terminals (0.25 … 2.5 mm^2) for infeeding or looping through the auxiliary voltages



Hybrid field bus connection as active control cabinet gland with refresher function

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Communication via PROFIBUS DP
Hybrid field bus connections

Technical specifications

Type		Passive hybrid field bus connections	Active hybrid field bus connections
Mechanics and environment			
Dimensions (W x H x D)	mm	93 x 103 x 65	
Cutout (W x H)	mm	80 x 90	
Temperature range	°C	-25 ... +60	
Degree of protection		IP20 internal / IP65 on field side	
Material/enclosures	mm	Plastic (black PC), flame retardant	
Electrical specifications			
Rated operational voltage			
• 24 V DC not switched (NS)	V DC	24, ±25 %	
• 24 V DC switched (S)	V DC	24, ±25 %	
Max. rated current	A	10	
power supply		--	From 24 V DC not switched (NS)
Max. power consumption	mA	--	130
Mains buffering	ms	--	> 20
Baud rate detection		--	Automatic
Maximum cascading depth		--	9 hybrid field bus connections
Baud rates	kbit/s	9.6 / 19.2 / 45.45 / 93.75 / 187.5 / 500/1 500 / 3 000 / 6 000 /12 000	
Electrical separation	V DC	500	

Selection and ordering data



Hybrid field bus connection on the field side:
With socket/socket (HanBrid)



With pin/socket (HanBrid)



With socket/socket (M12)

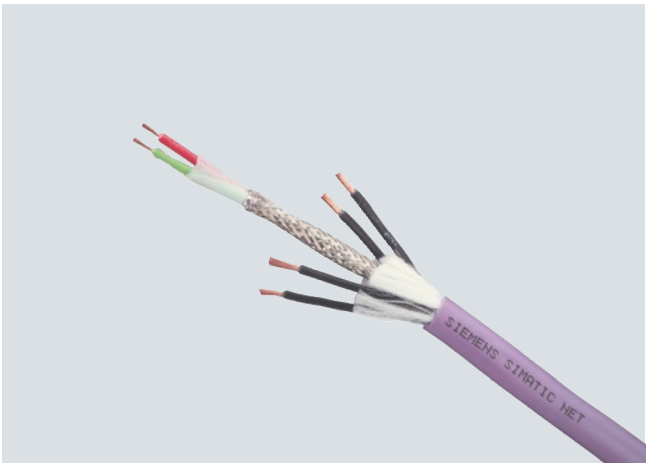
Link type/ function	Connection IP65	Connection IP20 (PROFIBUS)	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Hybrid field bus connections								
Passive								
• Cu/Cu, for feeding into the field	Socket/socket (2 x HanBrid)	Direct connection	B	**3RK1 911-1AA22**		1	1 unit	42D
• Cu/Cu, for looping through in the field	Pin /socket (2 x HanBrid)	Direct connection	B	**3RK1 911-1AA32**		1	1 unit	42D
• Cu/Cu, for feeding into the field	Socket/socket (2 x HanBrid)	PROFIBUS Fast Connect bus connector	B	**3RK1 911-1AF22**		1	1 unit	42D
• Cu/Cu, for looping through in the field	Pin /socket (2 x HanBrid)	PROFIBUS Fast Connect bus connector	B	**3RK1 911-1AF32**		1	1 unit	42D
Active (refresher)								
• Cu/Cu, for feeding into the field	Socket/socket (2 x HanBrid)	9-pole Sub D socket	B	**3RK1 911-1AJ22**		1	1 unit	42D
• Cu/Cu, for looping through in the field	Pin /socket (2 x HanBrid)	9-pole Sub D socket	B	**3RK1 911-1AJ32**		1	1 unit	42D
• Cu/Cu, for feeding into the field	Socket/socket (2 x M12)	9-pole Sub D socket	B	**3RK1 911-1AK22**		1	1 unit	42D

1) When ordering, specify the length as well (example: length = 7.50 m).
Orders possible for minimum 10 cm module widths.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



ECOFAST Hybrid Cable PROFIBUS DP in Cu_RS 485

All devices running in the field are connected to the PROFIBUS DP with the ECOFAST bus cables.

The bus cable is configured as a hybrid cable and contains:

- PROFIBUS DP in Cu-RS 485;
- Four additional copper cores for transmission of the 24 V DC voltage:
  - 24 V DC, not switched (for electronics and inputs)
  - 24 V DC, switched (for outputs, can be switched off, e.g. on EMERGENCY-STOP)

The ECOFAST hybrid cables are available by the meter or in pre-assembled lengths with ECOFAST connectors (Han Brid) and sockets.

Technical specifications

Type		6XV1 830-7AH10 PROFIBUS ECOFAST hybrid cables – copper	6XV1 860-2P PROFIBUS ECOFAST Hybrid Cable GP
Suitability for use		Connection for ECOFAST stations	Connection for ECOFAST stations
Cable designation		02Y (ST)C 1 x 2 x 0.65/2.56- 150 LI LIH-Z 11Y 4 x 1 x 1.5 VI FRNC	02Y (ST)C 1 x 2 x 0.65/2.56 -150 LI LIY-Z Y 4 x 1 x 1.5 VI
Electrical specifications			
Damping dimension per length			
• At 16 MHz	dB/km	49	49
• At 4 MHz	dB/km	25	25
• At 9.6 MHz	dB/km	3	3
Shaft resistance			
• At 9.6 kHz	Ω	270	270
• At 38.4 kHz	Ω	185	185
• At 3 MHz ... 20 MHz	Ω	150	150
• Rated value	Ω	150	150
Symmetrical tolerance of the shaft resistance			
• At 3 MHz ... 20 MHz	Ω	±15	±15
• At 38.4 kHz	Ω	±18.5	±18.5
• At 9.6 MHz	Ω	±27	±27
Maximum loop resistance per length	Ω/km	138	138
Maximum shield resistance per length	Ω/km	15	15
Capacity per length at 1 kHz	nF/km	30	30
RMS value of operational voltage	V	100	100
Uninterrupted current of power cores	A	12	12

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Communication via PROFIBUS DP
ECOFAST hybrid field bus cables in Cu-RS 485

Type		6XV1 830-7AH10 PROFIBUS ECOFAST hybrid cables – copper	6XV1 860-2P PROFIBUS ECOFAST Hybrid Cable GP
Suitability for use		Connection for ECOFAST stations	Connection for ECOFAST stations
Cable designation		02Y (ST)C 1 x 2 x 0.65/2.56- 150 LI LIH-Z 11Y 4 x 1 x 1.5 VI FRNC	02Y (ST)C 1 x 2 x 0.65/2.56 -150 LI LIY-Z Y 4 x 1 x 1.5 VI
Mechanical data			
Cable sheath			
• Material		PUR	PVC
• External diameter	mm	11	11
• Color		Violet	Violet
Power core			
• Conductor cross-section	mm^2	1.5	1.5
• Color of core insulation		Black	Black
Ambient temperature			
• During mounting	°C	-40 ... +60	-30 … +80
• During operating phase	°C	-40 ... +60	-30 … +80
• During storage	°C	-40 ... +60	-30 … +80
• During transport	°C	-40 ... +60	-30 … +80
Bending radius			
• With single bend	mm	38	77
• With several bends	mm	85	110
Number of bending cycles		5 000 000	1 000 000[1]
Weight per length	kg/km	150	154
Fire behavior		IEC 60332-1	IEC 60332-3-24 Category C
Chemical resistance			
• To mineral oil		Conditionally resistant	Conditionally resistant
• To grease		Conditionally resistant	Conditionally resistant
Radiological resistance to UV radiation resistance		--	✓
Product feature			
• Halogen-free		✓	--
• Silicone-free		✓	✓
UL listing at 300 V rating		--	✓ / CM, CL3, SunRes, OilRes
UL style at 600 V rating		--	✓

✓ Function is available
-- Functionality not available

[1] At bending radius 15 x D.

Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
PROFIBUS ECOFAST hybrid cables – copper						
Trailing cables (PUR sheath) with two copper conductors, shielded, for PROFIBUS DP and four copper cores with 1.5 mm^2						
Sold by the meter Delivery unit max. 1 000 m, minimum order quantity 20 m	A	**6XV1 830-7AH10**		1	1 m	5K2
Non-assembled						
• 20 m	A	**6XV1 830-7AN20**		1	1 unit	5K2
• 50 m	A	**6XV1 830-7AN50**		1	1 unit	5K2
• 100 m	A	**6XV1 830-7AT10**		1	1 unit	5K2
Pre-assembled With ECOFAST plug and socket (HanBrid), fixed length						
• 0.5 m	A	**6XV1 830-7BH05**		1	1 unit	5K2
• 1.0 m	A	**6XV1 830-7BH10**		1	1 unit	5K2
• 1.5 m	A	**6XV1 830-7BH15**		1	1 unit	5K2
• 3 m	A	**6XV1 830-7BH30**		1	1 unit	5K2
• 5 m	A	**6XV1 830-7BH50**		1	1 unit	5K2
• 10 m	A	**6XV1 830-7BN10**		1	1 unit	5K2
• 15 m	A	**6XV1 830-7BN15**		1	1 unit	5K2
• 20 m	A	**6XV1 830-7BN20**		1	1 unit	5K2
• 25 m	A	**6XV1 830-7BN25**		1	1 unit	5K2
• 30 m	A	**6XV1 830-7BN30**		1	1 unit	5K2
• 35 m	A	**6XV1 830-7BN35**		1	1 unit	5K2
• 40 m	A	**6XV1 830-7BN40**		1	1 unit	5K2
• 45 m	D	**6XV1 830-7BN45**		1	1 unit	5K2
• 50 m	D	**6XV1 830-7BN50**		1	1 unit	5K2
With two ECOFAST connectors (HanBrid), variable length (can be ordered from your local Siemens representative)						

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
PROFIBUS ECOFAST Hybrid Cable GP						
Trailing cable with 4 x Cu and 2 x Cu, shielded with UL approval						
Sold by the meter Delivery unit max. 1 000 m, minimum order quantity 20 m	B	**6XV1 860-2P**		1	1 m	5K2
Non-assembled						
• 20 m	A	**6XV1 860-4PN20**		1	1 unit	5K2
• 50 m	B	**6XV1 860-4PN50**		1	1 unit	5K2
• 100 m	A	**6XV1 860-4PT10**		1	1 unit	5K2
Assembled With ECOFAST plug and socket (HanBrid)						
• 0.5 m	D	**6XV1 860-3PH05**		1	1 unit	5K2
• 1 m	A	**6XV1 860-3PH10**		1	1 unit	5K2
• 1.5 m	A	**6XV1 860-3PH15**		1	1 unit	5K2
• 3 m	A	**6XV1 860-3PH30**		1	1 unit	5K2
• 5 m	D	**6XV1 860-3PH50**		1	1 unit	5K2
• 10 m	A	**6XV1 860-3PN10**		1	1 unit	5K2
• 15 m	A	**6XV1 860-3PN15**		1	1 unit	5K2
• 20 m	A	**6XV1 860-3PN20**		1	1 unit	5K2
• 25 m	A	**6XV1 860-3PN25**		1	1 unit	5K2
• 30 m	A	**6XV1 860-3PN30**		1	1 unit	5K2
• 35 m	A	**6XV1 860-3PN35**		1	1 unit	5K2
• 40 m	A	**6XV1 860-3PN40**		1	1 unit	5K2
• 45 m	A	**6XV1 860-3PN45**		1	1 unit	5K2
• 50 m	A	**6XV1 860-3PN50**		1	1 unit	5K2
Additional components						
PROFIBUS copper bus connectors With 2 x Cu shielded and 4 x Cu 1.5 mm^2; contact type: POF, Han D for 24 V; tool: Crimping tool, polishing set; 5 units; with mounting instructions						
• With pin insert	A	**6GK1 905-0CA00**		1	1 unit	5K2
• With female insert	A	**6GK1 905-0CB00**		1	1 unit	5K2
PROFIBUS ECOFAST Hybrid Plugs, angled; With 2 x Cu shielded and 4 x Cu 1.5 mm^2; 5 units; with mounting instructions						
• Pin insert	A	**6GK1 905-0CC00**		1	1 unit	5K2
• Female inserts	A	**6GK1 905-0CD00**		1	1 unit	5K2
ECOFAST Terminating Plugs Bus termination plug-in connector for PROFIBUS DP; with 2 x Cu and 4 x Cu 1.5 mm^2; pin insert, integrated terminating resistors						
• Pack of 1	A	**6GK1 905-0DA10**		1	1 unit	5K2
• Pack of 5	A	**6GK1 905-0DA00**		1	1 unit	5K2
Data T pieces For 2 x 24 V auxiliary voltage (switched and non-switched) and PROFIBUS DP						
• For Cu RS 485	B	**3RK1 911-2AG00**		1	1 unit	42D
Addressing plugs For setting the PROFIBUS DP address	A	**6ES7 194-1KB00-0XA0**		1	1 unit	250

Supplementary components for the SIMATIC NET cabling range can be ordered from your local representative.
Technical consulting is available at:
juergen.hertlein@siemens.com

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Communication via PROFIBUS DP
ECOFAST Fiber Optic Hybrid Cable

Overview



ECOFAST Fiber Optic Hybrid Cable

The ECOFAST Fiber Optic Hybrid Cable from SIMATIC NET is used for setting up optical PROFIBUS DP networks indoors.

The robust and trailing hybrid cable contains two plastic fiber-optic cables for data transmission and four copper cables (1.5 mm^2) for the power supply of DESINA[1] stations.

It is particularly suitable for the connection of DESINA components installed near the machine and is easy to assemble on site. The maximum cable length between two DP units is 50 m.

- Hybrid cable for joint transmission of data and power supply
- Electrical separation of DP units
- Protection of the transmission path against electromagnetic faults
- Up to 50 m cable length with plastic fiber-optic cable
- Robust fiber-optic cable, designed for industrial applications

[1] DESINA is the trademark for **DE**centralized (distributed) and **S**tandardized **IN**stall**A**tion technology on machine tools.

Technical specifications

Type		6XV1 830-6CH10 ECOFAST Fiber Optic Hybrid Cable (DESINA-compatible)
Suitability for use		DESINA-compatible devices, e.g. for ET 200X
Cable designation of the ECOFAST Hybrid Cable		I-(ZN) J-V4Y 11Y2S 980/1000+4x1.5
Version of the assembled FO cable		Sold by the meter, can be assembled locally with DESINA connectors or pre-assembled with two DESINA connectors
Electrical specifications		
Damping dimension per length at 660 nm maximum	dB/km	280
Operational voltage rated value	V	300
Uninterrupted current of power cores	A	10
Mechanical data		
Number of electrical cores		4
Number of conductors of the fiber-optic cable		2
Version of the FO conductor fiber		Step index fiber
Material		
• of the FO fiber core		Polymethylmethacrylate (PMMA)
• of the FO fiber sheath		Fluorinated special polymer
• of the sheath of the FO cable		PUR
• of the sheath of the FO core		PA
Color		
• of the sheath of the FO core		Black, orange
• of the core insulation of power cores		Black
• of the sheath of the hybrid cable		Violet
Diameter of the FO fiber core	µm	980
Conductor cross-section of the power cores	mm^2	1.5
External diameter		
• of the FO fiber sheath	µm	1 000
• of the sheath of the cable	mm	10.6
• of the sheath of the FO core	mm	2.2
- Lower deviation	mm	2.19
- Upper deviation	mm	2.21
Weight per length	kg/km	146
Maximum permitted short-term tensile loading	N	60
Short-term shear force per length	N/m	1 000
Bending radius with several bends with minimum permitted tensile loading	mm	110
Ambient temperature		
• During operating phase	°C	-20 … +60
• During storage	°C	-20 … +60
• During transport	°C	-20 … +60
• During mounting	°C	-5 … +50
• In the short circuit on the conductor	°C	+160 (max. 5 s)

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Type	6XV1 830-6CH10 ECOFAST Fiber Optic Hybrid Cable (DESINA-compatible)
Mechanical specifications (continued)	
Chemical resistance	
• To ASTM oil 2	Conditionally resistant
• To grease	Conditionally resistant
• To water	Conditionally resistant
Radiological resistance to UV radiation resistance	--
Fire behavior	IEC 60332-1
Verification of suitability UL approval	--
Product feature	
• Halogen-free	--
• Silicone-free	✓

✓ Function is available
-- Functionality not available

Selection and ordering data

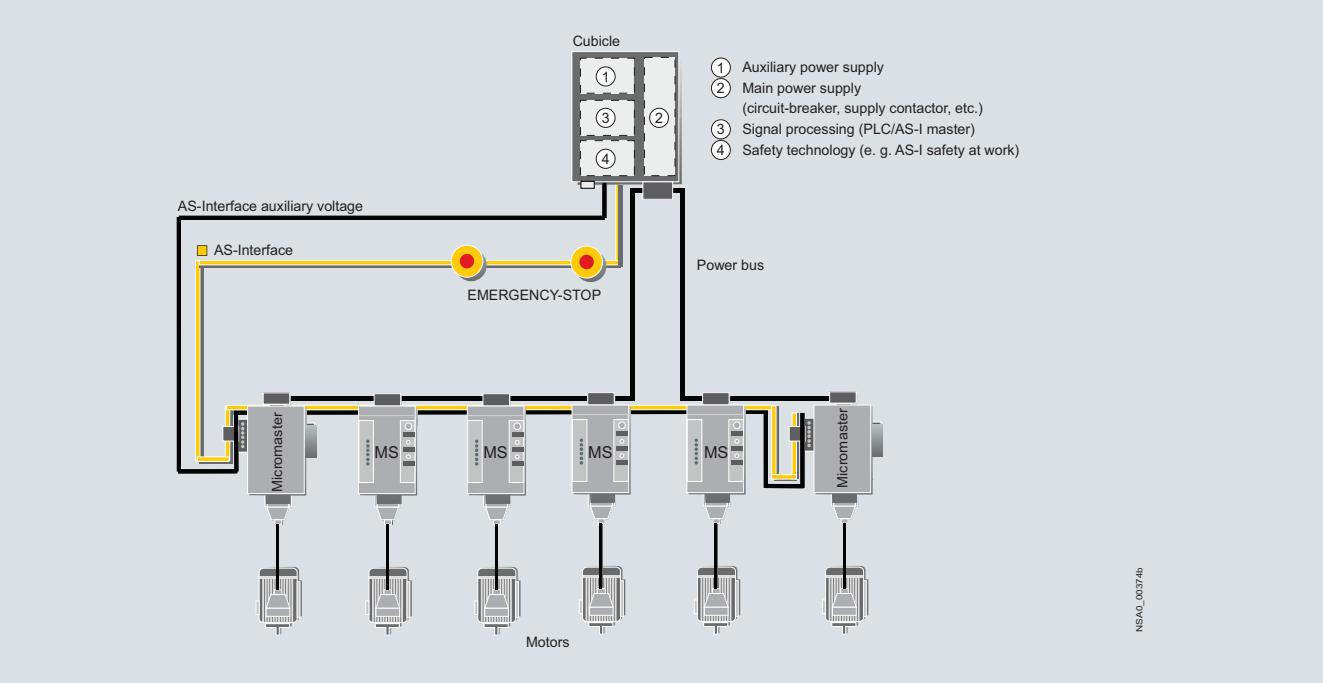
Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
ECOFAST Fiber Optic Hybrid Cable (DESINA-compatible)						
Trailing cable with 2 plastic optical conductors and 4 copper cores, 1.5 mm^2 only for operation in DESINA-compatible devices						
Sold by the meter	A	**6XV1 830-6CH10**		1	1 m	5K2
Delivery unit max. 1 000 m, minimum order quantity 20 m						
Non-assembled						
• 20 m	A	**6XV1 830-6CN20**		1	1 unit	5K2
• 50 m	A	**6XV1 830-6CN50**		1	1 unit	5K2
• 100 m	A	**6XV1 830-6CT10**		1	1 unit	5K2
Pre-assembled						
With 2 DESINA connectors						
• 1.5 m	A	**6XV1 830-6DH15**		1	1 unit	5K2
• 3 m	A	**6XV1 830-6DH30**		1	1 unit	5K2
• 5 m	A	**6XV1 830-6DH50**		1	1 unit	5K2
• 10 m	A	**6XV1 830-6DN10**		1	1 unit	5K2
• 15 m	A	**6XV1 830-6DN15**		1	1 unit	5K2
ECOFAST Fiber Optic Hybrid Plug 180, DESINA-compatible (ECOFAST FOC)						
2 x FO; 4 x 1.5 mm^2 Cu						
• With pin insert (Hanbrid connectors)	A	**6GK1 905-0BA00**		1	1 unit	5K2
• With female insert (Hanbrid connectors)	A	**6GK1 905-0BB00**		1	1 unit	5K2
Data T piece						
For 2 x 24 V auxiliary voltage (switched and non-switched) and PROFIBUS DP						
• For FOC	B	**3RK1 911-2AH00**		1	1 unit	42D
Manual for PROFIBUS networks						
Paper version						
Network architecture, configuring, network components, mounting						
• German	C	**6GK1 970-5CA20-0AA0**		On req.	1 unit	5DK
• English	C	**6GK1 970-5CA20-0AA1**		On req.	1 unit	5DK
SIMATIC NET Manual Collection						
Electronic manuals for communication systems, protocols, products; on DVD; German/English	C	**6GK1 975-1AA00-3AA0**		1	1 unit	5DK

Supplementary components for the SIMATIC NET cabling range can be ordered from your local representative.
Technical consulting is available at:
juergen.hertlein@siemens.com

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Communication via AS-Interface

Overview



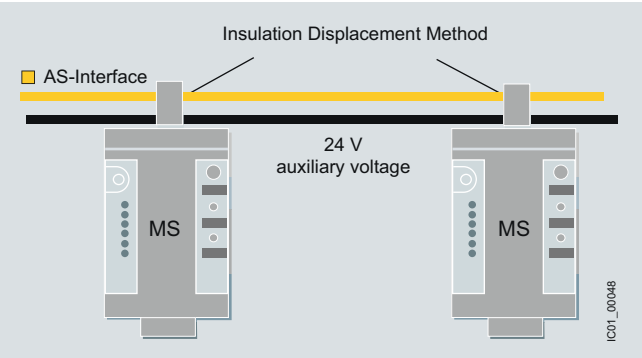
AS-Interface network topology

AS-Interface shaped cable

The two-core AS-Interface shaped cable is used in the communication via AS-Interface (see page 9/77):
- Yellow core for data transmission
- Black core for 24 V auxiliary voltage

Insulation piercing method

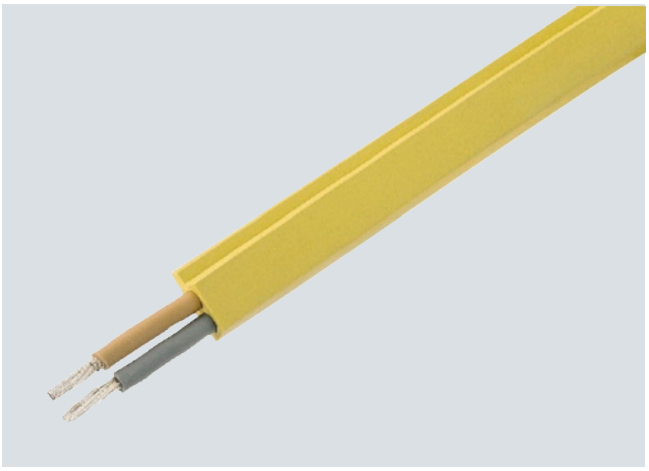
Connection is by means of the insulation piercing method which was developed especially for the AS-Interface (see page 9/77).



Connection at AS-Interface using insulation piercing method

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Overview



AS-Interface shaped cable

The **Actuator-Sensor Interface (AS-Interface)** - the networking system used for the lowest field area - is characterized by very easy mounting and installation. A new connection method was developed specially for AS-Interface.

The stations are connected using the AS-Interface cable. This two-wire AS-Interface shaped cable has a trapezoidal shape, thus ruling out polarity reversal.

Connection is effected by the **insulation piercing method**. In other words, male contacts pierce the shaped AS-Interface cable and make reliable contact with the two wires. Cutting to length and stripping are superfluous. Consequently, AS-Interface stations (e.g. I/O modules, intelligent devices) can be connected in the shortest possible time and exchanging devices is quick.

To enable use in the most varied ambient conditions (e.g. in an oily environment), the AS-Interface cable is available in different materials (rubber, TPE, PUR).

For special applications it is also possible to use an unshielded standard round cable H05VV-F 2x1.5 mm^2 according to AS-i Specification. With AS-Interface, data and energy for the sensors (e.g. proximity switches BERO) and actuators (e.g. indicator lights) are transmitted over the yellow AS-Interface cable.

The black AS-Interface cable must be used for actuators with a 24 V DC supply (e.g. solenoid valves) and a high power requirement.

Suitable for operation in tow chains

The use of the AS-Interface shaped cables with TPE and PUR outer sheath was checked in a tow chain test with the following conditions:

Chain length	m	6
Travel	m	10
Bending radius	mm	75
Travel speed	m/s	4
Acceleration	m/s^2	4
Number of cycles		10 million
Duration of test		approx. 3 years (11 000 cycles per day)

After termination of the 10 million cycles only slight wear was visible due to the lugs of the tow chain. No damage to the cores and core insulation could be detected.

Note:

When using a tow chain, the cables must be installed such that they are not subject to tensile forces. On no account may the cables be twisted, but must be routed flat through the tow chain.

Selection and ordering data

Material	Color	Quantity	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
AS-Interface shaped cables								
Rubber	Yellow (AS-Interface)	100-m roll	►	**3RX9 010-0AA00**		1	1 unit	42C
		1-km drum	B	**3RX9 012-0AA00**		1	1 unit	42C
	Black (24 V DC)	100-m roll	►	**3RX9 020-0AA00**		1	1 unit	42C
		1-km drum	B	**3RX9 022-0AA00**		1	1 unit	42C
TPE	Yellow (AS-Interface)	100-m roll	►	**3RX9 013-0AA00**		1	1 unit	42C
		1-km drum	B	**3RX9 014-0AA00**		1	1 unit	42C
	Black (24 V DC)	100-m roll	►	**3RX9 023-0AA00**		1	1 unit	42C
		1-km drum	B	**3RX9 024-0AA00**		1	1 unit	42C
TPE special version[1)]	Yellow (AS-Interface)	100-m roll	C	**3RX9 017-0AA00**		1	1 unit	42C
	Black (24 V DC)	100-m roll	C	**3RX9 027-0AA00**		1	1 unit	42C
PUR	Yellow (AS-Interface)	100-m roll	►	**3RX9 015-0AA00**		1	1 unit	42C
		1-km drum	B	**3RX9 016-0AA00**		1	1 unit	42C
	Black (24 V DC)	100-m roll	►	**3RX9 025-0AA00**		1	1 unit	42C
		1-km drum	B	**3RX9 026-0AA00**		1	1 unit	42C

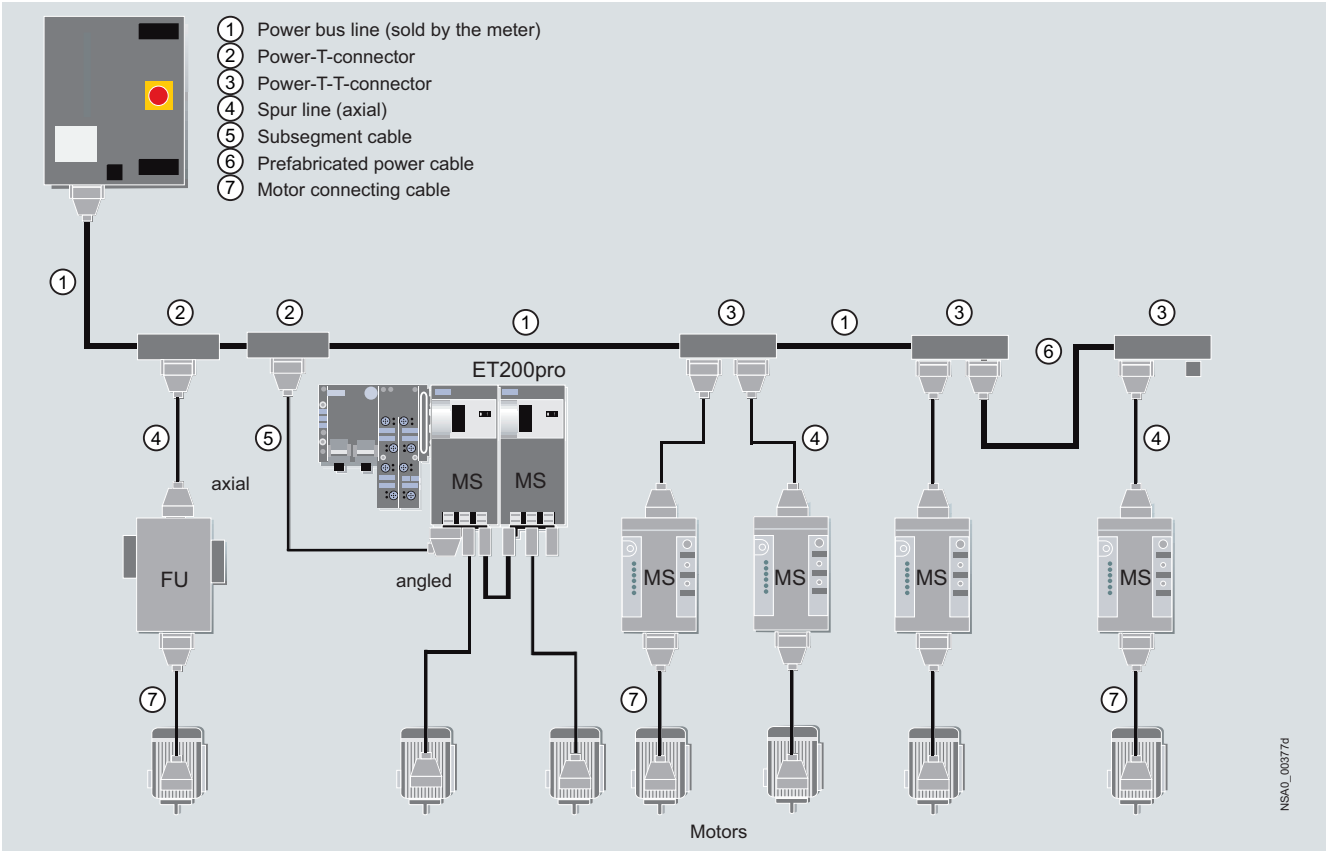


1) Special version according to UL Class

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Power connection technology

Overview



Power supply to the motors via the power bus with power T and TT terminal connectors, spur lines to the field devices and power loop-through via motor connection cables

Power bus

The power supply to the field devices (ECOFAST motor starter, ET 200pro motor starter, M200D motor starter, MCU motor starter or frequency converter) is provided via the power bus, in which the power T terminal connector ② or power double-T terminal connector ③ are connected by power bus cables ①.

Feeders

From the terminal connectors, spur lines ④ with Han Q4/2 plugs lead to the field devices from which the motors are supplied with power via motor connection cables ⑦.

Interruption-free thanks to power terminal connectors

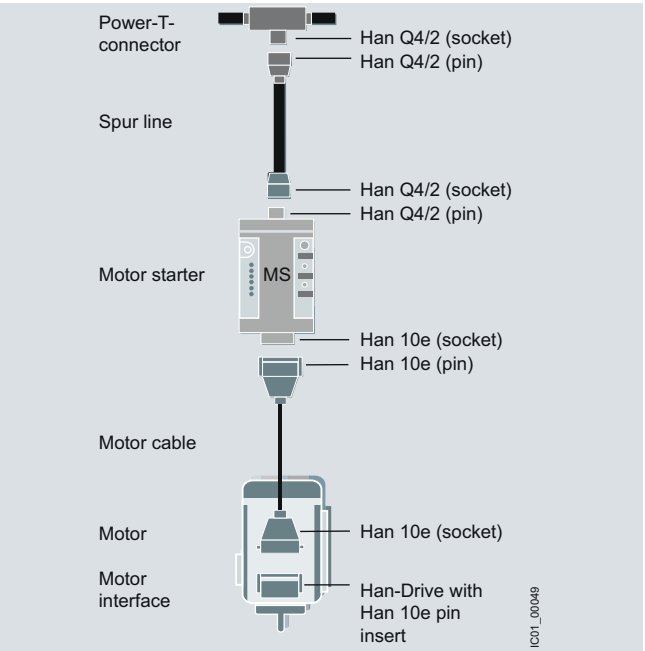
In finger-safe connection technology the power T connectors (② see page 9/80) and power TT terminal connectors (③ see page 9/80) connect the components of a feeder to the power bus. They ensure interruption-free operation, i.e. when the components are plugged in the power bus is not interrupted.

Motor connection cables

This section describes only the motor cables for the connection of the motor with Han 10e plug-in connectors on the motor starter. (⑦ motor connection cables see page 9/81)

Han Q8 plug-in connectors on the motor starter are required:
- For ET 200pro motor starters
  (see "Accessories for ET 200pro Motor Starters", page 9/12)
- For M200D motor starters
  (see "Accessories for M200D Motor Starters", page 9/45)

For MCU motor starters (see page 9/53) the M screw is used for the load feeder.



Power feeder from power bus with spur line to the motor starter and motor cable for connection of the motor
- Connection via Han 10e plug-in connection on the motor starter (for ET 200pro/M200D in HAN Q8 version)
- Connection via HanDrive/10e plug-in connector on the motor
- Motor connection cable as shielded or non-shielded design: Use of a frequency converter requires EMC shielding

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Selection and ordering data

Cross-section	Fixed length	Any length[1)]	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
mm^2	m	m						
① Power bus cables, non-assembled								
5 x 4	20	--	C	**3RK1 911-0AG60**		1	1 unit	42D
	50	--	C	**3RK1 911-0AG70**		1	1 unit	42D
	100	--	C	**3RK1 911-0AG80**		1	1 unit	42D
5 x 6	20	--	C	**3RK1 911-0AH60**		1	1 unit	42D
	50	--	C	**3RK1 911-0AH70**		1	1 unit	42D
	100	--	C	**3RK1 911-0AH80**		1	1 unit	42D
Power cables (new), preassembled								
④ Spur line/connection of switching devices/motor starters both ends with Han Q4/2 (pin/socket), axial cable routing								
5 x 4	--	< 3	C	**3RK1 911-0CP21**		1	1 unit	42D
	--	> 3.1 ... < 5	C	**3RK1 911-0CP31**		1	1 unit	42D
	--	> 5.1 ... < 10	C	**3RK1 911-0CP41**		1	1 unit	42D
	--	> 10.1 ... < 15	C	**3RK1 911-0CP51**		1	1 unit	42D
5 x 6	--	< 3	C	**3RK1 911-0CP22**		1	1 unit	42D
	--	> 3.1 ... < 5	C	**3RK1 911-0CP32**		1	1 unit	42D
	--	> 5.1 ... < 10	C	**3RK1 911-0CP42**		1	1 unit	42D
	--	> 10.1 ... < 15	C	**3RK1 911-0CP52**		1	1 unit	42D

1) When ordering, specify the length as well (example: length = 7.50 m). Orders possible for minimum 10 cm module widths.

Enclosure	Usage	Contacts	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Connector sets for energy supply HAN Q4/2								
2.5 mm^2 / 4 mm^2 / 6 mm^2, comprising:								
• Angled, e.g. for energy supply to motor starter								
1 cable-end connector hood with Pg16	1 female insert	5 female contacts 2.5 mm^2	C	**3RK1 911-2BE50**		1	1 unit	42D
1 cable-end connector hood with Pg16	1 female insert	5 female contacts 4 mm^2	B	**3RK1 911-2BE10**		1	1 unit	42D
1 cable-end connector hood with Pg16	1 female insert	5 female contacts 6 mm^2	B	**3RK1 911-2BE30**		1	1 unit	42D
• Straight, e.g. for energy supply to motor starter								
1 cable-end connector hood with Pg16	1 female insert	5 female contacts 2.5 mm^2	B	**3RK1 911-2BR50**		1	1 unit	42D
1 cable-end connector hood with Pg16	1 female insert	5 female contacts 4 mm^2	B	**3RK1 911-2BR10**		1	1 unit	42D
1 cable-end connector hood with Pg16	1 female insert	5 female contacts 6 mm^2	B	**3RK1 911-2BR30**		1	1 unit	42D
Connector sets for power loop-through connection HAN Q4/2								
2.5 mm^2 / 4 mm^2 / 6 mm^2, comprising:								
• Angled e.g. for connection P&CM								
1 coupling enclosure with Pg16	1 pin insert	5 male contacts 2.5 mm^2	C	**3RK1 911-2BF60**		1	1 unit	42D
1 coupling enclosure with Pg16	1 pin insert	5 male contacts 4 mm^2	B	**3RK1 911-2BF20**		1	1 unit	42D
1 coupling enclosure with Pg16	1 pin insert	5 male contacts 6 mm^2	B	**3RK1 911-2BF40**		1	1 unit	42D
• Straight e.g. for connection on power T terminal connector								
1 coupling enclosure with Pg16	1 pin insert	5 male contacts 2.5 mm^2	B	**3RK1 911-2BS60**		1	1 unit	42D
1 coupling enclosure with Pg16	1 pin insert	5 male contacts 4 mm^2	B	**3RK1 911-2BS20**		1	1 unit	42D
1 coupling enclosure with Pg16	1 pin insert	5 male contacts 6 mm^2	B	**3RK1 911-2BS40**		1	1 unit	42D
Control cabinet gland HAN Q4/2 **e.g. for installation in control cabinets or local switchboxes**			C	**3RK1 911-1BF00**		1	1 unit	42D

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Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
② Power T terminal connectors						
For 400 V AC for connection of feeders (e.g. motor starters) by means of standard round cable at any point of the power bus, by insulation displacement connection						
Use of preassembled bus segments						
• 2.5 mm² / 4 mm²	B	**3RK1 911-2BF01**		1	1 unit	42D
• 4 mm² / 6 mm²	B	**3RK1 911-2BF02**		1	1 unit	42D
③ Power double-T terminal connectors						
For 400 V AC for connection of feeders (e.g. motor starters) by means of standard round cable at any point of the power bus, by insulation displacement connection						
• Use of preassembled bus segments						
• Connection of two motor starters possible						
• 4 mm² / 6 mm²	B	**3RK1 911-2BG02**		1	1 unit	42D
Sealing set (comprising 2 seals)						
For power T / power double-T terminal connector						
• For power cables with Ø 10 ... 13 mm	B	**3RK1 911-5BA00**		1	1 unit	42D
• For power cables with Ø 13 ... 16 mm	B	**3RK1 911-5BA10**		1	1 unit	42D
• For power cables with Ø 16 ... 19 mm	B	**3RK1 911-5BA20**		1	1 unit	42D
• For power cables with Ø 19 ... 22 mm	B	**3RK1 911-5BA30**		1	1 unit	42D
• Blanking plugs	B	**3RK1 911-5BA50**		1	1 unit	42D

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Miscellaneous accessories						
Crimping tools For male and female contacts						
• 1.5 and 2.5 mm²	B	**3RK1 902-0AH00**		1	1 unit	42D
• 1.5, 2.5 and 4 mm²	B	**3RK1 902-0CT00**		1	1 unit	42D
Dismantling tools						
• For male and female contacts for 9-pole inserts (e.g. HAN Q8)	B	**3RK1 902-0AJ00**		1	1 unit	42D
• For male and female contacts for 9-pole HAN Q4/2 inserts	C	**3RK1 902-0AB00**		1	1 unit	42D
Sealing caps For power socket connectors						
• 1 unit per pack	B	**3RK1 902-0CK00**		1	1 unit	42D
• 10 units per pack	B	**3RK1 902-0CJ00**		1	10 units	42D

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

Cross-section	Fixed length	Any length [1]	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
mm^2	m	m						
⑦ **Motor connection cables**								
• Preassembled at both ends with Han 10e (pin/socket), unshielded								
11 x 1.5	1.5	--	C	**3RK1 911-0BK10**		1	1 unit	42D
	--	< 2.9	C	**3RK1 911-0CK20**		1	1 unit	42D
	3	--	C	**3RK1 911-0BK20**		1	1 unit	42D
	--	> 3.1 ... < 4.9	C	**3RK1 911-0CK30**		1	1 unit	42D
	5	--	C	**3RK1 911-0BK30**		1	1 unit	42D
7 x 1.5	1.5	--	C	**3RK1 911-0BH10**		1	1 unit	42D
	--	< 2.9	C	**3RK1 911-0CH20**		1	1 unit	42D
	3	--	C	**3RK1 911-0BH20**		1	1 unit	42D
	--	> 3.1 ... < 4.9	C	**3RK1 911-0CH30**		1	1 unit	42D
	5	--	C	**3RK1 911-0BH30**		1	1 unit	42D
• Preassembled at both ends with Han 10e (pin/socket), shielded								
4 x 2.5	1.5	--	B	**3RK1 911-0BU10**		1	1 unit	42D
4 x 0.75	--	< 2.9	C	**3RK1 911-0CU20**		1	1 unit	42D
	3	--	B	**3RK1 911-0BU20**		1	1 unit	42D
	--	> 3.1 ... < 4.9	C	**3RK1 911-0CU30**		1	1 unit	42D
	5	--	B	**3RK1 911-0BU30**		1	1 unit	42D
• Preassembled at one end with Han 10e (pin), unshielded								
11 x 1.5	1.5	--	C	**3RK1 911-0BJ10**		1	1 unit	42D
	--	< 2.9	C	**3RK1 911-0CJ20**		1	1 unit	42D
	3	--	C	**3RK1 911-0BJ20**		1	1 unit	42D
	--	> 3.1 ... < 4.9	C	**3RK1 911-0CJ30**		1	1 unit	42D
	5	--	C	**3RK1 911-0BJ30**		1	1 unit	42D
7 x 1.5	1.5	--	C	**3RK1 911-0BG10**		1	1 unit	42D
	--	< 2.9	C	**3RK1 911-0CG20**		1	1 unit	42D
	3	--	C	**3RK1 911-0BG20**		1	1 unit	42D
	--	> 3.1 ... < 4.9	C	**3RK1 911-0CG30**		1	1 unit	42D
	5	--	C	**3RK1 911-0BG30**		1	1 unit	42D
• Preassembled at one end with Han 10e (pin), shielded								
4 x 2.5	1.5	--	C	**3RK1 911-0BV10**		1	1 unit	42D
4 x 0.75	--	< 2.9	C	**3RK1 911-0CV20**		1	1 unit	42D
	3	--	B	**3RK1 911-0BV20**		1	1 unit	42D
	--	> 3.1 ... < 4.9	C	**3RK1 911-0CV30**		1	1 unit	42D
	5	--	B	**3RK1 911-0BV30**		1	1 unit	42D
• Non-assembled								
4 x 2.5	20	--	B	**3RK1 911-0BW60**		1	1 unit	42D
4 x 0.75	50	--	B	**3RK1 911-0BW70**		1	1 unit	42D
	100	--	B	**3RK1 911-0BW80**		1	1 unit	42D

[1] When ordering, specify the length as well (example: length = 7.50 m).
Orders possible for minimum 10 cm module widths.

Enclosure	Usage	Contacts	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Connector set for motor connection Han 10e								
• Unshielded								
1 coupling enclosure with Pg13, low	1 pin insert	6 male contacts 1.5 mm^2	B	**3RK1 911-2BK00**		1	1 unit	42D
1 coupling enclosure with Pg21, high	1 pin insert	6 male contacts 1.5 mm^2	B	**3RK1 911-2BL00**		1	1 unit	42D
Connection on motor								
1 cable-end connector hood with Pg16, low	1 female insert	6 female contacts 1.5 mm^2	B	**3RK1 911-2BM00**		1	1 unit	42D
1 cable-end connector hood with Pg21, high	1 female insert	6 female contacts 1.5 mm^2	B	**3RK1 911-2BN00**		1	1 unit	42D
• Shielded								
Outgoing feeder on motor starter								
1 coupling enclosure with M25	1 pin insert	7 male contacts $3 \times 2.5\ mm^2 + 4 \times 0.75\ mm^2$	B	**3RK1 911-2BL10**		1	1 unit	42D
Connection on motor including star bridge								
One cable-end connector hood with M25	1 female insert	7 female contacts $3 \times 2.5\ mm^2 + 4 \times 0.75\ mm^2$	B	**3RK1 911-2BN10**		1	1 unit	42D

More connection technology products
can be found at "Siemens Solution Partners Automation"
www.siemens.com/automation/partnerfinder
under "Distributed Field Installation System" technology.

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Accessories
ECOFAST selection modules

Overview



ECOFAST selection module

The selection module enables the selective shutdown of feeders on the power bus, e.g. for servicing purposes. The module is equipped accordingly with a lockable switch (repair switch). In addition it provides line protection for cross sectional transitions on the power bus and can be used for increasing the size of the power bus segments.

Spectrum:

- Modules with 8, 16 and 25 A rated current
- With feedback contact through M12 plug
- Generally with 6 mm^2 wiring

Selection and ordering data

Connection value	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A						
Selection module For the selective switch-off of feeders with maintenance switching function for line protection for cross-sectional transitions and for increasing the segment size with feedback contact M12						
• 8	B	**3RK1 911-4AB08**		1	1 unit	42D
• 16	B	**3RK1 911-4AB16**		1	1 unit	42D
• 25	B	**3RK1 911-4AB25**		1	1 unit	42D

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Monitoring and Control Devices

10



Price groups PG 2SP, 41B, 41F, 41H, 41L, 42C, 42J, 200, 401, 470, 471

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More information can be found on the Internet: see opening information, page 13

Note:
3RT19 1. function modules can be found
- in the Catalog Add-On IC 10 AO · 2012 in the CD/DVD box
- in the Catalog Add-On IC 10 AO · 2012 at the Information and Download Center
- in the interactive catalog CA 01
- in the Industry Mall

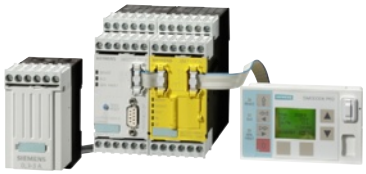
1) See Catalog ST 70 · 2011.

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Introduction

Overview





Type	SIMOCODE pro C	SIMOCODE pro V	Page
SIMOCODE 3UF motor management and control devices			
Basic units	✓	✓	10/5
Current measuring modules	✓	✓	10/13
Current/voltage measuring modules	--	✓	10/13
Decoupling modules	--	✓	10/13
Operator panels	✓	✓	10/13
Operator panels with display	--	✓	10/13
Expansion modules	--	✓	10/14
Failsafe expansion modules	--	✓	10/15
Current transformers	✓	✓	10/20
SIMOCODE ES 2007	✓	✓	10/18
SIMOCODE pro block library for SIMATIC PCS 7	✓	✓	10/19

✓ Available

-- Not available







Type	Basic units	Expansion modules	Software	Page
LOGO! logic modules				
LOGO! Modular basic versions	✓	--	--	10/22
SIPLUS LOGO! Modular basic versions[1)]	✓	--	--	10/23
LOGO! Modular pure versions	✓	--	--	10/24
SPLUS LOGO! Modular pure versions[1)]	✓	--	--	10/25
LOGO! Modular expansion modules	--	✓	--	10/26
SIPLUS LOGO! Modular expansion modules[1)]	--	✓	--	10/27
LOGO! Communication modules	--	✓	--	10/28, 10/29
LOGO! Contact	--	✓	--	10/31
LOGO! Software	--	--	✓	10/32

✓ Corresponds to

-- Does not correspond to

[1)] Devices with extended temperature range and medial loading

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Type	3RP15	3RP20	7PV15	3RT19
Page	10/42	10/48	10/51	10/55
Timing relays				
Enclosure:				
• 17.5 mm industry and household equipment installation	--	--	✓	--
• 22.5 mm industry	✓	--	--	--
• 45 mm industry	--	✓	--	--
• For contactor sizes S0 to S12	--	--	--	✓
Monofunction	✓	✓	✓	✓
Multifunction	✓	✓	✓	--
Monovoltage	--	--	--	✓
Combination voltage	✓	✓	✓	--
Wide voltage range	✓	✓	✓	--
Application:	--	--	--	--
• Control systems and mechanical engineering	✓	✓	✓	✓
• Infrastructure	--	--	✓	--
• Mounting onto contactors	--	--	--	✓

✓ Corresponds to or possible -- Does not correspond to or not possible










Type	3UG45 1., 3UG46 1.	3UG46 3.	3RR2, 3UG46 21, 3UG46 22	3UG46 41	3UG46 24	3UG45 8.	3UG45 01	3UG46 51	Page
Monitoring Relays									
Line monitoring	✓	--	--	--	--	--	--	--	10/68
Voltage monitoring	--	✓	--	--	--	--	--	--	10/73
Current monitoring	--	--	✓	--	--	--	--	--	10/62, 10/76
Power factor and active current monitoring	--	--	3RR2: ✓	✓		--	--	--	10/62, 10/79
Residual current monitoring	--	--	--	--	✓	--	--	--	10/82
Insulation monitoring	--	--	--	--	--	✓	--	--	10/87, 10/90
Level monitoring	--	--	--	--	--	--	✓	--	10/95
Speed monitoring	--	--	--	--	--	--	--	✓	10/99

✓ Possible -- Not possible







Type	3UG48 1.	3UG48 32	3UG48 22	3UG48 41	3UG48 51	Page
Monitoring relays for IO-Link						
Line monitoring	✓	--	--	--	--	10/106
Voltage monitoring	--	✓	--	--	--	10/109
Current monitoring	--	--	✓	--	--	10/112
Power factor and active current monitoring	--	--	--	✓		10/115
Speed monitoring	--	--	--	--	✓	10/119

✓ Possible -- Not possible

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Introduction






Type	3RS10, 3RS11, 3RS20, 3RS21	3RS14, 3RS15	3RN1	3RS17	Page
Temperature monitoring relays					
Temperature monitoring	✓	--	--	--	10/127, 10/130, 10/133
Temperature monitoring relays for IO-Link					
Temperature monitoring for IO-Link	--	✓	--	--	10/142, 10/145
Thermistor motor protection					
Thermistor motor protection	--	--	✓	--	10/148
Interface converters					
Interface converters	--	--	--	✓	10/157

✓ Available
-- Not available

Options

Connection methods

The monitoring and control devices are available with screw or spring-type terminals.

Screw terminals

Spring-type terminals

The terminals are indicated in the corresponding tables by the symbols shown on orange backgrounds.

"Increased safety" type of protection EEx e/d according to ATEX directive 94/9/EC

The communication-capable, modularly designed SIMOCODE pro motor management system (SIRIUS Motor Management and Control Devices) protects motors of types of protection EEx e and EEx d in potentially explosive areas.

ATEX approval for operation in areas subject to explosion hazard

The SIRIUS 3RN1 thermistor motor protection relay for PTC sensors is certified according to ATEX Ex II (2) G and D for environments with explosive gas or dust loads.

The SIRIUS SIMOCODE pro 3UF7 motor management system is certified for the protection of motors in areas subject to explosion hazard according to

- ATEX Ex I (M2); equipment group I, category M2 (mining)
- ATEX Ex II (2) GD; equipment group II, category 2 in area GD

See www.siemens.com/sirius/atex

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Overview



SIMOCODE pro V with current/voltage measuring module, failsafe expansion module and operator panel with display

SIMOCODE pro is a flexible, modular motor management system for motors with constant speeds in the low-voltage performance range. It optimizes the connection between I&C and motor feeder, increases plant availability and allows significant savings to be made for startup, operation and maintenance of a system.

When SIMOCODE pro is installed in the low-voltage switchboard, it is the intelligent interface between the higher-level automation system and the motor feeder and includes the following:

- Multifunctional, solid-state full motor protection which is independent of the automation system
- Integrated control functions instead of hardware for the motor control
- Detailed operating, service and diagnostics data
- Open communication through PROFIBUS DP, the standard for fieldbus systems
- Safety relay function for the failsafe disconnection of motors up to SIL 3 (IEC 61508/62061) or PL e with Category 4 (ISO 13849-1)

SIMOCODE ES is the software package for SIMOCODE pro parameterization, start-up and diagnostics.

Two series

SIMOCODE pro is structured into two functionally tiered series:

- SIMOCODE pro C, as a compact system for direct-on-line starters and reversing starters or the actuation of a circuit breaker
- SIMOCODE pro V, as a variable system with all control functions and with the possibility of expanding the inputs, outputs and functions of the system at will using expansion modules

Expansion possibilities	SIMOCODE pro C, Basic Unit 1	SIMOCODE pro V, Basic Unit 2[1)]
Operator panel	✓	✓
Operator panels with display	--	✓
Current measuring modules	✓	✓
Current/voltage measuring modules	--	✓
Decoupling modules	--	✓
Expansion modules:		
• Digital modules (max. 2)	--	✓
• Failsafe digital module (max. 1)[2)]	--	✓
• Analog module (max. 1)	--	✓
• Ground-fault module (max. 1)	--	✓
• Temperature module (max. 1)	--	✓

✓ Available -- Not available

1) When an operator panel with display and/or a decoupling module is used, more restrictions on the number of expansion modules connectable per basic unit must be observed, see page 10/12.

2) The failsafe digital module can be used instead of one of the two digital modules.

Per feeder each system always comprises one basic unit and one separate current measuring module. The two modules are connected together electrically through the system interface with a connection cable and can be mounted mechanically connected as a unit (one behind the other) or separately (side by side). The motor current to be monitored is decisive only for the choice of the current measuring module.

An operator panel for mounting in the control cabinet door is optionally connectable through a second system interface on the basic unit. Both the current measuring module and the operator panel are electrically supplied by the basic unit through the connection cable. More inputs, outputs and functions can be added to basic unit 2 (SIMOCODE pro V) by means of optional expansion modules, thus supplementing the inputs and outputs already existing on the basic unit. With the DM-F Local and DM-F PROFIsafe failsafe digital modules it is also possible to integrate the failsafe disconnection of motors in the SIMOCODE pro V motor management system.

All modules are connected by connection cables. The connection cables are available in various lengths. The maximum distance between the modules (e.g. between the basic unit and the current measuring module) must not exceed 2.5m. The total length of all the connection cables in a single system must not be more than 3 m.

Order No. scheme

Digit of the Order No.	1st - 4th	5th	6th	7th		8th	9th	10th	11th	12th		13th
	□□□□	□	□	□	–	**1**	□	□	**0**	**0**	–	**0**
SIMOCODE pro motor management system	**3 U F 7**											
Type of unit/module		□										
Functional version of the unit/module			□	□								
Connection type of the current transformer							□					
Voltage version								□				
Example	**3 U F 7**	**0**	**1**	**0**	**–**	**1**	**A**	**A**	**0**	**0**	**–**	**0**

Note:

The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quoted in the catalog in the Selection and ordering data.

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General data

Benefits

General customer benefits

- Integrating the whole motor feeder into the process control by means of a bus significantly reduces the wiring outlay between the motor feeder and PLC
- Decentralization of the automated processes by means of configurable control and monitoring functions in the feeder saves resources in the automation system and ensures full functionality and protection of the feeder even if the I&C or bus system fails
- The acquisition and monitoring of operating, service and diagnostics data in the feeder and process control system increases plant availability as well as maintenance and service-friendliness
- The high degree of modularity allows users to perfectly implement their plant-specific requirements for each motor feeder
- The SIMOCODE pro system offers functionally graded and space-saving solutions for each customer application
- The replacement of the control circuit hardware with integrated control functions decreases the number of hardware components and wiring required and in this way limits stock keeping costs and potential wiring errors
- The use of solid-state full motor protection permits better utilization of the motors and ensures long-term stability of the tripping characteristic and reliable tripping even after years of service

Multifunctional, solid-state full motor protection for rated motor currents up to 820 A

SIMOCODE pro offers comprehensive protection of the motor feeder by means of a combination of different, multi-step and delayable protection and monitoring functions:

- Inverse-time delayed solid-state overload protection (CLASS 5 to 40)
- Thermistor motor protection
- Phase failure/unbalance protection
- Stall protection
- Monitoring of adjustable limit values for the motor current
- Voltage and power monitoring
- Monitoring of the power factor (motor idling/load shedding)
- Ground-fault monitoring
- Temperature monitoring, e.g. over PT100/PT1000
- Monitoring of operating hours, downtime and number of starts etc.

Recording of measuring curves

SIMOCODE pro can record measuring curves and therefore is able, for example, to present the progression of motor current during motor start-up.

Flexible motor control implemented with integrated control functions (instead of comprehensive hardware interlocks)

Many predefined motor control functions have already been integrated into SIMOCODE pro, including all necessary logic operations and interlocks:

- Overload relays
- Direct-on-line and reversing starters
- Wye/delta starters (also with direction reversal)
- Two speeds, motors with separate windings (pole-changing switch); also with direction reversal
- Two speeds, motors with separate Dahlander windings (also with direction reversal)
- Positioner actuation
- Solenoid valve actuation
- Actuation of a circuit breaker
- Soft starter actuation (also with direction reversal)

These control functions are predefined in SIMOCODE pro and can be freely assigned to the inputs and outputs of the device (including PROFIBUS DP).

These predefined control functions can also be flexibly adapted to each customized configuration of a motor feeder by means of freely configurable logic modules (truth tables, counters, timers, edge evaluation, etc.) and with the help of standard functions (power failure monitoring, emergency start, external faults, etc.), without additional auxiliary relays being necessary in the control circuit.

SIMOCODE pro makes a lot of additional hardware and wiring in the control circuit unnecessary which results in a high level of standardization of the motor feeder in terms of its design and circuit diagrams.

Detailed operating, service and diagnostics data

SIMOCODE pro makes different operating, service and diagnostics data available and helps to detect potential faults in time and to prevent them by means of preventative measures. In the event of a malfunction, a fault can be diagnosed, localized and rectified very quickly – there are no or very short downtimes.

Operating data

- Motor switching state derived from the current flow in the main circuit
- All phase currents
- All phase voltages and phase-to-phase voltages
- Active power, apparent power and power factor
- Phase unbalance and phase sequence
- Time to trip
- Motor temperature
- Remaining cooling time etc.

Service data

- Motor operating hours
- Motor stop times
- Number of motor starts
- Number of overload trips
- Interval for compulsory testing of the enabling circuits
- Energy consumed
- Internal comments stored in the device etc.

Diagnostics data

- Numerous detailed early warning and fault messages
- Internal device fault logging with time stamp
- Time stamping of freely selectable status, alarm or fault messages etc.

Easy operation and diagnostics

Operator panel

The operator panel is used to control the motor feeder and can replace all conventional pushbuttons and indicator lights to save space. It makes SIMOCODE pro or the feeder directly operable in the control cabinet. It features all the status LEDs available on the basic unit and externalizes the system interface for simple parameterization or diagnosis on a PC/PG.

Operator panels with display

As an alternative to the 3UF7 20 standard operator panel for SIMOCODE pro V there is also an operator panel with display: the 3UF7 21 is thus able in addition to indicate current measured values, operational and diagnostics data or status information of the motor feeder at the control cabinet. The pushbuttons of the operator panel can be used to control the motor while at the same time the display indicates current measured values, status information, fault messages or the device-internal fault protocol. Using the display settings each user can select for himself how the measured values are presented as standard and how the displayed unit is converted (e.g. °C -> °F).

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Communications

SIMOCODE pro is equipped with an integral PROFIBUS DP interface (SUB-D or terminal connection) and can therefore replace all individual wiring (including marshalling racks), which would usually be required for exchanging data with the higher-level automation system, with a single 2-wire cable.

In conjunction with a failsafe controller (F-CPU), the DM-F PROFIsafe failsafe digital module also enables failsafe disconnection through the same PROFIBUS with the PROFIsafe profile.

SIMOCODE pro supports among other things:
- Baud rates up to 12 Mbit/s
- Automatic baud rate detection
- Communication with up to 3 masters
- Time synchronization over PROFIBUS (SIMATIC S7)
- Time stamp with high timing precision (SIMATIC S7)
- Cyclic services (DPV0) and acyclic services (DPV1)
- DPV1 communication after the Y-Link
- Failsafe communication through PROFIBUS/PROFIsafe in conjunction with the DM-F PROFIsafe (F-DO) failsafe digital module etc.

For SIMOCODE pro motor management and control devices with communication function see page 10/13 onwards.

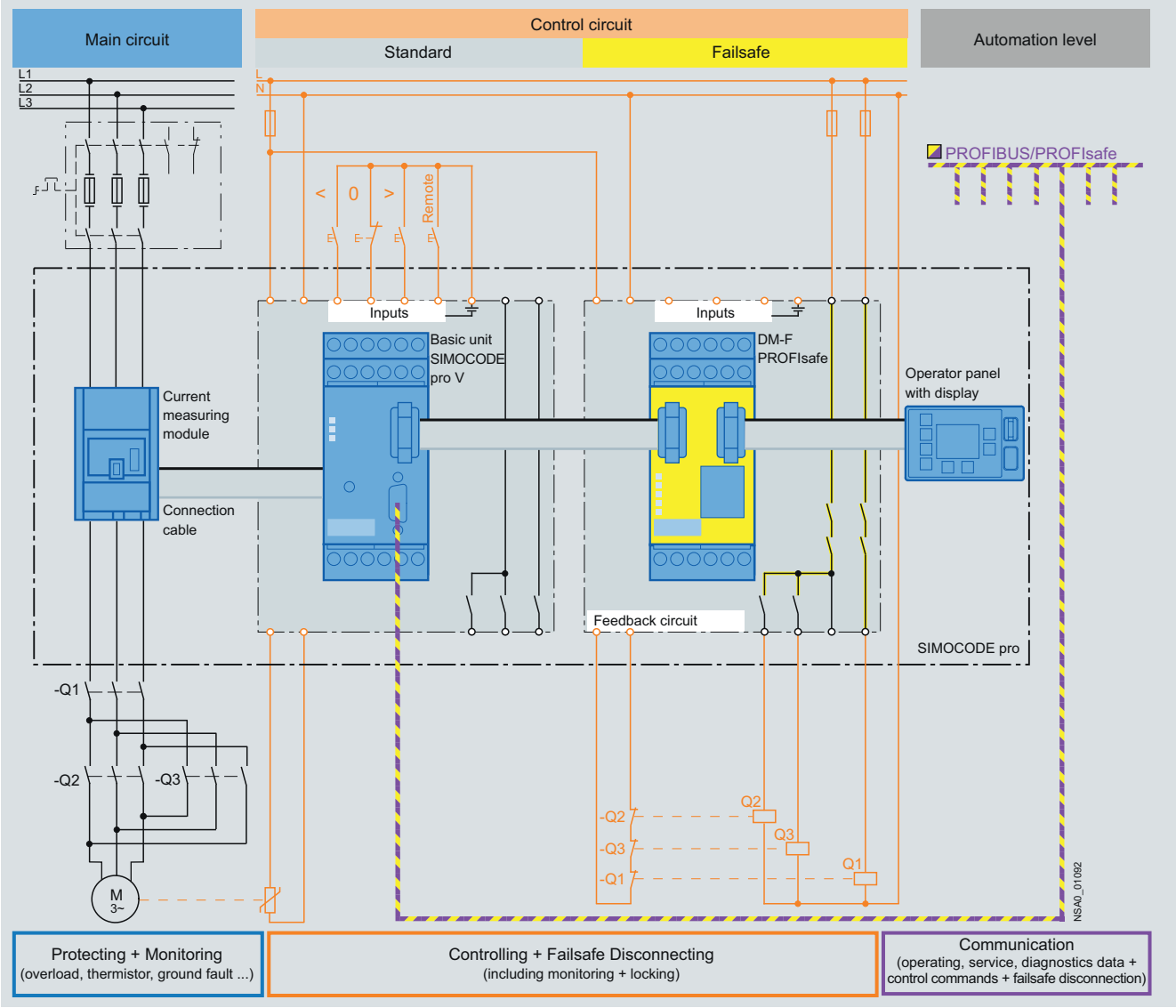
Accessories see page 10/16 onwards.
More information see Chapter 14 "Parametrization, Configuration and Visualization with SIRIUS".

Autonomous operation

An essential feature of SIMOCODE pro is independent execution of all protection and control functions even if communication with the I&C system breaks down. If the bus or automation system fails, the full functionality of the feeder is ensured or a pre-defined response can be initiated, e.g. the feeder can be shut down in a controlled manner or certain configured control mechanisms can be performed (e.g. the direction of rotation can be reversed).

SIMOCODE pro designed for mixed operation

Depending on functional requirements, the two systems can be used simultaneously without any problems and without any additional outlay in a low-voltage system. SIMOCODE pro C is fully upward-compatible to SIMOCODE pro V. The same components are used. The parameterization of SIMOCODE pro C can be transferred without any problems. Both systems have the same removable terminals and the same terminal designations.

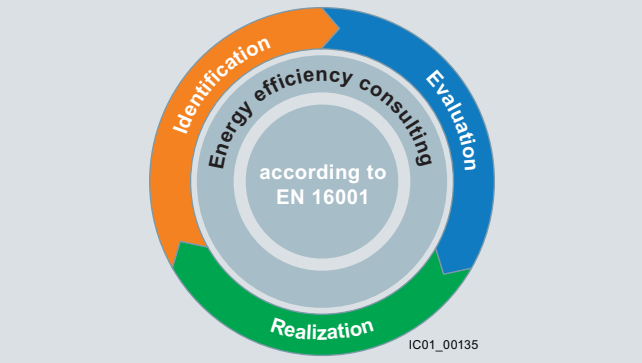


SIMOCODE pro combines all essential functions, including safety functions, through PROFIBUS/PROFIsafe for the motor feeder

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General data

Advantages through energy efficiency



Overview of the energy management process

We offer you a unique portfolio for industrial energy management, using an energy management system that helps to optimally define your energy needs. We split up our industrial energy management into three phases – Identification, Evaluation and Realization – and we support you with the appropriate hardware and software solutions in every process phase.

The innovative products of the SIRIUS industrial controls portfolio can also make a substantial contribution to a plant's energy efficiency (www.siemens.com/sirius/energysaving).

The SIMOCODE pro 3UF7 motor management system contributes to energy efficiency throughout the plant as follows:

- Energy consumption:
  Clear display of the energy consumption of a motor feeder or process element by means of the acquisition and transmission of all operating and consumption date, such as current, voltage, active and reactive power, energy consumption, motor temperature etc.
- Energy management:
  Evaluation of energy measured values (e.g. limit value monitoring) with exporting of local or central actions (= forwarding to higher-level)

Application

SIMOCODE pro is often used for automated processes where plant downtimes are very expensive (e.g. steel or cement industry) and where it is important to prevent plant downtimes through detailed operating, service and diagnostics data or to localize the fault very quickly in the event of a fault.

SIMOCODE pro is modular and space-saving and suited especially for operation in motor control centers in the process industry and for power plant technology.

Applications

Protection and control of motors

In hazardous areas for types of protection EEx e/d according to ATEX directive 94/9/EC
see www.siemens.com/sirius/atex.

- With heavy starting (paper, cement, metal and water industries)
- In high-availability plants (chemical, oil, raw material processing industries, power plants)

Safety technology for SIMOCODE pro

The safe disconnection of motors, in the process industry in particular, is becoming increasingly important as a result of new and revised standards and requirements in the safety technology field.

With the DM-F Local and DM-F PROFIsafe failsafe expansion modules it is easy to integrate functions for failsafe disconnection into the SIMOCODE pro V motor management system while retaining service-proven concepts. The strict separation of safety functions and operational functions proves particularly advantageous for planning, configuring and construction. Seamless integration in the motor management system leads to greater transparency for diagnostics and during operation of the system.

Suitable components for this purpose are the DM-F Local and DM-F PROFIsafe failsafe expansion modules, depending on the requirements:

- the DM-F Local failsafe digital module for when direct assignment between a failsafe hardware shutdown signal and a motor feeder is required, or
- the DM-F PROFIsafe failsafe digital module for when a failsafe controller (F-CPU) creates the signal for the disconnection and transmits it in a failsafe manner through PROFIBUS/ PROFIsafe to the motor management system

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Technical specifications

General data		
Permissible ambient temperature		
• During operation	°C	-25 ... +60 ; 3UF7 21: 0 ... +60
• During storage and transport	°C	-40 ... +80 ; 3UF7 21: -20 ... +70
Degree of protection (to IEC 60529)		
• Measuring modules with busbar connection		IP00
• Operator panel (front) and door adapter (front) with cover		IP54
• Other components		IP20
Shock resistance (sine pulse)	*g*/ms	15/11
Mounting position		Any
Frequency	Hz	50/60 ±5 %
EMC interference immunity (according to IEC 60947-1)		Corresponds to degree of severity 3
• Conductor-related interference, burst acc. to IEC 61000-4-4	kV	2 (power ports)
	kV	1 (signal ports)
• Conductor-related interference, high frequency acc. to IEC 61000-4-6	V	10
• Conductor-related interference, surge acc. to IEC 61000-4-5	kV	2 (line to earth); 3UF7 320-1AB, 3UF7 330-1AB: 1 (line to earth)
	kV	1 (line to line); 3UF7 320-1AB, 3UF7 330-1AB: 0.5 (line to line)
• Electrostatic discharge, ESD acc. to IEC 61000-4-2	kV	8 (air discharge)
	kV	6 (contact discharge); 3UF7 21: 4 (contact discharge)
• Field-related interference acc. to IEC 61000-4-3	V/m	10
Immunity to EMC (according to IEC 60947-1)		
• Conducted and radiated interference emission		EN 55011/ EN 55022 (CISPR 11/ CISPR 22) (corresponds to degree of severity A)
Protective separation (acc. to IEC 60947-1)		All circuits in SIMOCODE pro are safely separated from each other according to IEC 60947-1, i.e. they are designed with doubled creepage paths and clearances. In this context, compliance with the instructions in the test report "Safe Isolation" No.2668 is required.

Basic units				
Control circuits				
Rated control supply voltage U_s (according to IEC 61131-2)		110 ... 240 AC/DC; 50/60 Hz		24 V DC
Operating range		0.85 ... 1.1 x U_s		0.80 ... 1.2 x U_s
Power consumption				
• Basic Unit 1 (3UF7 000)		7 VA/5 W		5 W
• Basic Unit 2 (3UF7 010) incl. two expansion modules connected to Basic Unit 2		10 VA/7 W		7 W
Rated insulation voltage U_i	V	300 (at pollution degree 3)		
Rated impulse withstand voltage U_{imp}	kV	4		
Relay outputs				
• Number		3 monostable relay outputs		
• Specified short-circuit protection for auxiliary contacts (relay outputs)		• Fuse links, gG operational class 6 A, quick-response 10 A (IEC 60947-5-1) • Miniature circuit breaker 1.6 A, C characteristic (IEC 60947-5-1) • Miniature circuit breaker 6 A, C characteristic (I_K < 500 A)		
• Rated uninterrupted current	A	6		
• Rated switching capacity				
- AC-15		6 A/24 V AC	6 A/120 V AC	3 A/230 V AC
- DC-13		2 A/24 V DC	0.55 A/60 V DC	0.25 A/125 V DC
Inputs (binary)		4 inputs supplied internally by the device electronics (with 24 V DC) and connected to a common potential		
Thermistor motor protection (binary PTC)				
• Summation cold resistance	kΩ	≤ 1.5		
• Response value	kΩ	3.4 ... 3.8		
• Return value	kΩ	1.5 ... 1.65		

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General data

Current measuring modules or current/voltage measuring modules

Main circuit

		3UF7 1.0	3UF7 1.1	3UF7 1.2	3UF7 1.3	3UF7 1.4
Current setting I_e	A	0.3 ... 3	2.4 ... 25	10 ... 100	20 ... 200	63 ... 630
Rated insulation voltage U_i	V	690; 3UF7 103 and 3UF7 104: 1 000 (at pollution degree 3)				
Rated operational voltage U_e	V	690				
Rated impulse withstand voltage U_{imp}	kV	6; 3UF7 103 and 3UF7 104: 8				
Rated frequency	Hz	50/60				
Type of current		Three-phase current				
Short circuit		Additional short-circuit protection is required in the main circuit				
Accuracy of current measurement (in the range of 1 x minimum current setting I_u to 8 x max. current setting I_o)	%	±3				
Typical voltage measuring range						
• Phase-to-phase voltage/line-to-line voltage (e.g. $U_{L1\,L2}$)	V	110 ... 690				
• Phase voltage (e.g. $U_{L1\,N}$)	V	65 ... 400				
Accuracy						
• Voltage measurement (phase voltage U_L in the range 230 ... 400 V)	%	±3 (typical)				
• Power factor measurement (in the rated load range power factor = 0.4 ... 0.8)	%	±5 (typical)				
• Apparent power measurement (in the rated load range)	%	±5 (typical)				
Notes on voltage measurement						
• In insulated, high-resistance or asymmetrically grounded forms of power supply system and for single-phase systems • Supply lines for voltage measurement		In these networks the current/voltage measuring module can be used only with an upstream decoupling module on the system interface. In the supply lines from the main circuit for voltage measurement of SIMOCODE pro it may be necessary to provide additional line protection!				

Digital modules

Control circuits

Rated insulation voltage U_i	V	300 (at pollution degree 3)		
Rated impulse withstand voltage U_{imp}	kV	4		
Relay outputs				
• Number • Specified short-circuit protection for auxiliary contacts (relay outputs)		2 monostable or bistable relay outputs (depending on the version) • Fuse links, gG operational class 6 A, quick-response 10 A (IEC 60947-5-1) • Miniature circuit breaker 1.6 A, C characteristic (IEC 60947-5-1) • Miniature circuit breaker 6 A, C characteristic (I_k < 500 A)		
• Rated uninterrupted current	A	6		
• Rated switching capacity				
- AC-15		6 A/24 V AC	6 A/120 V AC	3 A/230 V AC
- DC-13		2 A/24 V DC	0.55 A/60 V DC	0.25 A/125 V DC
Inputs (binary)		4 inputs, electrically isolated, supplied externally with 24 V DC or 110 ... 240 V AC/DC depending on the version, connected to a common potential		

Ground-fault modules

Control circuits

Connectable 3UL22 summation current transformer with rated fault currents I_N	A	0.3/0.5/1		
• $I_{Ground\ fault} \leq 50\ \%\ I_N$		No tripping		
• $I_{Ground\ fault} \geq 100\ \%\ I_N$		Tripping		
Response delay (conversion time)	ms	300 ... 500, additionally delayable		

Temperature modules

Sensor circuit

Typical sensor circuit					
• PT100	mA	1 (typical)			
• PT1000/KTY83/KTY84/NTC	mA	0.2 (typical)			
Open-circuit/short-circuit detection					
• Sensor type		PT100/PT1000	KTY83-110	KTY84	NTC
- Open circuit		✓	✓	✓	--
- Short circuit		✓	✓	✓	✓
- Measuring range	°C	-50 ... +500	-50 ... +175	-40 ... +300	80 ... 160
Measuring accuracy at 20 °C ambient temperature (T20)	K	< ±2			
Deviation due to ambient temperature (in % of measuring range)	%	0.05 per K deviation from T20			
Conversion time	ms	500			
Connection type		Two- or three-wire connection			

✓ Detection possible

-- Detection not possible

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Analog modules

Control circuits

Inputs		
• Channels		2 (passive)
• Parameterizable measuring ranges	mA	0/4 ... 20
• Shielding		Up to 30 m shield recommended, from 30 m shield required
• Max. input current (destruction limit)	mA	40
• Accuracy	%	±1
• Input resistance	Ω	50
• Conversion time	ms	150
• Resolution	bit	12
• Open-circuit detection		With measuring range 4 ... 20 mA
Output		
• Channels		1
• Parameterizable output range	mA	0/4 ... 20
• Shielding		Up to 30 m shield recommended, from 30 m shield required
• Max. voltage at output		30 V DC
• Accuracy	%	±1
• Max. output load	Ω	500
• Conversion time	ms	25
• Resolution	bit	12
• Short-circuit proof		Yes
Connection type		Two-wire connection
Electrical separation of inputs/output to the device electronics		No

Failsafe digital modules

Control circuits

		3UF7 320-1AB00-0	3UF7 320-1AU00-0	3UF7 330-1AB00-0	3UF7 330-1AU00-0
Rated control supply voltage U_s	V	24 DC	110 ... 240 AC/DC; 50/60 Hz	24 DC	110 ... 240 AC/DC; 50/60 Hz
Power consumption		3 W	9.5 VA/4.5 W	4 W	11 VA/5.5 W
Rated insulation voltage	V	300			
Rated impulse withstand voltage U_{imp}	kV	4			
Relay outputs					
• Number		2 relay enabling circuits, 2 relay outputs			
Version of the fuse link for short-circuit protection of the relay enabling circuit	A	4, gG operational class			
Rated uninterrupted current	A	5			
Rated switching capacity					
• At AC-15					
- At 24 V	A	3			
- At 120 V	A	3			
- At 240 V	A	1.5			
• At DC-13					
- At 24 V	A	4			
- At 60 V	A	0.55			
- At 125 V	A	0.22			
Inputs (binary)		5 (with internal power supply from the device electronics)			
Cable length					
• Between sensor/start signal and evaluation electronics		1500 m			
• For further digital signals		300 m			
Safety data [1]					
SIL level max. according to IEC 61508		3			
Performance level PL according to ISO 13849-1		e			
Category according to IEC 13849-1		4			
Stop category according to EN 60204-1		0			
Probability of a dangerous failure (at 40 °C) for SIL 3 applications					
• Per hour (PFH_d) at a high demand rate according to EN 62061	1/h	4.5×10^{-9}	4.6×10^{-9}	4.4×10^{-9}	4.4×10^{-9}
• On demand (PFD_{avg}) at a low demand rate according to IEC 61508		5.4×10^{-6}	5.5×10^{-6}	5.1×10^{-6}	5.2×10^{-6}
T1 value for proof-test interval or service life according to IEC 61508	a	20			

[1] More safety data see system manual "SIMOCODE pro Safety Failsafe Digital Modules" on the Internet at www.siemens.com/simocode.

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General data

More information

Configuration instructions when using an operator panel with display and/or a decoupling module

If you want to use an operator panel with display and/or a decoupling module in the SIMOCODE pro V system, then the following configuration instructions concerning the type and number of connectable expansion modules must be observed.

The following tables show the maximum possible configuration of the expansion modules for the various combinations.

The DM-F Local and DM-F PROFIsafe failsafe expansion modules behave in this connection like digital modules for standard applications.

Use of an operator panel with display

Digital modules	Digital modules	Analog modules	Temperature modules	Ground-fault modules
Only operator panel with display for basic unit 2 (24 V DC or 110 ... 240 V AC/DC)				
Max. 4 expansion modules can be used				
Operator panel with display and current/voltage measurement with basic unit 2 (110 ... 240 V AC/DC)				
Max. 3 expansion modules can be used or:				
--	--	✓	✓	--

✓ Available

-- Not available

Use of a decoupling module (voltage measurement in insulated networks)

Digital modules	Digital modules	Analog modules	Temperature modules	Ground-fault modules
Basic units 2 (24 V DC)				
✓[1)]	✓[1)]	✓	✓	✓
Basic unit 2 (110 ... 240 V AC/DC)				
✓	✓	--	✓	✓
✓[1)]	✓[1)]	✓	✓	--
✓	--	✓	✓	--
✓	--	✓	--	✓

✓ Available

-- Not available

1) No bistable relay outputs and no more than 5 of 7 relay outputs active simultaneously (> 3 s).

Use of a decoupling module (voltage measurement in insulated networks) in combination with an operator panel with display

Digital modules	Digital modules	Analog modules	Temperature modules	Ground-fault modules
Basic units 2 (24 V DC)				
✓	--	✓	✓	✓
✓	✓	--	✓	✓
Basic unit 2 (110 ... 240 V AC/DC)				
✓[2)]	--	✓	✓	✓
✓	✓	--	--	--
✓[1)]	✓[1)]	✓[3)]	--	--
✓	--	--	✓	✓

✓ Available

-- Not available

1) No bistable relay outputs and no more than 5 of 7 relay outputs active simultaneously (> 3 s).

2) No bistable relay outputs and no more than 3 of 5 relay outputs active simultaneously (> 3 s).

3) Analog module output is not used.

Protective separation

All circuits in SIMOCODE pro are safely separated from each other according to IEC 60947-1, Annex N. That is, they are designed with double creepages and clearances. In the event of a fault, therefore, no parasitic voltages can be formed in neighboring circuits. The instructions of Test Report No. 2668 must be complied with.

Types of protection EEx e and EEx d

The overload protection and the thermistor motor protection of the SIMOCODE pro system comply with the requirements for overload protection of explosion-protected motors to the type of protection:

- EEx d "flameproof enclosure" e. g. according to EN 50018 or EN 60079-1
- EEx e "increased safety" e.g. according to EN 50019 or EN 60079-7.

When using SIMOCODE pro devices with a 24 V DC control voltage, electrical separation must be ensured using a battery or a safety transformer according to EN 61558-2-6. EC type test certificate: BVS 06 ATEX F 001
Test report: BVS PP 05.2029 EG.

Selection data for type-tested assemblies/load feeders

Configuration tables according to type of coordination "1" or "2" can be found in the manual "SIRIUS Configuration", Order No.: 3ZX1012-0RA21-0AB0, the manual "Configuring SIRIUS Innovations", order no.: 3ZX1012-0RA21-1AB0 or the system manual SIMOCODE pro.

System manual

The SIMOCODE pro system manual describes the motor management system and its functions in detail. It provides information on configuration, start-up, servicing and maintenance.
A typical example of a reversing starter application is used to teach the user quickly and practically how to use the system. In addition to help on how to identify and rectify faults in the event of a malfunction, the manual also contains special information for servicing and maintenance. For selection of equipment and for configuration, it is recommended that the 3UF7 970-0AA0.-0 system manual is consulted.

A detailed description of the DM-F Local and DM-F PROFIsafe failsafe expansion modules is provided in the system manual "SIMOCODE pro Safety Failsafe Digital Modules", which can be downloaded from the Internet.

Internet

More information is available on the Internet at:
www.siemens.com/simocode.

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Selection and ordering data

Version	Current setting	Width	DT	Screw terminals Order No.	PU (UNIT, SET, M) Price per PU	PS*	PG
	A	mm					
SIMOCODE pro							
 3UF7 000-1A.00-0	**SIMOCODE pro C, Basic Unit 1** PROFIBUS DP interface, 12 Mbit/s, RS 485 4 I/3 O freely assignable, input for thermistor connection, monostable relay outputs, rated control supply voltage U_s:						
	• 24 V DC		▶	**3UF7 000-1AB00-0**	1	1 unit	42J
	• 110 ... 240 V AC/DC		▶	**3UF7 000-1AU00-0**	1	1 unit	42J
 3UF7 010-1A.00-0	**SIMOCODE pro V, Basic Unit 2** PROFIBUS DP interface, 12 Mbit/s, RS 485 4 I/3 O freely assignable, input for thermistor connection, monostable relay outputs, can be expanded by expansion modules, rated control supply voltage U_s:						
	• 24 V DC		▶	**3UF7 010-1AB00-0**	1	1 unit	42J
	• 110 ... 240 V AC/DC		▶	**3UF7 010-1AU00-0**	1	1 unit	42J
 3UF7 100-1AA00-0	**Current measuring modules**						
	• Straight-through transformers	0.3 ... 3	45	▶	**3UF7 100-1AA00-0**	1	1 unit	42J
		2.4 ... 25	45	▶	**3UF7 101-1AA00-0**	1	1 unit	42J
		10 ... 100	55	▶	**3UF7 102-1AA00-0**	1	1 unit	42J
		20 ... 200	120	▶	**3UF7 103-1AA00-0**	1	1 unit	42J
	• Busbar connections	20 ... 200	120	▶	**3UF7 103-1BA00-0**	1	1 unit	42J
		63 ... 630	145	▶	**3UF7 104-1BA00-0**	1	1 unit	42J
 3UF7 110-1AA00-0	**Current/voltage measuring modules For SIMOCODE pro V** Voltage measuring up to 690 V if required in connection with a decoupling module						
	• Straight-through transformers	0.3 ... 3	45	▶	**3UF7 110-1AA00-0**	1	1 unit	42J
		2.4 ... 25	45	▶	**3UF7 111-1AA00-0**	1	1 unit	42J
		10 ... 100	55	▶	**3UF7 112-1AA00-0**	1	1 unit	42J
		20 ... 200	120	▶	**3UF7 113-1AA00-0**	1	1 unit	42J
	• Busbar connections	20 ... 200	120	▶	**3UF7 113-1BA00-0**	1	1 unit	42J
		63 ... 630	145	▶	**3UF7 114-1BA00-0**	1	1 unit	42J
 3UF7 150-1AA00-0	**Decoupling modules** For connecting upstream from a current/voltage measuring module on the system interface when using voltage detection in insulated, high-resistance or asymmetrically grounded systems and in single-phase systems			A	**3UF7 150-1AA00-0**	1	1 unit	42J
 3UF7 200-1AA00-0	**Operator panels** Installation in control cabinet door or front plate, for plugging into basic unit, 10 LEDs for status indication and user-assignable buttons for controlling the motor			▶	**3UF7 200-1AA00-0**	1	1 unit	42J
 3UF7 210-1AA00-0	**Operator panels with display for SIMOCODE pro V**[1] Installation in control cabinet door or front plate, for plugging into basic unit 2, 7 LEDs for status indication and user-assignable buttons for controlling the motor, multilingual display, e.g. for indication of measured values, status information or fault messages			▶	**3UF7 210-1AA00-0**	1	1 unit	42J

[1] Only possible with basic unit 2, product version E03 and higher (from 12/2006).

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Expansion modules

Selection and ordering data

Version	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Expansion modules for SIMOCODE pro V						
With SIMOCODE pro V, it is possible to expand the type and number of inputs and outputs in steps. Each expansion module has two system interfaces on the front. Through the one system interface the expansion module is connected to the system interface of the SIMOCODE pro V using a connection cable; through the second system interface, further expansion modules or the operator panel can be connected. The power supply for the expansion modules is provided by the connection cable through Basic Unit 2. Note: Please order connection cable separately, see page 10/16.						
Digital modules Up to two digital modules can be used to add additional binary inputs and relay outputs to basic unit. The input circuits of the digital modules are supplied from an external power supply. 4 binary inputs and 2 relay outputs, up to 2 digital modules can be connected per basic unit 2						
Relay outputs: Monostable; Input voltage: 24 V DC	►	**3UF7 300-1AB00-0**		1	1 unit	42J
Relay outputs: Monostable; Input voltage: 110 ... 240 V AC/DC	►	**3UF7 300-1AU00-0**		1	1 unit	42J
Relay outputs: Bistable; Input voltage: 24 V DC	►	**3UF7 310-1AB00-0**		1	1 unit	42J
Relay outputs: Bistable; Input voltage: 110 ... 240 V AC/DC	►	**3UF7 310-1AU00-0**		1	1 unit	42J
Analog modules Basic unit can be optionally expanded with analog inputs and outputs (0/4 ... 20 mA) by means of the analog module. 2 inputs (passive) for input and 1 output for output of 0/4 ... 20 mA signals, max. 1 analog module can be connected per Basic Unit 2.	►	**3UF7 400-1AA00-0**		1	1 unit	42J
Ground-fault modules Instead of ground-fault monitoring using the current measuring modules or current/voltage measuring modules, it may be necessary, especially in high-impedance grounded networks, to implement ground-fault monitoring for smaller ground fault currents using a summation current transformer. 1 input for connecting a summation current transformer 3UL22, up to 1 ground-fault module can be connected per Basic Unit 2 Note: For corresponding summation current transformers for rated fault currents of 0.3 A, 0.5 A or 1 A see page 10/84.	►	**3UF7 500-1AA00-0**		1	1 unit	42J
Temperature modules Independently of the thermistor motor protection of the basic units, up to 3 analog temperature sensors can be evaluated using a temperature module. Sensor types: PT100/PT1000, KTY83/KTY84 or NTC 3 inputs for connecting up to 3 analog temperature sensors, up to 1 temperature module can be connected per Basic Unit 2	►	**3UF7 700-1AA00-0**		1	1 unit	42J


3UF7 300-1AU00-0


3UF7 400-1AA00-0


3UF7 500-1AA00-0


3UF7 700-1AA00-0

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

Version	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Failsafe expansion modules for SIMOCODE pro V						
Thanks to the failsafe expansion modules, SIMOCODE pro V can be expanded with the function of a safety relay for the failsafe disconnection of motors. A maximum of 1 failsafe digital module can be connected; it can be used instead of a digital module. *The failsafe expansion modules are equipped likewise with two system interfaces at the front for making the connection to other system components. Unlike other expansion modules, power is supplied to the modules through a separate terminal connection.* Note: Please order connection cable separately, see page 10/16.						
 3UF7 320-1AB00-0 **DM-F Local failsafe digital modules** [1] For failsafe disconnection using a hardware signal 2 relay enabling circuits, joint switching; 2 relay outputs, common potential disconnected failsafe; inputs for sensor circuit, start signal, cascading and feedback circuit, safety function adjustable using DIP switches, rated control supply voltage U_s:						
• 24 V DC	►	**3UF7 320-1AB00-0**		1	1 unit	42J
• 110 ... 240 V AC/DC	►	**3UF7 320-1AU00-0**		1	1 unit	42J
 3UF7 330-1AB00-0 **DM-F PROFIsafe failsafe digital modules** [1] For failsafe disconnection using PROFIBUS/PROFIsafe 2 relay enabling circuits, joint switching; 2 relay outputs, common potential disconnected failsafe; 1 input for feedback circuit; 3 binary standard inputs, rated control supply voltage U_s:						
• 24 V DC	►	**3UF7 330-1AB00-0**		1	1 unit	42J
• 110 ... 240 V AC/DC	►	**3UF7 330-1AU00-0**		1	1 unit	42J

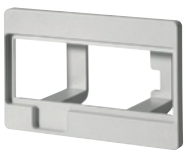
[1] Only possible with basic unit 2, product version E07 and higher (from 05/2011)

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Accessories

Selection and ordering data

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Connection cables (essential accessory)							
 3UF7 932-0AA00-0	**Connection cables** In different lengths for connecting basic unit, current measuring module, current/voltage measuring module, operator panel or expansion modules or decoupling module:						
	• Length 0.025 m (flat) Important: Only suitable for connecting basic unit 2 to its expansion modules or for connecting expansion modules to each other; only when the front plates finish at the same height!	►	**3UF7 930-0AA00-0**		1	1 unit	42J
	• Length 0.1 m (flat)	►	**3UF7 931-0AA00-0**		1	1 unit	42J
	• Length 0.3 m (flat)	►	**3UF7 935-0AA00-0**		1	1 unit	42J
	• Length 0.5 m (flat)	►	**3UF7 932-0AA00-0**		1	1 unit	42J
	• Length 0.5 m (round)	►	**3UF7 932-0BA00-0**		1	1 unit	42J
	• Length 1.0 m (round)	►	**3UF7 937-0BA00-0**		1	1 unit	42J
	• Length 2.5 m (round)	►	**3UF7 933-0BA00-0**		1	1 unit	42J
PC cables and adapters							
 3UF7 940-0AA00-0	**For PC/PG communication with SIMOCODE pro** Through the system interface, for connecting to the serial interface of the PC/PG	►	**3UF7 940-0AA00-0**		1	1 unit	42J
	USB/serial adapters To connect an RS 232 PC cable to the USB port of a PC, we recommend using 3RK3 modular safety system, 3RW44 soft starter, ET 200S/ECOFAST/ET 200pro motor starter, AS-i safety monitor, AS-i analyzer in conjunction with SIMOCODE pro 3UF7	B	**3UF7 946-0AA00-0**		1	1 unit	42J
Memory modules							
 3UF7 900-0AA00-0	The memory module enables the complete parameter assignment of a system to be saved and transferred to a new system, e.g. when a device is replaced, without the need for additional aids or detailed knowledge of the the system interface	►	**3UF7 900-0AA00-0**		1	1 unit	42J
Interface covers							
 3UF7 950-0AA00-0	**For system interface**	►	**3UF7 950-0AA00-0**		1	5 units	42J
Addressing plug							
 3UF7 910-0AA00-0	**For assigning the PROFIBUS addresses without using a PC or programming device** on SIMOCODE pro through the system interface	►	**3UF7 910-0AA00-0**		1	1 unit	42J
Door adapters							
 3UF7 920-0AA00-0	**For external connection of the system interface** Outside, for example, a control cabinet	►	**3UF7 920-0AA00-0**		1	1 unit	42J
Adapters for operator panel							
 3UF7 922-0AA00-0	The adapter enables the smaller 3UF7 20 operator panel from SIMOCODE pro to be used in a front panel cutout in which previously, e.g. after a change of system, a larger 3UF5 2 operator panel from SIMOCODE-DP had been used; degree of protection IP54	►	**3UF7 922-0AA00-0**		1	1 unit	42J

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Labeling strips						
 3UF7 925-0AA02-0						
• For pushbuttons of the 3UF7 20 operator panel	►	**3UF7 925-0AA00-0**		100	400 units	42J
• For pushbuttons of the 3UF7 21 operator panel with display	►	**3UF7 925-0AA01-0**		100	600 units	42J
• For LEDs of the 3UF7 20 operator panel	►	**3UF7 925-0AA02-0**		100	1 200 units	42J
Note:						
Pre-punched labeling strips for user-specific printing using the free inscription software "SIRIUS Label Designer" on a laser printer.						
Note the software version!						
Download from www.siemens.com/simocode.						
Push-in lugs						
 3RB19 00-0B						
For screw fixing e.g. on mounting plate, 2 units required per device						
• Can be used with 3UF7 1.0, 3UF7 1.1 and 3UF7 1.2	A	**3RB19 00-0B**		100	10 units	41F
• Can be used with 3UF7 0, 3UF7 3, 3UF7 4, 3UF7 5 and 3UF7 7	B	**3RP19 03**		1	10 units	41H
Terminal covers						
 3RT19 56-4EA1						
Covers for cable lugs and busbar connections						
• Length 100 mm, can be used for 3UF7 1.3-1BA00-0	►	**3RT19 56-4EA1**		1	1 unit	41B
• Length 120 mm, can be used for 3UF7 1.4-1BA00-0	►	**3RT19 66-4EA1**		1	1 unit	41B
Covers for box terminals						
• Length 25 mm, can be used for 3UF7 1.3-1BA00-0	►	**3RT19 56-4EA2**		1	1 unit	41B
• Length 30 mm, can be used for 3UF7 1.4-1BA00-0	►	**3RT19 66-4EA2**		1	1 unit	41B
 3RT19 56-4EA2						
Covers for screw terminals between contactor and current measuring module or current/voltage measuring module for direct mounting						
• Can be used for 3UF7 1.3-1BA00-0	►	**3RT19 56-4EA3**		1	1 unit	41B
• Can be used for 3UF7 1.4-1BA00-0	►	**3RT19 66-4EA3**		1	1 unit	41B
Box terminal blocks						
 3RT19 5.-4G						
For round and ribbon cables						
• Up to 70 mm^2, can be used for 3UF7 1.3-1BA00-0	►	**3RT19 55-4G**		1	1 unit	41B
• Up to 120 mm^2, can be used for 3UF7 1.3-1BA00-0	►	**3RT19 56-4G**		1	1 unit	41B
• Up to 240 mm^2, can be used for 3UF7 1.4-1BA00-0	►	**3RT19 66-4G**		1	1 unit	41B
Bus termination modules						
With separate control supply voltage for terminating the bus following the last unit on the bus line						
Supply voltage:						
• 115/230 V AC	C	**3UF1 900-1KA00**		1	1 unit	42J
• 24 V DC	C	**3UF1 900-1KB00**		1	1 unit	42J
System manuals						
 3UF7 970-0AA01-0						
SIMOCODE pro With token fee Languages:						
• German	►	**3UF7 970-0AA01-0**		1	1 unit	42J
• English	►	**3UF7 970-0AA00-0**		1	1 unit	42J
• French	►	**3UF7 970-0AA02-0**		1	1 unit	42J

Note:

System manual "SIMOCODE pro Safety Failsafe Digital Modules" see on the Internet at www.siemens.com/simocode.

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Accessories

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIMOCODE ES 2007 Basic						
 3ZS1 312-4CC10-0YA5						
Floating license for one user						
Engineering software, type of delivery: on CD incl. electronic documentation, 3 languages (German/English/French), communication through system interface						
• License key on USB stick, Class A	►	**3ZS1 312-4CC10-0YA5**		1	1 unit	42J
• License key download, Class A	►	**3ZS1 312-4CE10-0YB5**		1	1 unit	42J
SIMOCODE ES 2007 Standard						
Floating license for one user						
Engineering software, type of delivery: on CD incl. electronic documentation, 3 languages (German/English/French), communication through system interface, integrated graphics editor						
• License key on USB stick, Class A	►	**3ZS1 312-5CC10-0YA5**		1	1 unit	42J
• License key download, Class A	►	**3ZS1 312-5CE10-0YB5**		1	1 unit	42J
Upgrade for SIMOCODE ES 2004 and later	A	**3ZS1 312-5CC10-0YE5**		1	1 unit	42J
Floating license for one user, engineering software, type of delivery: on CD incl. electronic documentation, 3 languages (German/English/French), license key on USB stick, Class A, communication through system interface, integrated graphics editor						
Powerpack for SIMOCODE ES 2007 Basic	A	**3ZS1 312-5CC10-0YD5**		1	1 unit	42J
Floating license for one user, engineering software, license key on USB stick, Class A, 3 languages (German/English/French), communication through the system interface, integrated graphics editor						
Software Update Service	►	**3ZS1 312-5CC10-0YL5**		1	1 unit	42J
For 1 year with automatic extension, assuming the current software version is in use, engineering software, type of delivery: on CD incl. electronic documentation, communication through system interface, integrated graphics editor						
SIMOCODE ES 2007 Premium						
Floating license for one user						
Engineering software, type of delivery: on CD incl. electronic documentation, 3 languages (German/English/French), communication through PROFIBUS or system interface, integrated graphics editor, STEP7 Object Manager						
• License key on USB stick, Class A	►	**3ZS1 312-6CC10-0YA5**		1	1 unit	42J
• License key download, Class A	►	**3ZS1 312-6CE10-0YB5**		1	1 unit	42J
Upgrade for SIMOCODE ES 2004 and later	A	**3ZS1 312-6CC10-0YE5**		1	1 unit	42J
Floating license for one user, engineering software, type of delivery: on CD incl. electronic documentation, 3 languages (German/English/French), license key on USB stick, Class A, communication through PROFIBUS or system interface, integrated graphics editor. STEP7 Object Manager						
Powerpack for SIMOCODE ES 2007 Standard	A	**3ZS1 312-6CC10-0YD5**		1	1 unit	42J
Floating license for one user, engineering software, license key on USB stick, Class A, 3 languages (German/English/French), communication through PROFIBUS or the system interface, integrated graphics editor, STEP7 Object Manager						
Software Update Service	►	**3ZS1 312-6CC10-0YL5**		1	1 unit	42J
For 1 year with automatic extension, assuming the current software version is in use, engineering software, type of delivery: on CD incl. electronic documentation, communication through PROFIBUS or system interface, integrated graphics editor, STEP7 Object Manager						

Please order PC cable separately, see page 10/16.

Note:

More information see Chapter 14 "Parametrization, Configuration and Visualization with SIRIUS".

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIMOCODE pro block library for SIMATIC PCS 7						
 3UF7 982-0AA00-0	Scope of supply: AS modules and faceplates for integrating SIMOCODE pro into the PCS 7 process control system					
	Engineering software for one engineering station (single license) including runtime software for execution of the AS module in an automation system (single license), German/English/French, Type of delivery: CD incl. electronic documentation					
	• For PCS 7 Version V 7.0/V 7.1	►	**3UF7 982-0AA10-0**	1	1 unit	42J
	Runtime software For execution of the AS module in an automation system (single license), Type of delivery: License without software and documentation					
	• For PCS 7 Version V 7.x	►	**3UF7 982-0AA11-0**	1	1 unit	42J
	Upgrade for the PCS 7 block library SIMOCODE pro, V 6.0 or V 6.1 to version SIMOCODE pro V 7.0/V 7.1 for integrating SIMOCODE pro into the PCS 7 process control system, for PCS 7 Version V 7.0/V 7.1 (single license), German/English/French, type of delivery: CD incl. electronic documentation	A	**3UF7 982-0AA13-0**	1	1 unit	42J

Note:

More information see Chapter 14 "Parametrization, Configuration and Visualization with SIRIUS".

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3UF18 current transformers for overload protection

Overview

The 3UF18 current transformers are protection transformers and are used for actuating overload relays. Protection transformers are designed to ensure proportional current transfer up to a multiple of the primary rated current. The 3UF18 current transformers convert the maximum current of the corresponding operating range into the standard value of 1 A secondary.

Selection and ordering data

Mounting type	Operating range A	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
For stand-alone installation							
 3UF18 43							
Screw fixing and snap-on mounting onto 35 mm standard mounting rail	0.25 … 2.5[1]	C	**3UF18 43-1BA00**		1	1 unit	42J
	1.25 … 12.5[1]	C	**3UF18 43-2AA00**		1	1 unit	42J
	2.5 … 25[1]	C	**3UF18 43-2BA00**		1	1 unit	42J
	12.5 … 50	C	**3UF18 45-2CA00**		1	1 unit	42J
	16 … 65	C	**3UF18 47-2DA00**		1	1 unit	42J
	25 … 100	C	**3UF18 48-2EA00**		1	1 unit	42J
For mounting onto contactors and stand-alone installation							
 3UF18 68							
Screw fixing	32 … 130	C	**3UF18 50-3AA00**		1	1 unit	42J
	50 … 200	C	**3UF18 52-3BA00**		1	1 unit	42J
	63 … 250	C	**3UF18 54-3CA00**		1	1 unit	42J
	100 … 400	C	**3UF18 56-3DA00**		1	1 unit	42J
	125 … 500	C	**3UF18 57-3EA00**		1	1 unit	42J
	160 … 630	C	**3UF18 68-3FA00**		1	1 unit	42J
	205 … 820	C	**3UF18 68-3GA00**		1	1 unit	42J

[1] The following setting ranges for the protection of EEx e motors are applicable:
3UF18 43-1BA00, 0.25 ... 1.25 A;
3UF18 43-2AA00, 1.25 ... 6.3 A;
3UF18 43-2BA00, 2.5 ... 12.5 A.

Accessories

For contactor type	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Terminal covers						
 3TX7 466-0A						
For transformer/contactor combinations and stand-alone installation for transformer (cover required per connection side)						
3UF18 45	D	**3TX7 446-0A**		1	1 unit	41B
3UF18 48	D	**3TX7 466-0A**		1	1 unit	41B
3UF18 50, 3UF18 52	D	**3TX7 506-0A**		1	1 unit	41B
3UF18 54 to 3UF18 57	D	**3TX7 536-0A**		1	2 units	41B
3UF18 68-3FA00	B	**3TX7 686-0A**		1	1 unit	41B
3UF18 68-3GA00	B	**3TX7 696-0A**		1	1 unit	41B
For covering the screw terminal for direct mounting on contactor (cover required per contactor/transformer combination)						
3UF18 48	D	**3TX7 466-0B**		1	1 unit	41B
3UF18 50, 3UF18 52	D	**3TX7 506-0B**		1	1 unit	41B
3UF18 54 to 3UF18 57	D	**3TX7 536-0B**		1	1 unit	41B
3UF18 68-3FA00	D	**3TX7 686-0B**		1	1 unit	41B
3UF18 68-3GA00	D	**3TX7 696-0B**		1	1 unit	41B

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



LOGO! logic modules

LOGO! logic modules

- The compact, user-friendly, and low-cost solution for simple control tasks
- Compact, user-friendly, can be used universally without accessories
- All in one: The display and operator panel are integrated
- 38/43 different functions can be linked at a press of a button or with PC software; up to 200/400 times in total
- Functions can be changed simply using buttons; no complicated rewiring

SIPLUS LOGO!

- The control system for use in the toughest ambient conditions
- With extended temperature range from -40/-25 °C to +70 °C
- Use under medial loading (corrosive gas atmosphere)
- Condensation permissible
- With the service-proven PLC technology from LOGO!
- User-friendly handling, programming, maintenance and service
- Ideal for use in vehicle manufacturing, environmental engineering, mining, chemical plants, conveyor systems, the food industry, etc.

Accessories:

- With the front panel assembly kit, mounting the logic modules is easy and safe also in front panels, with degree of protection IP65 possible.
- To ensure safe operation at a combustion engine battery it may be necessary to install a SIPLUS upmiter voltage reducer between the battery and SIPLUS LOGO!.

Information on LOGO! can be found in Catalog ST 70:
www.siemens.com/simatic/printmaterial

or at:

www.siemens.com/siplus-extreme

Brochures to assist in the selection of SIMATIC products can be found at:

www.siemens.com/simatic/printmaterial

Application

LOGO! is universally applicable, e.g.:

- Building installation and wiring (lighting, shutters, awnings, doors, access control, barriers, ventilation systems, etc.)
- Control cabinet installation
- Machine and device construction (pumps, small presses, compressors, hydraulic lifts, conveyors, etc.)
- Special controls for conservatories and greenhouses
- Signal preprocessing for other controllers
- The LOGO! Modular logic modules can be expanded easily for each application.

Marine approvals

American Bureau of Shipping, Bureau Veritas, Det Norske Veritas, Germanischer Lloyd, Lloyds Register of Shipping; Polski Rejestr Statków

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LOGO! Modular basic versions

Overview



LOGO! Modular basic version

- The space-saving basic versions with display
- Interface for connecting expansion modules, max. 24 digital inputs, 16 digital outputs, 8 analog inputs and 2 analog outputs can be addressed
- With connection option for LOGO! TD text display (can be connected to all LOGO! basic versions as from-0BA6 upwards)

LOGO!-0BA7 versions

- Ethernet interface for communication with SIMATIC S7 controller, SIMATIC panel and PC
- Networking of up to 8 LOGO! units
- Use of standard SD card or SIMATIC memory card

Selection and ordering data

Version	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
LOGO! Modular basic versions (-0BA7)						
LOGO! logic modules 12/24RCE Control supply voltage 12/24 V DC, 8 digital inputs 12/24 V DC, of which 4 can be used as analog inputs (0 to 10 V), 4 relay outputs 10 A, integrated time switch; 400 function blocks can be combined, modular expandability, Ethernet interface	A	**6ED1 052-1MD00-0BA7**		1	1 unit	200
LOGO! logic modules 230RCE Control supply voltage 115/230 V AC/DC, 8 digital inputs 115/230 V AC/DC, 4 relay outputs 10 A, integrated time switch; 400 function blocks can be combined, modular expandability, Ethernet interface	A	**6ED1 052-1FB00-0BA7**		1	1 unit	200
LOGO! Modular basic versions (-0BA6)						
LOGO! logic modules 24C Control supply voltage 24 V DC, 8 digital inputs 12/24 V DC, of which 4 can be used as analog inputs (0 to 10 V), 4 transistor outputs 0.3 A, integrated time switch; 200 function blocks can be combined, modular expandability	A	**6ED1 052-1CC01-0BA6**		1	1 unit	200
LOGO! logic modules 12/24RC Control supply voltage 12/24 V DC, 8 digital inputs 12/24 V DC, of which 4 can be used as analog inputs (0 to 10 V), 4 relay outputs 10 A, integrated time switch; 200 function blocks can be combined, modular expandability	A	**6ED1 052-1MD00-0BA6**		1	1 unit	200
LOGO! logic modules 24RC Control supply voltage 24 V AC/DC, 8 digital inputs 24 V AC/DC, 4 relay outputs 10 A, integrated time switch; 200 function blocks can be combined, modular expandability	A	**6ED1 052-1HB00-0BA6**		1	1 unit	200
LOGO! logic modules 230RC Control supply voltage 115/230 V AC/DC, 8 digital inputs 115/230 V AC/DC, 4 relay outputs 10 A, integrated time switch; 200 function blocks can be combined, modular expandability	A	**6ED1 052-1FB00-0BA6**		1	1 unit	200

Accessories see page 10/30.

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Overview



SIPLUS LOGO! Modular basic version

- The space-saving basic versions with display
- Interface for connecting expansion modules, max. 24 digital inputs, 16 digital outputs, 8 analog inputs and 2 analog outputs can be addressed
- With connection option for LOGO! TD text display (can be connected to all LOGO! 0BA6 basic versions)

Note:

SIPLUS extreme products are based upon Siemens Industry standard products.

Selection and ordering data

Version	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIPLUS LOGO! Modular basic versions – extended temperature range and medial loading						
SIPLUS LOGO! 24C Control supply voltage 24 V DC, 8 digital inputs 12/24 V DC, of which 4 can be used as analog inputs (0 to 10 V), 4 transistor outputs 0.3 A, integrated time switch; 200 function blocks can be combined, modular expandability, temperature range -25 ... +70 °C	D	**6AG1 052-1CC01-2BA6**		1	1 unit	470
SIPLUS LOGO! 12/24RC Control supply voltage 12/24 V DC, 8 digital inputs 12/24 V DC, of which 4 can be used as analog inputs (0 to 10 V), 4 relay outputs 10 A, integrated time switch; 200 function blocks can be combined, modular expandability, temperature range -25 ... +70 °C	D	**6AG1 052-1MD00-2BA6**		1	1 unit	470
SIPLUS LOGO! 24RC Control supply voltage 24 V AC/DC, 8 digital inputs 24 V AC/DC, 4 relay outputs 10 A, integrated time switch; 200 function blocks can be combined, modular expandability, temperature range -25 ... +70 °C	D	**6AG1 052-1HB00-2BA6**		1	1 unit	470
SIPLUS LOGO! 230RC Control supply voltage 115/230 V AC/DC, 8 digital inputs 115/230 V AC/DC, 4 relay outputs 10 A, integrated time switch; 200 function blocks can be combined, modular expandability, temperature range -25 ... +70 °C	D	**6AG1 052-1FB00-2BA6**		1	1 unit	470

Accessories see page 10/30.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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LOGO! Modular pure versions

Overview



LOGO! Modular pure version

- The cost-optimized basic versions without display
- Interface for connecting expansion modules, max. 24 digital inputs, 16 digital outputs, 8 analog inputs and 2 analog outputs can be addressed
- With connection option for LOGO! TD text display (can be connected to all LOGO! 0BA6 basic versions)

Selection and ordering data

Version	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
LOGO! Modular pure versions						
LOGO! logic modules 24Co Control supply voltage 24 V DC, 8 digital inputs 24 V DC, of which 4 can be used as analog inputs (0 to 10 V), 4 digital outputs 24 V DC, 0.3 A; integrated time switch; without display and keyboard; 200 function blocks can be combined, modular expandability	A	**6ED1 052-2CC01-0BA6**		1	1 unit	200
LOGO! logic modules 12/24RCo Control supply voltage 12/24 V DC, 8 digital inputs 12/24 V DC, of which 4 can be used as analog inputs (0 to 10 V), 4 relay outputs 10 A, integrated time switch; without display and keyboard; 200 function blocks can be combined, modular expandability	A	**6ED1 052-2MD00-0BA6**		1	1 unit	200
LOGO! logic modules 24RCo Control supply voltage 24 V AC/DC, 8 digital inputs 24 V AC/DC, 4 relay outputs 10 A, integrated time switch; without display and keyboard; 200 function blocks can be combined, modular expandability	A	**6ED1 052-2HB00-0BA6**		1	1 unit	200
LOGO! logic modules 230RCo Control supply voltage 115/230 V AC/DC, 8 digital inputs 115/230 V AC/DC, 4 relay outputs 10 A, integrated time switch; without display and keyboard; 200 function blocks can be combined, modular expandability	A	**6ED1 052-2FB00-0BA6**		1	1 unit	200

Accessories see page 10/30.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



SIPLUS LOGO! Modular pure version

- The cost-optimized basic versions without display
- Interface for connecting expansion modules, max. 24 digital inputs, 16 digital outputs, 8 analog inputs and 2 analog outputs can be addressed
- With connection option for LOGO! TD text display (can be connected to all LOGO! 0BA6 basic versions)

Note:

SIPLUS extreme products are based upon Siemens Industry standard products.

Selection and ordering data

Version	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIPLUS LOGO! Modular pure versions – extended temperature range and medial loading						
SIPLUS LOGO! 24Co Control supply voltage 24 V DC, 8 digital inputs 24 V DC, of which 4 can be used as analog inputs (0 to 10 V), 4 digital outputs 24 V DC, 0.3 A; integrated time switch; without display and keyboard; 200 function blocks can be combined, modular expandability, temperature range -25 ... +70 °C	D	**6AG1 052-2CC01-2BA6**		1	1 unit	470
SIPLUS LOGO! 12/24RCo Control supply voltage 12/24 V DC, 8 digital inputs 12/24 V DC, of which 4 can be used as analog inputs (0 to 10 V), 4 relay outputs 10 A, integrated time switch; without display and keyboard; 200 function blocks can be combined, modular expandability, temperature range -40 ... +70 °C	D	**6AG1 052-2MD00-2BA6**		1	1 unit	470
SIPLUS LOGO! 24RCo Control supply voltage 24 V AC/DC, 8 digital inputs 24 V AC/DC, 4 relay outputs 10 A, integrated time switch; without display and keyboard; 200 function blocks can be combined, modular expandability, temperature range -40 ... +70 °C	D	**6AG1 052-2HB00-2BA6**		1	1 unit	470
SIPLUS LOGO! 230RCo Control supply voltage 115/230 V AC/DC, 8 digital inputs 115/230 V AC/DC, 4 relay outputs 10 A, integrated time switch; without display and keyboard; 200 function blocks can be combined, modular expandability, temperature range -40 ... +70 °C	D	**6AG1 052-2FB00-2BA6**		1	1 unit	470

Accessories see page 10/30.

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LOGO! Modular expansion modules

Overview



LOGO! Modular expansion module

- Expansion modules for connection to LOGO! Modular
- With digital inputs and outputs, analog inputs or analog outputs

Selection and ordering data

Version	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
LOGO! Modular expansion modules						
LOGO! DM8 24 Control supply voltage 24 V DC, 4 digital inputs 24 V DC, 4 digital outputs 24 V DC, 0.3 A	A	**6ED1 055-1CB00-0BA0**		1	1 unit	200
LOGO! DM16 24 Control supply voltage 24 V DC, 8 digital inputs 24 V DC, 8 digital outputs 24 V DC, 0.3 A	A	**6ED1 055-1CB10-0BA0**		1	1 unit	200
LOGO! DM8 12/24R Control supply voltage 12/24 V DC, 4 digital inputs 12/24 V DC, 4 relay outputs 5 A	A	**6ED1 055-1MB00-0BA1**		1	1 unit	200
LOGO! DM8 24R Control supply voltage 24 V AC/DC, 4 digital inputs 24 V AC/DC, 4 relay outputs 5 A	A	**6ED1 055-1HB00-0BA0**		1	1 unit	200
LOGO! DM16 24R Control supply voltage 24 V DC, 8 digital inputs 24 V DC, 8 relay outputs 5 A	A	**6ED1 055-1NB10-0BA0**		1	1 unit	200
LOGO! DM8 230R Control supply voltage 115/230 V AC/DC, 4 digital inputs 115/230 V AC/DC, 4 relay outputs 5 A	A	**6ED1 055-1FB00-0BA1**		1	1 unit	200
LOGO! DM16 230R Control supply voltage 115/230 V AC/DC, 8 digital inputs 115/230 V AC/DC, 8 relay outputs 5 A	A	**6ED1 055-1FB10-0BA0**		1	1 unit	200
LOGO! AM2 Control supply voltage 12/24 V DC, 2 analog inputs 0 to 10 V or 0/4 to 20 mA, 10 bit resolution	A	**6ED1 055-1MA00-0BA0**		1	1 unit	200
LOGO! AM2 RTD Control supply voltage 12/24 V DC, 2 analog inputs PT100/PT1000, temperature range -50 to 200 °C	A	**6ED1 055-1MD00-0BA1**		1	1 unit	200
LOGO! AM2 AQ Control supply voltage 24 V DC, 2 analog outputs 0 to 10 V, 0/4 to 20 mA	A	**6ED1 055-1MM00-0BA1**		1	1 unit	200

Accessories see page 10/30.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



SIPLUS LOGO! Modular expansion module

- Expansion modules for connection to LOGO! Modular
- With digital inputs and outputs, analog inputs or analog outputs

Note:

SIPLUS extreme products are based upon Siemens Industry standard products.

Selection and ordering data

Version	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIPLUS LOGO! Modular expansion modules – extended temperature range and medial loading						
SIPLUS LOGO! DM8 24 Control supply voltage 24 V DC, 4 digital inputs 24 V DC, 4 digital outputs 24 V DC, 0.3 A						
• Temperature range -25 ... +70 °C	D	**6AG1 055-1CB00-2XB0**		1	1 unit	470
• Temperature range -40 ... +70 °C	D	**6AG1 055-1CB00-2BY0**		1	1 unit	470
SIPLUS LOGO! DM8 12/24 Control supply voltage 12/24 V DC, 4 digital inputs 12/24 V DC, 4 digital outputs 24 V DC, 0.3 A						
• Temperature range -25 ... +70 °C	D	**6AG1 055-1PB00-2XB0**		1	1 unit	470
• Temperature range -40 ... +70 °C	D	**6AG1 055-1PB00-2BY0**		1	1 unit	470
SIPLUS LOGO! DM8 24R Control supply voltage 24 V AC/DC, 4 digital inputs 24 V AC/DC, 4 relay outputs 5 A						
• Temperature range -25 ... +70 °C	D	**6AG1 055-1HB00-2XB0**		1	1 unit	470
• Temperature range -40 ... +70 °C	D	**6AG1 055-1HB00-2BY0**		1	1 unit	470
SIPLUS LOGO! DM8 12/24R Control supply voltage 12/24 V DC, 4 digital inputs 12/24 V DC, 4 relay outputs 5 A						
• Temperature range -25 ... +70 °C	D	**6AG1 055-1MB00-2XB1**		1	1 unit	470
• Temperature range -40 ... +70 °C	D	**6AG1 055-1MB00-2BY1**		1	1 unit	470
SIPLUS LOGO! DM8 230R Control supply voltage 115/230 V AC/DC, 4 digital inputs 115/230 V AC/DC, 4 relay outputs 5 A						
• Temperature range -25 ... +70 °C	D	**6AG1 055-1FB00-2XB1**		1	1 unit	470
• Temperature range -40 ... +70 °C	D	**6AG1 055-1FB00-2BY1**		1	1 unit	470
SIPLUS LOGO! AM2 Control supply voltage 12/24 V DC, 2 analog inputs 0 ... 10 V or 0 ... 20 mA, 10 bit resolution						
• Temperature range -25 ... +70 °C	D	**6AG1 055-1MA00-2XB0**		1	1 unit	470
• Temperature range -40 ... +70 °C	D	**6AG1 055-1MA00-2BY0**		1	1 unit	470
SIPLUS LOGO! AM2 AQ Control supply voltage 24 V DC, 2 analog inputs 0 ... 10 V, 0/4 ... 20 mA						
• Temperature range -40 ... +70 °C	D	**6AG1 055-1MM00-2BY1**		1	1 unit	470
SIPLUS LOGO! DM16 24R Control supply voltage 24 V DC, 8 digital inputs 24 V DC, 8 relay outputs 5 A						
• Temperature range -25 ... +70 °C	D	**6AG1 055-1NB10-2BA0**		1	1 unit	470

Accessories see page 10/30.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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LOGO! Communication modules

Overview



LOGO! CM EIB/KNX communication module

- Expansion module for the LOGO! basic versions
- For communication between LOGO! and external *EIB/*KNX components via *EIB*/KNX

Application

The CM EIB/KNX communication module allows communication between LOGO! and external *EIB/KNX* devices via *EIB*/KNX. This module can be used to integrate LOGO! in a *EIB*/KNX system.

Selection and ordering data

Version	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
LOGO! CM EIB/KNX communication modules						
For connection to *EIB*/KNX, control supply voltage 24 V DC	C	**6BK1 700-0BA00-0AA2**		1	1 unit	471

Accessories see page 10/30.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Every LOGO! can now be connected to the AS-Interface system



AS-Interface connection for LOGO!

Using the AS-Interface connection for LOGO!, an intelligent slave can be integrated in the AS-Interface system. With the modular interface it becomes possible to integrate the different basic units in the system according to their functionality. Similarly, functionalities can be quickly and easily adapted to new requirements by exchanging the basic unit.

The interface module provides four inputs and four outputs on the system. These I/Os do not actually exist in hardware terms, however, but are only virtually present through the interface on the bus.

Selection and ordering data

Version	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
AS-Interface connections for LOGO!						
Four virtual digital inputs, four virtual digital outputs	A	**3RK1 400-0CE10-0AA2**		1	1 unit	42C

Accessories see page 10/30.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Accessories

Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
LOGO! TD text displays						
LOGO! TD text displays 4-line text display, can be connected to all LOGO! basic and pure versions as from -0BA6 upwards, incl. connection cable	A	**6ED1 055-4MH00-0BA0**		1	1 unit	200
SIPLUS LOGO! TD text displays						
SIPLUS LOGO! TD text displays (extended temperature range -10 ... +60 °C and medial loading) 4-line text display, can be connected to all LOGO! 0BA6 basic and pure versions, degree of protection IP65, incl. connection cable	D	**6AG1 055-4MH00-2BA0**		1	1 unit	470
SIPLUS voltage reducers						
SIPLUS Upmiter voltage reducers For safe operation at combustion engine batteries						
• 1.25 A	D	**6AG1 053-1AA00-2AA0**		1	1 unit	470
• 2.5 A	D	**6AG1 203-1AA00-2AA0**		1	1 unit	471
LOGO! Manuals						
LOGO! Manuals						
• German	X	**6ED1 050-1AA00-0AE8**		1	1 unit	200
• English	X	**6ED1 050-1AA00-0BE8**		1	1 unit	200
• French	X	**6ED1 050-1AA00-0CE8**		1	1 unit	200
• Spanish	X	**6ED1 050-1AA00-0DE8**		1	1 unit	200
• Italian	X	**6ED1 050-1AA00-0EE8**		1	1 unit	200
• Chinese	X	**6ED1 050-1AA00-0KE8**		1	1 unit	200
LOGO! Cards (only -0BA6)						
LOGO! memory cards Program module for copying, with know-how protection (as from -0BA4 upwards)	A	**6ED1 056-1DA00-0BA0**		1	1 unit	200
LOGO! battery cards Battery modules for buffering the integrated real-time clock (not LOGO! 24)	A	**6ED1 056-6XA00-0BA0**		1	1 unit	200
LOGO! memory/battery cards Combined program and battery modules, with know-how protection and buffering of the integrated real-time clock (not LOGO! 24)	A	**6ED1 056-7DA00-0BA0**		1	1 unit	200
SIPLUS LOGO! PROM Programming units for simultaneous duplication of program module contents on up to 8 program modules	D	**6AG1 057-1AA01-0BA6**		1	1 unit	470
LOGO! cables						
LOGO! PC cables For transferring programs between LOGO! up to -0BA6 and PC	A	**6ED1 057-1AA00-0BA0**		1	1 unit	200
LOGO! USB PC cables For transferring programs between LOGO! up to -0BA6 and the PC, incl. drivers on CD-ROM,	A	**6ED1 057-1AA01-0BA0**		1	1 unit	200
LOGO! modem cables Adapter cables for analog modem communication, for LOGO! 0BA6	A	**6ED1 057-1CA00-0BA0**		1	1 unit	200
Front panel assembly kits						
Front panel assembly kits						
• Width: 4 MW	C	**6AG1 057-1AA00-0AA0**		1	1 unit	470
• Width: 4 MW, with pushbuttons	D	**6AG1 057-1AA00-0AA3**		1	1 unit	470
• Width: 8 MW	C	**6AG1 057-1AA00-0AA1**		1	1 unit	470
• Width: 8 MW, with pushbuttons	D	**6AG1 057-1AA00-0AA2**		1	1 unit	470
LOGO! Starter kits (-0BA6)						
LOGO! starter kits 12/24 V Contains LOGO! 12/24 RC, LOGO! USB PC cable, LOGO! Soft Comfort V6, language-neutral	A	**6ED1 057-3BA00-0AA6**		1	1 unit	2SP
LOGO! starter kits 230 V Contains LOGO! 230 RC, LOGO! USB PC cable, LOGO! Soft Comfort V6, language-neutral	A	**6ED1 057-3BA02-0AA6**		1	1 unit	2SP
LOGO! TD starter kits 12/24 V Contains LOGO! 12/24 RCo, LOGO! TD, LOGO! USB PC cable, LOGO! Soft Comfort V6, language-neutral	A	**6ED1 057-3BA10-0AA6**		1	1 unit	2SP
LOGO! starter kits (-0BA7)						
LOGO! starter kits 12/24 V Contains LOGO! 12/24 RCE, LOGO! Soft Comfort V7, LOGO! Power 24 V, 1.3 A, Ethernet cable, WinCC Basic V11, language-neutral	A	**6ED1 057-3BA00-0AA7**		1	1 unit	2SP
LOGO! starter kits 230 V Contains LOGO! 230 RCE, LOGO! Soft Comfort V7, Ethernet cable, WinCC Basic V11, language-neutral	A	**6ED1 057-3BA02-0AA7**		1	1 unit	2SP

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



LOGO! Contact

- Switching module for switching resistive loads and motors directly
- Modules based on 3TG10 power relays
  see Chapter 4 "Controls – Contactors and Contactor Assemblies - Special Applications" →"3TG10 Power Relays/Miniature Contactors".

Application

LOGO! Contact is a switching module with $U \approx 400$ V, 3 NO contacts and 3 NC contacts for direct switching of resistive loads up (to 20 A) and motors (up to 4 kW). LOGO! Contact operates hum-free without noise pollution.

LOGO! Contact is universally applicable:

- Buildings/electrical installations
- Industry and commerce

Selection and ordering data

Version	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
LOGO! Contact						
Switching module for direct switching of resistive loads up to 20 A and motors up to 4 kW						
Switching voltage						
• 24 V	A	**6ED1 057-4CA00-0AA0**		1	1 unit	200
• 230 V	A	**6ED1 057-4EA00-0AA0**		1	1 unit	200

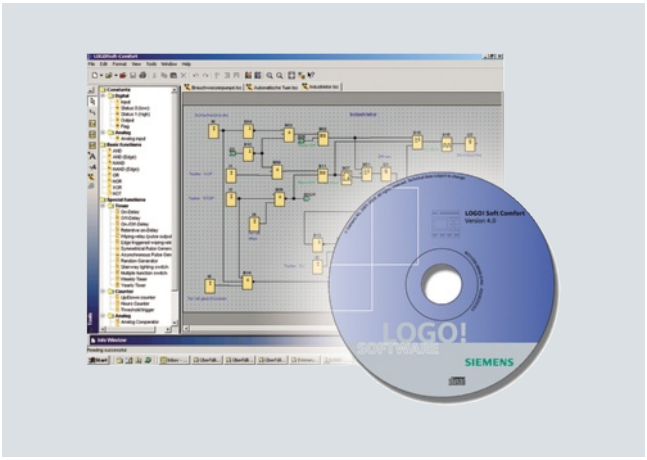
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*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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LOGO! Software

Overview



LOGO! Soft Comfort

- The user-friendly software for switching program generation on the PC
- Switching program generation for function diagrams (FBD) or contact diagrams (LAD)
- Additional testing, simulation, online testing and archiving of the switching programs
- Professional documentation with the help of various comment and print functions

The connection between LOGO! and the PC for LOGO! 0BA6 units is established with the help of the LOGO! PC cable (serial interface) or the LOGO! USB PC cable (USB interface). The LOGO! 0BA7 units are programmed via a standard Ethernet cable.

Minimum system requirements

Windows 98 SE, Windows 7, NT 4.0, ME, XP or Vista

- Pentium PC
- 90 Mbyte free on hard disk.
- 64 Mbyte RAM.
- SVGA graphics card with minimum 800x600 resolution (256 colors).

Mac OS X

- PowerMac G3, G4, G4 Cube, iMac, PowerBook G3, G4 or iBook

Linux (tested with Caldera OpenLinux 2.4)

- Runs on all Linux releases on which Java 2 SDK Version 1.3.1 runs.
- Please consult your Linux release for hardware requirements.

Application

LOGO! Soft Comfort is the multilingual software for switching program generation with LOGO! on the PC. LOGO! Soft Comfort can be used to program all devices of the LOGO! family.

Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
LOGO! Soft Comfort						
LOGO! Soft Comfort V7.0 For programming on the PC in LAD/FBD; runs on Windows 98 SE, Windows NT/XP/2000, Linux, Windows 7, Linux, MAC OS X; on CD-ROM	A	**6ED1 058-0BA02-0YA1**		1	1 unit	200
LOGO! Soft Comfort Upgrade V7.0 Upgrade from V1.0 to V7.0	A	**6ED1 058-0CA02-0YE1**		1	1 unit	200

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



7PV15, SIRIUS 3RP15 and SIRIUS 3RP20 timing relays

Solid-state timing relays are used in control, starting, and protective circuits for all switching operations involving time delays. Their fully developed concept and space-saving, compact design make the SIRIUS 3RP timing relays ideal modules for control cabinet, power distribution board and control manufacturers in the industry.

With their narrow design, the 7PV15 timing relays are ideal in particular for use in heating, ventilation and air-conditioning systems and in compressors. All 7PV15 timing relays in this enclosure version are suitable for snap-on mounting onto TH 35 standard mounting rails according to EN 60175. The enclosure complies with DIN 43880.

Benefits

- Clear-cut basic range with five basic units in the case of the 7PV15 timing relays, and seven basic units in the case of the 3RP timing relays
- Logistic advantages provided by versions with wide voltage range and wire setting range
- No tools required for assembly or disassembly on standard mounting rails
- Cadmium-free relay contacts
- Recyclable, halogen-free enclosure
- Optimum price/performance ratio
- Versions with logical separation
- Little variance: One design for distribution boards and for control cabinets
- Compliance with EMC requirements for buildings
- Environmentally friendly laser inscription instead of printing containing solvents
- Hard gold-plated relay contacts for optimum interplay with electronic controls
- Timing relays suitable for the 3RT miniature contactors allow smaller tier spacing
- Positively driven relay contacts
- Versions with screw terminals or alternatively with spring-type terminals

Application

Timing relays with ON-delay

- Interference pulse suppression (gating of interference pulses)
- Gradual startup of motors so as not to overload the mains

Timing relays with OFF-delay

- Generation of overtravel functions following removal of voltage
- Gradual, delayed shutdown, e.g. of motors or fans, to allow a plant to be shut down selectively

Wye-delta timing relay

- Switchover of motors from Wye to delta with a dead interval of 50 ms to prevent phase-to-phase short circuits

Multifunctional timing relays

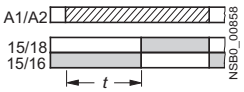
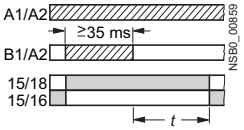
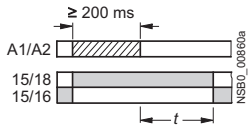
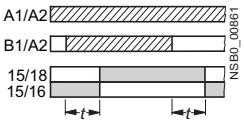
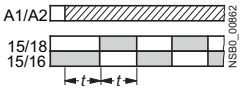
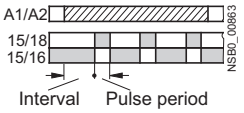
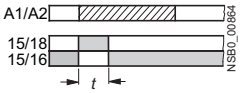
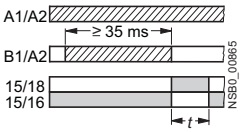
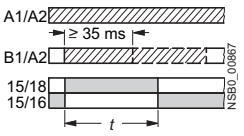
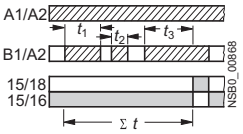
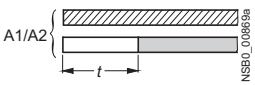
- Maximum flexibility, with a device for every application

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General data

Technical specifications

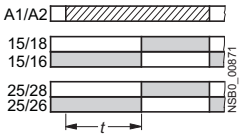
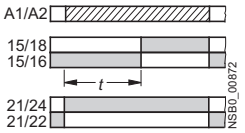
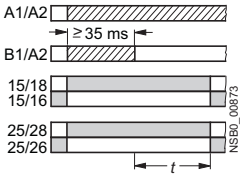
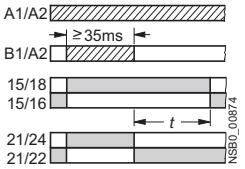
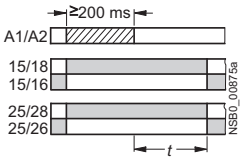
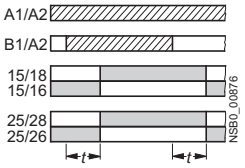
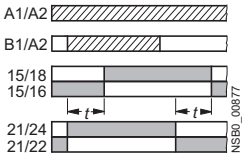
3RP15 and 3RP20 function table

Function	Function chart	3RP20 timing relay and 3RP19 01 label set		3RP15 timing relay and 3RP19 01 label set								
	Timing relay energized Contact closed Contact open	3RP20 05-.A	3RP20 25	3RP15 05-.A 3RP19 01-0A	Identification letter	3RP15 1.	3RP15 25	3RP15 27	3RP15 3.	3RP15 40	3RP15 55	3RP15 7.
1 CO contact												
With ON-delay		✓	✓	✓	A	✓	✓					
OFF-delay with auxiliary voltage		✓		✓	B[1]				✓			
OFF-delay without auxiliary voltage Observe minimum ON period for correct operation. For 3RP15 40-..W31 U_S 24 to 40 V AC/DC: 400 ms and U_S > 40 to 240 V AC/DC: 200 ms.										✓		
ON-delay and OFF-delay with auxiliary voltage ($t = t_{on} = t_{off}$)		✓		✓	C[1]							
Flashing, starting with interval (pulse/interval 1:1)		✓		✓	D							
Clock-pulse, starting with interval (dead time, pulse time, and time setting ranges each separately adjustable)											✓	
Passing make contact		✓		✓	E							
Passing break contact with auxiliary voltage		✓		✓	F[1]							
Pulse-forming with auxiliary voltage (pulse generation at the output does not depend on duration of energizing)		✓		✓	G[1]							
Additive ON-delay with auxiliary voltage		✓		✓	H[1]							
1 NO contact (semiconductor)												
ON-delay The two-wire timing relay is connected in series with the load. Timing begins after application of the exciting voltage. The semiconductor output then becomes conducting, and the load is under power.								✓				

[1] Note on function with start contact: A new control signal at terminal B, after the operating time has started, resets the operating time to zero. This does not apply to G and H, which are not retriggerable.

✓ Function available

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Function	Function chart	3RP20 timing relay and 3RP19 01 label set		3RP15 timing relay and 3RP19 01 label set										
	Timing relay energized Contact closed Contact open	3RP20 05-.B	3RP20 25	3RP15 05-.B 3RP19 01-0B	3RP15 05-.R 3RP19 01-0A	Identification letter	3RP15 1.	3RP15 25	3RP15 27	3RP15 3.	3RP15 40	3RP15 55	3RP15 60	3RP15 7.
2 CO contacts														
With ON-delay		✓		✓	✓	A		✓						
ON-delay and instantaneous contact		✓		✓		A●								
OFF-delay with auxiliary voltage		✓		✓	✓	B[1]								
OFF-delay with auxiliary voltage and instantaneous contact		✓		✓		B●[1]								
OFF-delay without auxiliary voltage											✓			
ON-delay and OFF-delay with auxiliary voltage ($t = t_{on} = t_{off}$)		✓		✓	✓	C[1]								
ON-delay and OFF-delay with auxiliary voltage and instantaneous contact ($t = t_{on} = t_{off}$)		✓		✓		C●[1]								

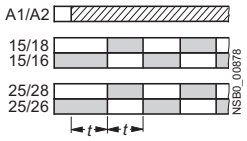
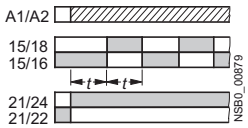
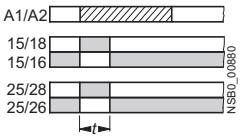
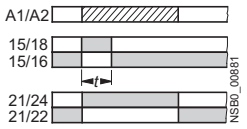
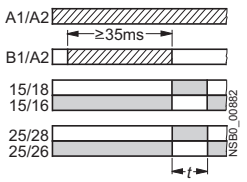
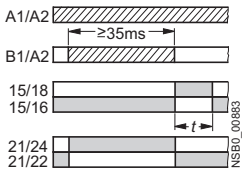
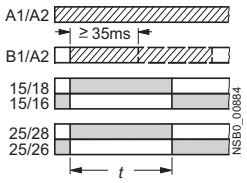
[1] Note on function with start contact: A new control signal at terminal B, after the operating time has started, resets the operating time to zero (retriggerable). This does not apply to G, G● and H, H●, which are not retriggerable.

✓ Function available

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General data

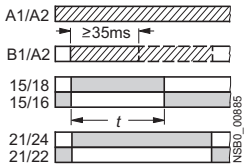
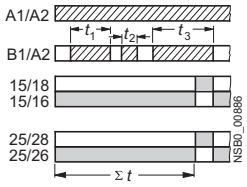
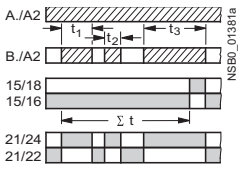
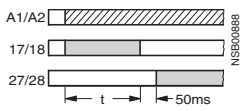
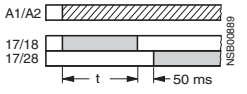
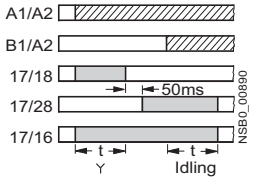
Function	Function chart	3RP20 timing relay and 3RP19 01 label set		3RP15 timing relay and 3RP19 01 label set									
	Timing relay energized Contact closed Contact open	3RP20 05-.B	3RP20 25	3RP15 05-.B 3RP19 01-0B	3RP15 05-.R 3RP19 01-0A	Identification letter	3RP15 1.	3RP15 25	3RP15 27	3RP15 3.	3RP15 40	3RP15 55	3RP15 60	3RP15 7.
2 CO contacts (continued)														
Flashing, starting with interval (pulse/interval 1:1)		✓		✓	✓	D								
Flashing, starting with interval (pulse/interval 1:1) and instantaneous contacts		✓		✓		D●								
Passing make contact		✓		✓	✓	E								
Passing make contact and instantaneous contact		✓		✓		E●								
Passing break contact with auxiliary voltage		✓		✓	✓	F[1]								
Passing break contact with auxiliary voltage and instantaneous contact		✓		✓		F●[1]								
Pulse-forming with auxiliary voltage (pulse generation at the output does not depend on duration of energizing)		✓		✓	✓	G[1]								

[1] Note on function with start contact: A new control signal at terminal B, after the operating time has started, resets the operating time to zero (retriggerable). This does not apply to G, G● and H, H●, which are not retriggerable.

✓ Function available

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Function	Function chart	3RP20 timing relay and 3RP19 01 label set		3RP15 timing relay and 3RP19 01 label set										
	Timing relay energized Contact closed Contact open	3RP20 05-.B	3RP20 25	3RP15 05-.B 3RP19 01-0B	3RP15 05-.R 3RP19 01-0A	Identification letter	3RP15 1.	3RP15 25	3RP15 27	3RP15 3.	3RP15 40	3RP15 55	3RP15 60	3RP15 7.
2 CO contacts (continued)														
Pulse-forming with auxiliary voltage and instantaneous contact) (pulse generation at the output does not depend on duration of energizing)		✓		✓		G●[1]								
Additive ON-delay with auxiliary voltage					✓	H[1]								
Additive ON-delay with auxiliary voltage and instantaneous contact		✓		✓		H●[1]								
Wye-delta function		✓		✓		Y Δ								
2 NO														
Wye-delta function Y Δ														✓
3 NO														
Wye-delta function with overtravel function[2] (idling)													✓	

[1] Note on function with start contact: A new control signal at terminal B, after the operating time has started, resets the operating time to zero (retriggerable). This does not apply to G, G● and H, H●, which are not retriggerable.

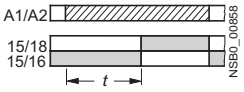
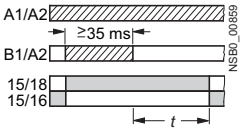
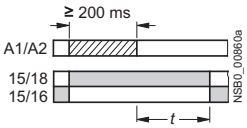
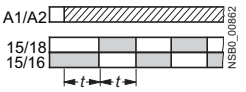
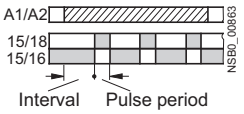
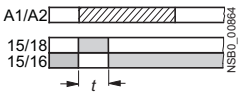
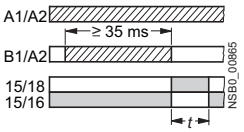
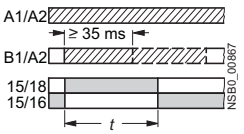
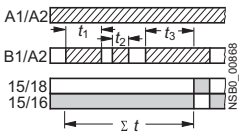
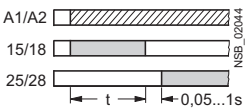
[2] Function charts showing the various possibilities of operation of the 3RP15 60-1S.30, see page 10/41.

✓ Function available

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General data

7PV15 function table

Function	Function chart	7PV15 timing relays						
	Timing relay energized Contact closed Contact open	7PV15 08-1A	Identification letter	7PV15 11 7PV15 12 7PV15 13 7PV15 18	7PV15 38	7PV15 40	7PV15 58	7PV15 78
1 CO contact								
With ON-delay		✓	A	✓				
OFF-delay with auxiliary voltage		✓	B[1]		✓			
OFF-delay without auxiliary voltage						✓		
Flashing, starting with interval (pulse/interval 1:1)		✓	C					
Clock-pulse, starting with interval (dead time, pulse time, and time setting ranges each separately adjustable)							✓	
Passing make contact		✓	D					
Passing break contact with auxiliary voltage		✓	E[1]					
Pulse-forming with auxiliary voltage (pulse generation at the output does not depend on duration of energizing)		✓	F[1]					
Additive ON-delay with auxiliary voltage		✓	G[1]					
2 NO								
Wye-delta function[2]								✓

[1] Note on function with start contact: A new control signal at terminal B, after the operating time has started, resets the operating time to zero (retriggerable). This does not apply to E, F and G, which are not retriggerable.

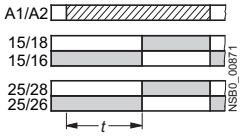
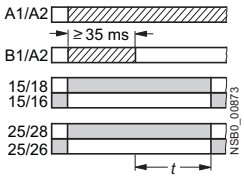
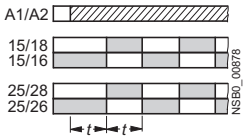
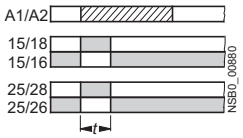
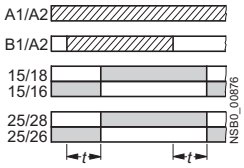
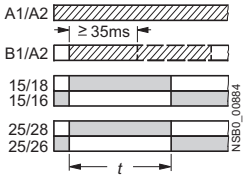
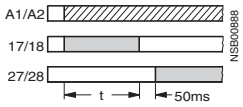
[2] With 7PV15 78 the contacts 16 and 26 are not needed for the wye-delta function.

✓ Function available

Note:

With the 7PV15 08-1A multifunction relay the identification letters A to G are printed on the front alongside the rotary selector switch. The related function can be found in the form of a bar graph on the side of the device.

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Function	Function chart	7PV15 timing relays	
	Timing relay energized Contact closed Contact open	7PV15 08-1B	Identification letter
2 CO contacts			
With ON-delay		✓	A
OFF-delay with auxiliary voltage		✓	B[1)]
Flashing, starting with interval (pulse/interval 1:1)		✓	C
Passing make contact		✓	D
ON-delay and OFF-delay with auxiliary voltage		✓	H[1)]
Pulse-forming with auxiliary voltage (pulse generation at the output does not depend on duration of energizing)		✓	F[1)]
Fixed pulse after response delay		✓	I

[1)] Note on function with start contact: A new control signal at terminal B, after the operating time has started, resets the operating time to zero. This does not apply to F, which is not retriggerable.

✓ Function available

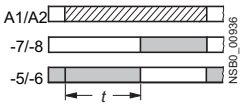
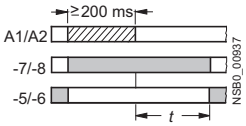
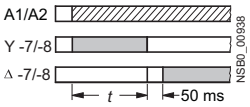
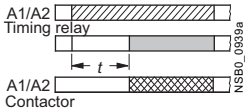
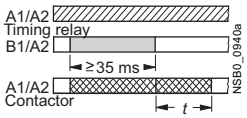
Note:

With the 7PV15 08-1B multifunction relay the identification letters A to D, F, H and I are printed on the front alongside the rotary selector switch. The related function can be found in the form of a bar graph on the side of the device.

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General data

3RT19 26 function table

Function	Function chart	3RT19 26 timing relays				
	Timing relay energized Contact closed Contact open Contactor coil energized	3RT19 26-2C	3RT19 26-2D	3RT19 26-2E	3RT19 26-2F	3RT19 26-2G
1 NO + 1 NC						
With ON-delay				✓		
OFF-delay without auxiliary voltage					✓	
2 NO						
Wye-delta function 1 NO delayed, 1 NO instantaneous, dead time 50 ms (varistor integrated)						✓
1 NO contact (semiconductor)						
ON-delay Two-wire design (varistor integrated)		✓				
OFF-delay with auxiliary voltage (varistor integrated)			✓			

✓ Function available

10

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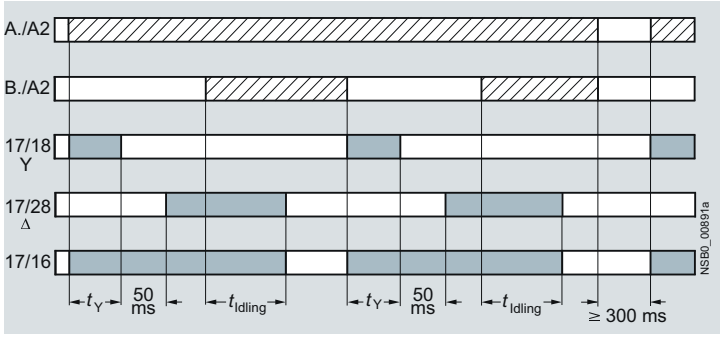
3RP15 function table

Possibilities of operation of the 3RP15 60-1S.30 timing relay

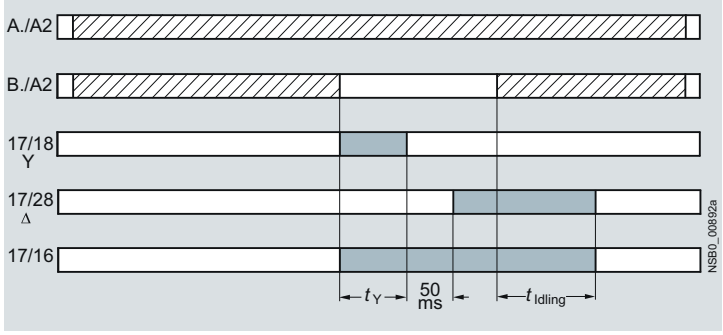
Timing relay energized
Contact closed
Contact open

t_Y = Star time 1 ... 20 s
t_{Idling} = Idling time (coasting time) 30 ... 600 s

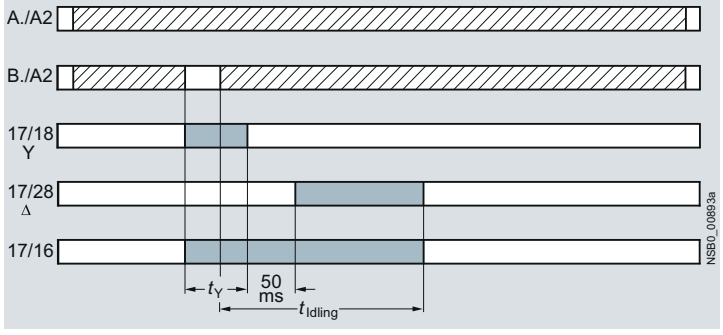
Operation 1



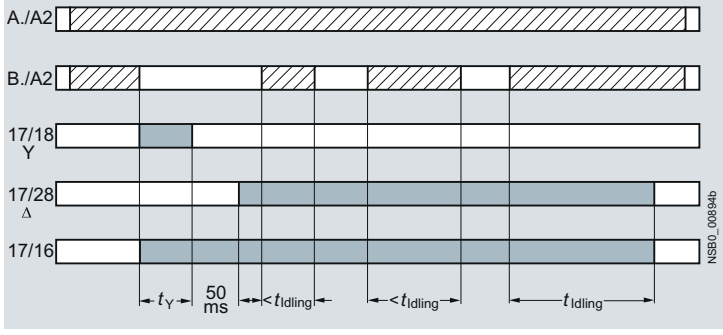
Operation 2



Operation 3



Operation 4



Note:

The following applies to all operations: The pressure switch controls the timing via B./A2.

Operation 1:
Start contact B./A2 is open when control supply voltage A./A2 is applied.

The control supply voltage is applied to A./A2 and there is no control signal on B./A2. This starts the Y/Δ timing. The idling time (coasting time) is started by applying a control signal to B./A2. When the set time t_{Idling} (30 ... 600 s) has elapsed, the output relays (17/16 and 17/28) are reset. If the control signal on B./A2 is switched off (minimum OFF period 270 ms), a new timing is started.

Comments:

Observe response time (dead time) of 400 ms on energizing control supply voltage until contacts 17/18 and 17/16 close.

Operation 2:
Start contact B./A2 is closed when control supply voltage A./A2 is applied.

If the control signal B./A2 is already present when the control supply voltage A./A2 is applied, **no** timing is started. The timing is only started when the control signal B./A2 is switched off.

Operation 3:
Start contact B./A2 closes while star time is running.

If the control signal B./A2 is applied again during the star time, the idling time starts and the timing is terminated normally.

Operation 4:
Start contact B./A2 opens while delta time is running and is applied again.

If the control signal on B./A2 is applied and switched off again during the delta time, although the idling time has not yet elapsed, the idling time (coasting time) is reset to zero. If the control signal is re-applied to B./A2, the idling time is restarted.

Application example based on standard operation (operation 1): For example, use of 3RP15 60 for compressor control

Frequent starting of compressors strains the network, the machine, and the increased costs for the operator. The new timing relay prevents frequent starting at times when there is high demand for compressed air. A special control circuit prevents the compressor from being switched off immediately when the required air pressure in the tank has been reached. Instead, the valve in the intake tube is closed and the compressor runs in "Idling" mode for a specific time which can be set from 30 ... 600 s.

If the pressure falls within this time, the motor does not have to be restarted again, but can return to nominal load operation from no-load operation.

If the pressure does not fall within this idling time, the motor is switched off.

The pressure switch controls the timing via B./A2.

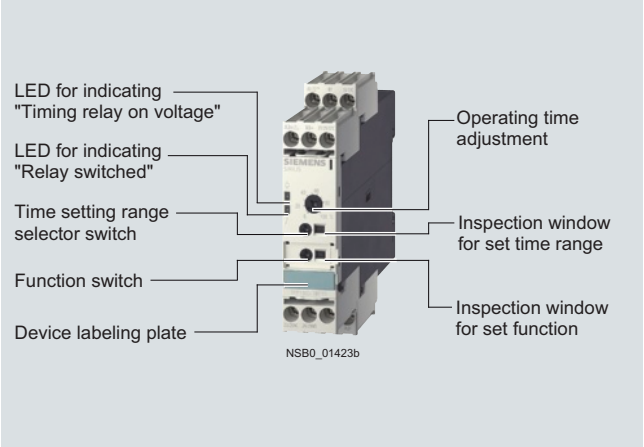
The control supply voltage is applied to A./A2 and the start contact B./A2 is open, i.e. there is no control signal on B./A2 when the control supply voltage is applied. The pressure switch signals "too little pressure in system" and starts the timing by way of terminal B./A2. The compressor is started, enters Y/Δ operation, and fills the pressure tank.

When the pressure switch signals "sufficient pressure", the control signal B./A2 is applied, the idling time (coasting time) is started, and the compressor enters no-load operation for the set period of time from 30 ... 600 s. The compressor is then switched off. The compressor is only restarted if the pressure switch responds again (low pressure).

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SIRIUS 3RP15 timing relays in industrial enclosure, 22.5 mm

Overview

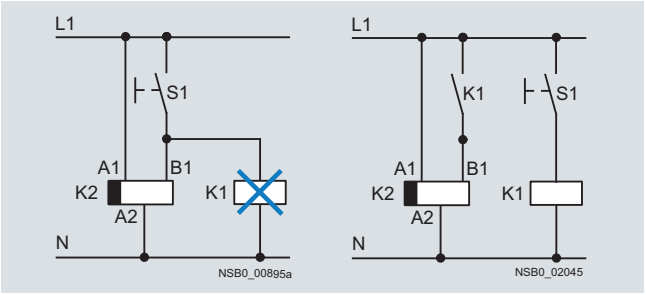


SIRIUS 3RP15 timing relays

Standards

The timing relays comply with:

- IEC 60721-3-3 "Ambient conditions"
- IEC 61812-1/DIN VDE 0435 Part 2021 "Specified time relays for industrial use"
- IEC 61000-6-2 and IEC 61000-6-4 "Electromagnetic compatibility"
- IEC 60947-5-1 (VDE 0660 Part 200) "Low-voltage switchgear and controlgear – Electromechanical control circuit devices"



Diagrams

Accessories



Push-in lugs for screw fixing



Sealable covers



Label set for marking the multifunction relay

Note:

The activation of loads parallel to the start input is not permissible when using AC control voltage (see diagrams).

Order No. scheme

Digit of the Order No.	1st - 5th	6th	7th		8th	9th	10th	11th	12th
	□□□□□	□	□	–	□	□	□	□	**0**
Timing relays in industrial enclosure, 22.5 mm	**3 R P 1 5**								
Functions/time setting ranges		□	□						
Connection type					□				
Contacts						□			
Rated control supply voltage							□	□	
Example	**3 R P 1 5**	**0**	**5**	**–**	**1**	**A**	**A**	**4**	**0**

Note:

The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quoted in the catalog in the Selection and ordering data.

Application

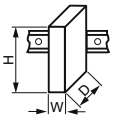
Timing relays are used in control, starting, and protective circuits for all switching operations involving time delays. They guarantee a high level of functionality and a high repeat accuracy of timer settings.

Enclosure version

All timing relays are suitable for snap-on mounting onto TH 35 standard mounting rails acc. to IEC 60715 or for screw mounting.

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Technical specifications

Type			3RP15 05, 3RP15 1., 3RP15 25, 3RP15 3., 3RP15 4., 3RP15 5., 3RP15 6., 3RP15 7.	3RP15 27
Dimensions (W x H x D)				
• For 2 terminal blocks				
- Screw terminals		mm	22.5 x 83 x 90	
- Spring-type terminals		mm	22.5 x 84 x 90	
• For 4 terminal blocks				
- Screw terminals		mm	22.5 x 102 x 110	
- Spring-type terminals		mm	22.5 x 103 x 110	
Rated insulation voltage Pollution degree 3, overvoltage category III		V AC	300; 500 to 3RP15 05-1BT10	
Permissible ambient temperature				
• During operation		°C	-25 ... +60	
• During storage		°C	-40 ... +80	
Operating range at excitation[1]			0.85 ... 1.1 x U_s at V AC/DC, 50/60 Hz 0.8 ... 1.25 x U_s 24 V DC 0.95 ... 1.05 times the rated frequency	
Rated operational current I_e				
• AC-140, DC-13		A	--	0.01 ... 0.6
• AC-15 at 24 ... 400 V, 50 Hz		A	3[2]	--
• DC-13 at				
- 24 V		A	1	--
- 125 V		A	0.2	--
- 250 V		A	0.1	--
Uninterrupted thermal current I_{th}		A	5	--
Mechanical endurance Operating cycles			30 x 10^6	100 x 10^6
Electrical endurance Operating cycles at I_e			1 x 10^5	100 x 10^6
Connection type			**Screw terminals**	
• Terminal screw			M3 (for standard screwdriver, size 2 and Pozidriv 2)	
• Solid		mm^2	1 x (0.5 ... 4)/2 x (0.5 ... 2.5)	
• Finely stranded with end sleeve		mm^2	1 x (0.5 ... 2.5)/2 x (0.5 ... 1.5)	
• AWG cables, solid or stranded		AWG	2 x (20 ... 14)	
• Tightening torque		Nm	0.8 ... 1.2	
Connection type			**Spring-type terminals**	
• Solid		mm^2	2 x (0.25 ... 1.5)	
• Finely stranded, with end sleeves acc. to DIN 46228		mm^2	2 x (0.25 ... 1.5)	
• Finely stranded		mm^2	2 x (0.25 ... 1.5)	
• AWG cables, solid or stranded		AWG	2 x (24 ... 16)	

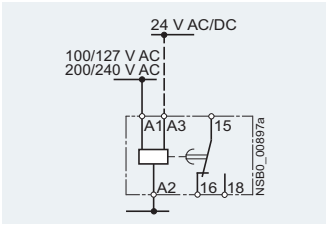
[1] If nothing else is stated.

[2] For 3RP15 05-.R: NC contact --> I_e = 1 A.

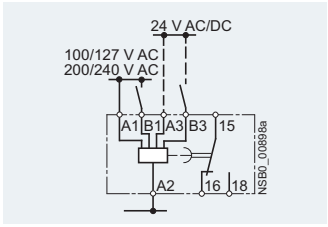
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SIRIUS 3RP15 timing relays in industrial enclosure, 22.5 mm

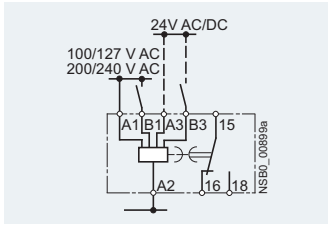
3RP15 internal circuit diagrams (terminal designation to DIN 46199, Part 5)



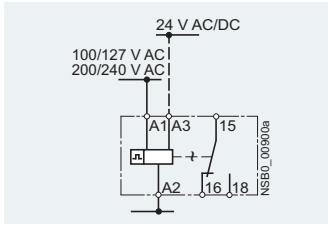
3RP15 05-.A, 3RP15 1., 3RP15 25-.A
With ON-delay



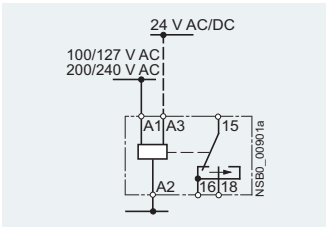
3RP15 05-.A, 3RP15 3.-.A
OFF-delay
with auxiliary voltage



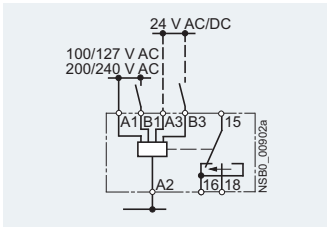
3RP15 05-.A
ON-delay and OFF-delay
with auxiliary voltage



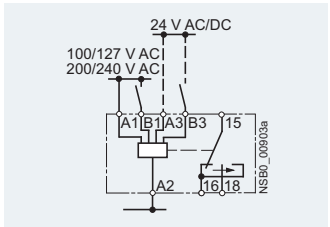
3RP15 05-.A
Flashing



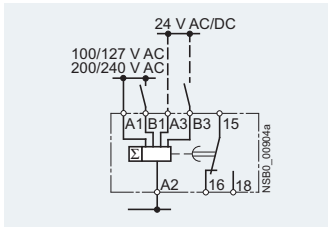
3RP15 05-.A
Passing make contact



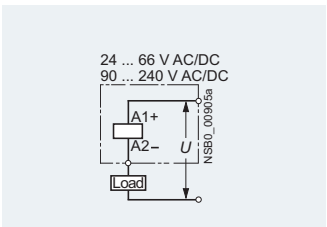
3RP15 05-.A
Passing break contact
with auxiliary voltage



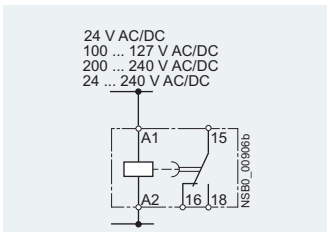
3RP15 05-.A
Pulse-forming
with auxiliary voltage



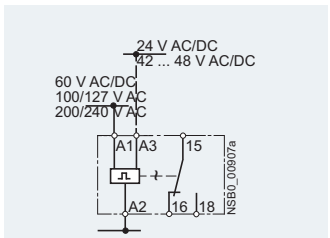
3RP15 05-.A
Additive ON-delay
with auxiliary voltage



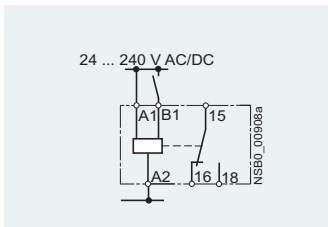
3RP15 27
24 ... 66 V AC/DC, 90 ... 240 V AC/DC
ON-delay,
two-wire version



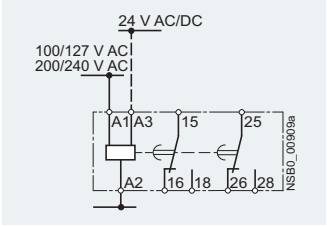
3RP15 40-.A
OFF-delay
without auxiliary voltage



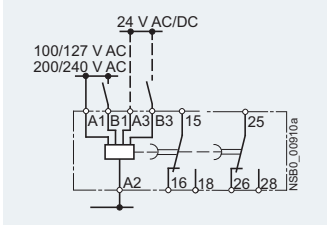
3RP15 55
Clock-pulse relay



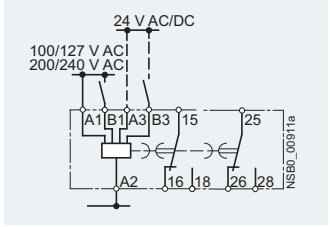
3RP15 05-.AW30
Multifunction relay
(same functions as 3RP15 05-1A)



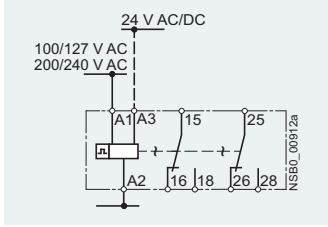
3RP15 05-.B, 3RP15 25-1B
ON-delay, 3RP15 25-1B
also for 42 ... 48/60 V AC/DC
(see page 10/45, 3RP15 25-1BR30)



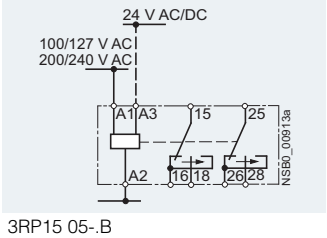
3RP15 05-.B
OFF-delay with auxiliary voltage



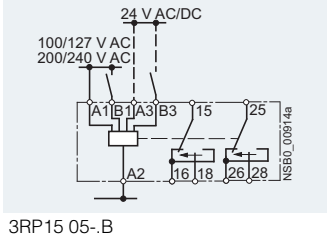
3RP15 05-.B
ON-delay and OFF-delay
with auxiliary voltage



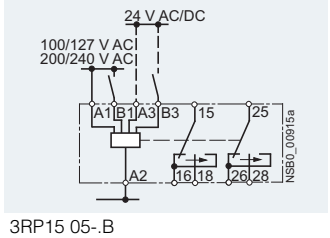
3RP15 05-.B
Flashing



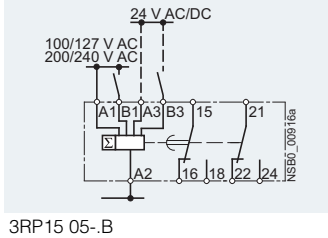
3RP15 05-.B
Passing make contact



3RP15 05-.B
Passing break contact
with auxiliary voltage



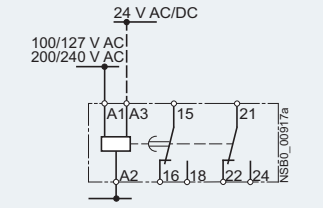
3RP15 05-.B
Pulse-forming with auxiliary voltage



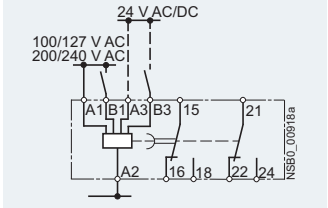
3RP15 05-.B
Additive ON-delay with
auxiliary voltage and instantaneous
contact

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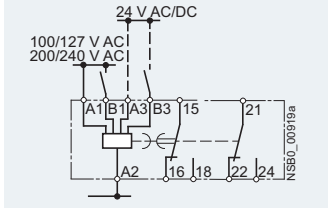
3RP15 internal circuit diagrams (terminal designation acc. to DIN 46199, Part 5) continued



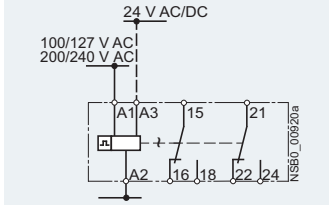
3RP15 05-.B
ON-delay and instantaneous contact



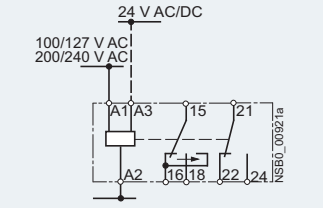
3RP15 05-.B
OFF-delay with auxiliary voltage and instantaneous contact



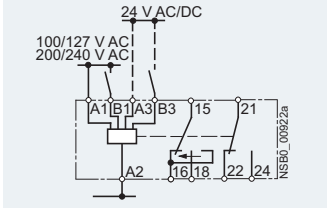
3RP15 05-.B
ON-delay and OFF-delay with auxiliary voltage and instantaneous contact



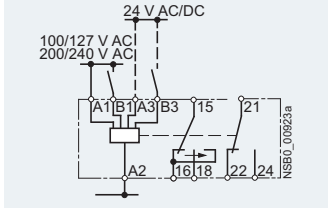
3RP15 05-.B
Flashing and instantaneous contact



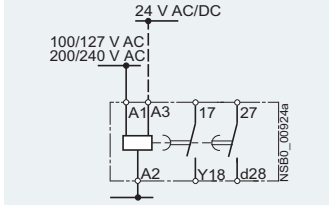
3RP15 05-.B
Passing make contact and instantaneous contact



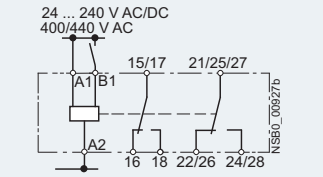
3RP15 05-.B
Passing break contact with auxiliary voltage and instantaneous contact



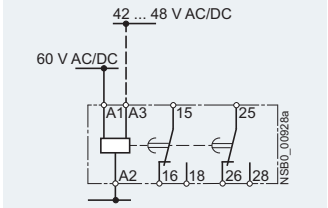
3RP15 05-.B
Pulse-forming with auxiliary voltage and instantaneous contact



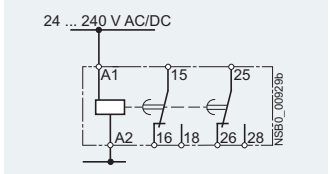
3RP15 05-.B
Wye-delta function



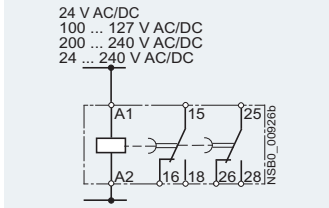
3RP15 05-.BW30/-1BT20/-.RW30
Multifunction relay functions
(see function table)



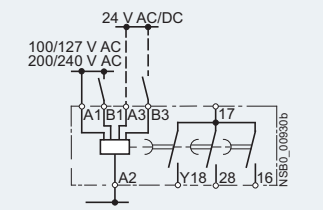
3RP15 25-. BR30
With ON-delay



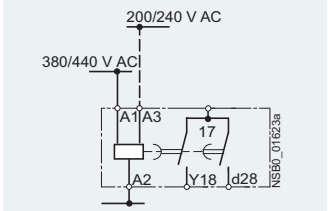
3RP15 25-. BW30
With ON-delay



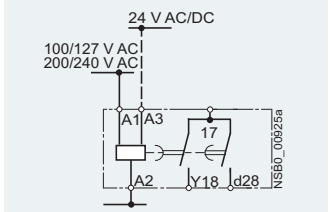
3RP15 40-.B
OFF-delay without auxiliary voltage



3RP15 60-. S
Wye-delta timing relay with overtravel function (idling)



3RP15 7.-.M20
Wye-delta timing relay



3RP15 74, 3RP15 76
Wye-delta timing relay

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SIRIUS 3RP15 timing relays in industrial enclosure, 22.5 mm

Selection and ordering data

Solid-state timing relays for general use in control systems and mechanical engineering with:

- 1 or 2 CO contacts
- Single or selectable time setting ranges
- Switch position indication and voltage indication by LED

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H


3RP15 05-1BP30


3RP15 11-1AP30


3RP15 25-1BW30


3RP15 27-1EM30


3RP15 05-2BP30


3RP15 11-2AP30


3RP15 25-2BW30

Version	Time setting range t adjustable by rotary switch to	Rated control supply voltage U_s 50/60 Hz AC V	Rated control supply voltage U_s DC V	DT	Screw terminals Order No.	Screw terminals Price per PU	DT	Spring-type terminals Order No.	Spring-type terminals Price per PU
3RP15 05 timing relays, multifunction, 15 time setting ranges									
The functions can be adjusted by means of rotary switches. Insert labels can be used to adjust different functions of the 3RP15 05 timing relay clearly and unmistakably. The corresponding labels can be ordered as an accessory. The same potential must be applied to terminals A. and B. Functions see 3RP19 01 label set, page 10/58.									
With LED and									
1 CO contact, 8 functions	0.05 ... 1 s 0.15 ... 3 s 0.5 ... 10 s 1.5 ... 30 s	-- 24/100 ... 127 24/200 ... 240 24 ... 240[5]	12 24 24 24 ... 240[2]	A ▶ ▶ ▶	**3RP15 05-1AA40** **3RP15 05-1AQ30** **3RP15 05-1AP30** **3RP15 05-1AW30**		 C A A	**--** **3RP15 05-2AQ30** **3RP15 05-2AP30** **3RP15 05-2AW30**	
2 CO contacts, 16 functions	0.05 ... 1 min 5 ... 100 s 0.15 ... 3 min 0.5 ... 10 min 1.5 ... 30 min	24/100 ... 127 24/200 ... 240 24 ... 240[5] 400 ... 440	24 24 24 ... 240[2] --	▶ ▶ ▶ A	**3RP15 05-1BQ30** **3RP15 05-1BP30** **3RP15 05-1BW30** **3RP15 05-1BT20**		A A A	**3RP15 05-2BQ30** **3RP15 05-2BP30** **3RP15 05-2BW30** **--**	
2 CO contacts, positively driven and hard gold-plated. 8 functions[3][4]	0.05 ... 1 h 5 ... 100 min 0.15 ... 3 h 0.5 ... 10 h 1.5 ... 30 h 5 ... 100 h ∞ [1]	24 ... 240	24 ... 240	▶	**3RP15 05-1RW30**		A	**3RP15 05-2RW30**	
3RP15 1. timing relays, ON-delay, 1 time setting range									
With LED and 1 CO contact	0.5 ... 10 s	24/100 ... 127 24/200 ... 240	24 24	▶ ▶	**3RP15 11-1AQ30** **3RP15 11-1AP30**		C A	**3RP15 11-2AQ30** **3RP15 11-2AP30**	
	1.5 ... 30 s	24/100 ... 127 24/200 ... 240	24 24	▶ ▶	**3RP15 12-1AQ30** **3RP15 12-1AP30**		C A	**3RP15 12-2AQ30** **3RP15 12-2AP30**	
	5 ... 100 s	24/100 ... 127 24/200 ... 240	24 24	▶ ▶	**3RP15 13-1AQ30** **3RP15 13-1AP30**		C A	**3RP15 13-2AQ30** **3RP15 13-2AP30**	
3RP15 25 timing relays, ON-delay, 15 time setting ranges									
With LED and									
1 CO contact	0.05 ... 1 s 0.15 ... 3 s	24/100 ... 127 24/200 ... 240	24 24	▶ ▶	**3RP15 25-1AQ30** **3RP15 25-1AP30**		C A	**3RP15 25-2AQ30** **3RP15 25-2AP30**	
2 CO contacts	0.5 ... 10 s 1.5 ... 30 s 0.05 ... 1 min 5 ... 100 s 0.15 ... 3 min 0.5 ... 10 min 1.5 ... 30 min 0.05 ... 1 h 5 ... 100 min 0.15 ... 3 h 0.5 ... 10 h 1.5 ... 30 h 5 ... 100 h ∞ [1]	42 ... 48/60 24/100 ... 127 24/200 ... 240 24 ... 240[5]	42 ... 48/60[5] 24 24 24 ... 240[2]	A ▶ ▶ ▶	**3RP15 25-1BR30** **3RP15 25-1BQ30** **3RP15 25-1BP30** **3RP15 25-1BW30**		 X A A	**--** **3RP15 25-2BQ30** **3RP15 25-2BP30** **3RP15 25-2BW30**	
3RP15 27 timing relays, ON-delay, two-wire design, 4 time setting ranges									
1 NO contact (semiconductor)	0.05 ... 1 s 0.2 ... 4 s 1.5 ... 30 s 12 ... 240 s	24 ... 66 90 ... 240	24 ... 66[5] 90 ... 240[5]	A ▶	**3RP15 27-1EC30** **3RP15 27-1EM30**		C C	**3RP15 27-2EC30** **3RP15 27-2EM30**	

1) With switch position ∞ no timing. For test purposes (ON/OFF function) on site. Relay is constantly on when activated, or relay remains constantly off when activated. Depending on which function is set.
2) Operating range 0.7 to 1.1 x U_s.
3) Positively driven: NO and NC are never closed simultaneously; contact gap ≥ 0.5 mm is ensured, minimum make-break capacity 12 V, 3 mA.
4) The changeover contacts are actuated simultaneously, as a result of which only 8 functions are selectable (no wye-delta, no instantaneous contact).
5) Operating range 0.8 to 1.1 x U_s.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RP15 timing relays in industrial enclosure, 22.5 mm

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H


3RP15 33-1AP30


3RP15 40-1BB31


3RP15 55-1AP30


3RP15 60-1SP30


3RP15 76-2NP30


3RP15 33-2AP30


3RP15 40-2BB31

Version	Time setting range t adjustable by rotary switch to	Rated control supply voltage U_s 50/60 Hz AC V	Rated control supply voltage U_s DC V	DT	Screw terminals Order No.	Screw terminals Price per PU	DT	Spring-type terminals Order No.	Spring-type terminals Price per PU
3RP15 3. timing relays, OFF-delay, with auxiliary voltage, 1 time setting range									
With LED and 1 CO contact The same potential must be applied to terminals A and B	0.5 ... 10 s	24/100 ... 127	24	A	**3RP15 31-1AQ30**		C	**3RP15 31-2AQ30**	
		24/200 ... 240	24 ▶		**3RP15 31-1AP30**		C	**3RP15 31-2AP30**	
	1.5 ... 30 s	24/100 ... 127	24	A	**3RP15 32-1AQ30**		C	**3RP15 32-2AQ30**	
		24/200 ... 240	24 ▶		**3RP15 32-1AP30**		A	**3RP15 32-2AP30**	
	5 ... 100 s	24/100 ... 127	24	A	**3RP15 33-1AQ30**		C	**3RP15 33-2AQ30**	
		24/200 ... 240	24 ▶		**3RP15 33-1AP30**		C	**3RP15 33-2AP30**	
3RP15 40 timing relays, OFF-delay, without auxiliary voltage, 9 time setting ranges[1]									
With LED and									
1 CO contact	0.05 ... 1 s 0.15 ... 3 s 0.3 ... 6 s 0.5 ... 10 s 1.5 ... 30 s 3 ... 60 s 5 ... 100 s 15 ... 300 s 30 ... 600 s	24 ▶	24[2] ▶		**3RP15 40-1AB31**		A	**3RP15 40-2AB31**	
		100 ... 127 ▶	100 ... 127 ▶		**3RP15 40-1AJ31**		A	**3RP15 40-2AJ31**	
		200 ... 240 ▶	200 ... 240 ▶		**3RP15 40-1AN31**		A	**3RP15 40-2AN31**	
		24 ... 240 ▶	24 ... 240 ▶		**3RP15 40-1AW31**		A	**3RP15 40-2AW31**	
2 CO contacts		24 ▶	24[2] ▶		**3RP15 40-1BB31**		A	**3RP15 40-2BB31**	
		100 ... 127	100 ... 127	A	**3RP15 40-1BJ31**		A	**3RP15 40-2BJ31**	
		200 ... 240 ▶	200 ... 240 ▶		**3RP15 40-1BN31**		C	**3RP15 40-2BN31**	
		24 ... 240 ▶	24 ... 40 ▶		**3RP15 40-1BW31**		A	**3RP15 40-2BW31**	
3RP15 55 timing relays, clock-pulse relay, 15 time setting ranges									
With LED and 1 CO contact	0.05 ... 1 s 0.15 ... 3 s 0.5 ... 10 s 1.5 ... 30 s 0.05 ... 1 min 5 ... 100 s 0.15 ... 3 min 0.5 ... 10 min 1.5 ... 30 min 0.05 ... 1 h 5 ... 100 min 0.15 ... 3 h 0.5 ... 10 h 1.5 ... 30 h 5 ... 100 h ∞ [3]	42 ... 48/60	42...48/60[4]	A	**3RP15 55-1AR30**		C	**3RP15 55-2AR30**	
		24/100 ... 127 ▶	24 ▶		**3RP15 55-1AQ30**		C	**3RP15 55-2AQ30**	
		24/200 ... 240 ▶	24 ▶		**3RP15 55-1AP30**		A	**3RP15 55-2AP30**	
3RP15 60 timing relays, wye-delta function, dead interval 50 ms and coasting time, 1 time setting range									
3 NO contacts (common contact root connecting terminal 17)	Wye-delta 1 ... 20 s , coasting time (idling) 30 ... 600 s	24/100 ... 127	24	A	**3RP15 60-1SQ30**			--	
		24/200 ... 240 ▶	24 ▶		**3RP15 60-1SP30**		C	**3RP15 60-2SP30**	
3RP15 7. timing relays, wye-delta function[5], dead interval 50 ms, 1 time setting range									
1 NO contact instantaneous and 1 NO contact delayed (common contact root connecting terminal 17)	1 ... 20 s	24/100 ... 127 ▶	24 ▶		**3RP15 74-1NQ30**		C	**3RP15 74-2NQ30**	
		24/200 ... 240 ▶	24 ▶		**3RP15 74-1NP30**		A	**3RP15 74-2NP30**	
		200 ... 240/ 380 ... 440	--	B	**3RP15 74-1NM20**		B	**3RP15 74-2NM20**	
	3 ... 60 s	24/100 ... 127 ▶	24 ▶		**3RP15 76-1NQ30**		A	**3RP15 76-2NQ30**	
		24/200 ... 240 ▶	24 ▶		**3RP15 76-1NP30**		A	**3RP15 76-2NP30**	
		200 ... 240/ 380 ... 440	--	X	**3RP15 76-1NM20**		X	**3RP15 76-2NM20**	

Accessories see page 10/58.

1) Setting of output contacts in as-supplied state not defined (bistable relay). Application of the control voltage once results in contact changeover to the correct setting.

2) Operating range 0.7 to 1.25 x U_s.

3) With switch position ∞ no timing. For test purposes (ON/OFF function) on site. For dead time "infinite", the relay is always off. For pulse time "infinite", the relay is always on.

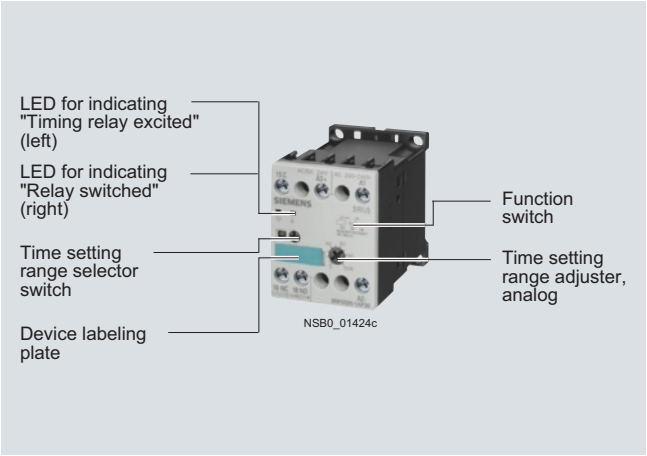
4) Operating range 0.8 to 1.1 x U_s.

5) Example circuits see "Reference Manual for Monitoring and Control Devices".

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SIRIUS 3RP20 timing relays, 45 mm

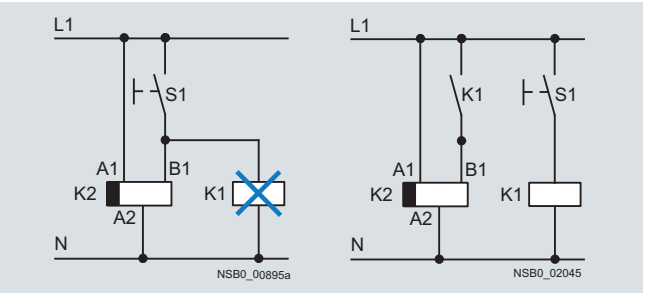
Overview



SIRIUS 3RP20 timing relays

Note:

The activation of loads parallel to the start input is not permissible when using AC control voltage (see diagrams).



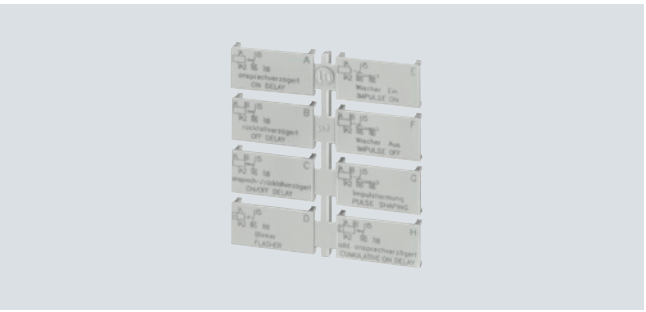
Diagrams

Standards

The timing relays comply with:

- IEC 60721-3-3 "Ambient conditions"
- IEC 61812-1/DIN VDE 0435 Part 2021 "Specified time relays for industrial use"
- IEC 61000-6-2 and IEC 61000-6-4 "Electromagnetic compatibility"
- IEC 60947-5-1 (VDE 0660 Part 200) "Low-voltage switchgear and controlgear – Electromechanical control circuit devices"
- IEC 61140 "Electrical protective separation"

Accessories



Label set for marking the multifunction relay

Order No. scheme

Digit of the Order No.	1st - 5th	6th	7th		8th	9th	10th	11th	12th
	□□□□□	□	□	–	□	□	□	□	**0**
SIRIUS timing relays, enclosure 45 mm	**3 R P 2 0**								
Functions/time setting ranges		□	□						
Connection type					□				
Contacts						□			
Rated control supply voltage							□	□	
Example	**3 R P 2 0**	**0**	**5**	**–**	**1**	**A**	**P**	**3**	**0**

Note:

The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

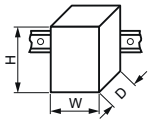
For your orders, please use the order numbers quoted in the catalog in the Selection and ordering data.

Application

Timing relays are used in control, starting, and protective circuits for all switching operations involving time delays. They guarantee a high level of functionality and a high repeat accuracy of timer settings.

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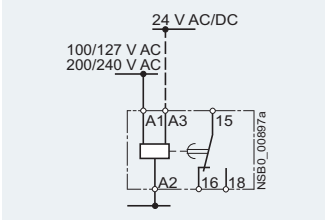
Technical specifications

Type			3RP20 05, 3RP20 25
Dimensions (W x H x D)		mm	45 x 57 x 73
Rated insulation voltage Pollution degree 3 Overvoltage category III		V AC	300
Permissible ambient temperature			
• During operation		°C	-25 ... +60
• During storage		°C	-40 ... +80
Operating range at excitation[1]			0.85 ... 1.1 x U_s at AC; 0.8 ... 1.25 x U_s at DC; 0.95 ... 1.05 times the rated frequency
Mechanical endurance Operating cycles			30 x 10^6
Electrical endurance Operating cycles at I_e			1 x 10^5
Connection type			**Screw terminals**
• Terminal screw			M3 (for standard screwdriver, size 2 and Pozidriv 2)
• Solid		mm^2	2 x (0.5 ... 1.5)[2], 2 x (0.75 ... 2.5)[2]
• Finely stranded with end sleeve		mm^2	2 x (0.5 ... 1.5)[2], 2 x (0.75 ... 2.5)[2]
• Stranded		AWG	2 x (0.5 ... 1.5)[2], 2 x (0.75 ... 2.5)[2]
• AWG cables		AWG	2 x (18 ... 14)
• Tightening torque		Nm	0.8 ... 1.2
Connection type			**Spring-type terminals**
• Solid		mm^2	2 x (0.25 ... 2.5)
• Finely stranded with end sleeve		mm^2	2 x (0.25 ... 1.5)
• Finely stranded without end sleeve		mm^2	2 x (0.25 ... 2.5)
• AWG cables, solid or stranded		AWG	2 x (24 ... 14)
• Max. external diameter of the conductor insulation		mm	3.6

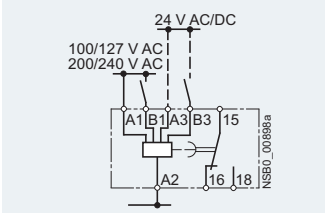
1) If nothing else is stated.

2) If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

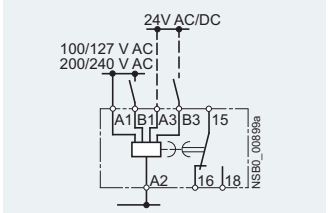
3RP20 internal circuit diagrams (terminal designation to DIN 46199, Part 5)



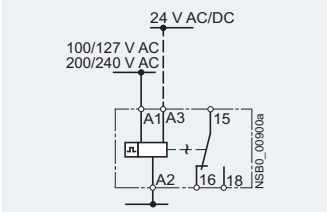
3RP20 05, 3RP20 25
With ON-delay



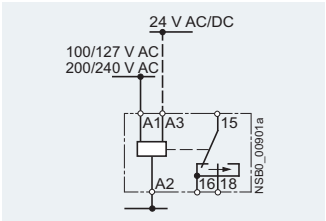
3RP20 05
OFF-delay
with auxiliary voltage



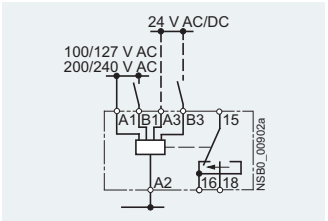
3RP20 05
ON-delay and OFF-delay
with auxiliary voltage



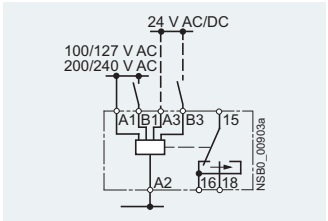
3RP20 05
Flashing



3RP20 05
Passing make contact



3RP20 05
Passing break contact
with auxiliary voltage



3RP20 05
Pulse-forming
with auxiliary voltage

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SIRIUS 3RP20 timing relays, 45 mm

Selection and ordering data

Multifunction

The functions can be adjusted by means of rotary switches. Insert labels can be used to adjust different functions of the 3RP20 05 timing relay clearly and unmistakably. The corresponding labels can be ordered as an accessory. The same potential must be applied to terminals A. and B.

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H

Functions see 3RP19 01 label set, page 10/58.


3RP20 05-1BW30


3RP20 25-1AP30


3RP20 05-2BW30


3RP20 25-2AP30

Version	Time setting range t	Rated control supply voltage U_s 50/60 Hz AC V	Rated control supply voltage U_s DC V	DT	Screw terminals Order No.	Screw terminals Price per PU	DT	Spring-type terminals Order No.	Spring-type terminals Price per PU
3RP20 05 timing relays, multifunction, 15 time setting ranges									
With LED and 1 CO contact, 8 functions	0.05 ... 1 s 0.15 ... 3 s 0.5 ... 10 s 1.5 ... 30 s 0.05 ... 1 min 5 ... 100 s 0.15 ... 3 min 0.5 ... 10 min 1.5 ... 30 min 0.05 ... 1 h 5 ... 100 min 0.15 ... 3 h 0.5 ... 10 h 1.5 ... 30 h 5 ... 100 h ∞ [2]	24/100 ... 127 24/200 ... 240	24 24	▶ ▶	**3RP20 05-1AQ30** **3RP20 05-1AP30**		D ▶	**3RP20 05-2AQ30** **3RP20 05-2AP30**	
With LED and 2 CO contacts, 16 functions[1]		24 ... 240[3]	24 ... 240[4]	▶	**3RP20 05-1BW30**		D	**3RP20 05-2BW30**	
3RP20 25. timing relays, ON-delay, 15 time setting ranges									
With LED and 1 CO contact[1]	0.05 ... 1 s 0.15 ... 3 s 0.5 ... 10 s 1.5 ... 30 s 0.05 ... 1 min 5 ... 100 s 0.15 ... 3 min 0.5 ... 10 min 1.5 ... 30 min 0.05 ... 1 h 5 ... 100 min 0.15 ... 3 h 0.5 ... 10 h 1.5 ... 30 h 5 ... 100 h ∞ [2]	24/100 ... 127 24/200 ... 240	24 24	▶ ▶	**3RP20 25-1AQ30** **3RP20 25-1AP30**		▶ ▶	**3RP20 25-2AQ30** **3RP20 25-2AP30**	

Accessories see page 10/58.

[1] Units with electrical protective separation.

[2] With switch position ∞ no timing. For test purposes (ON/OFF function) on site. Relay is constantly on when activated, or relay remains constantly off when activated. Depending on which function is set.

[3] Operating range 0.8 to 1.1 x U_s.

[4] Operating range 0.7 to 1.1 x U_s.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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7PV15 timing relays in enclosure, 17.5 mm

Overview



7PV15 Timing Relays

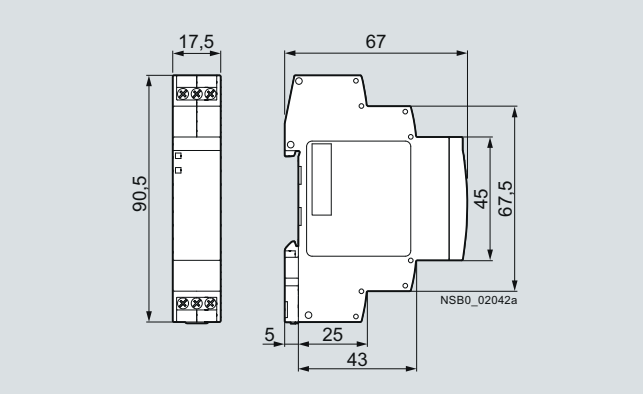
Standards

The timing relays comply with:

- IEC 60721-3-3 "Ambient conditions"
- IEC 61812-1/DIN VDE 0435 Part 2021 "Specified time relays for industrial use"
- IEC 61000-6-2 and IEC 61000-6-4 "Electromagnetic compatibility"
- IEC 60947-5-1 (VDE 0660 Part 200) "Low-voltage switchgear and controlgear – Electromechanical control circuit devices"
- DIN 43880 "Modular installation devices; enclosure dimensions and related mounting dimensions"

Enclosure version

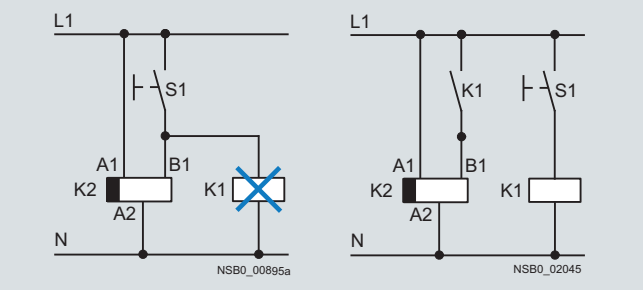
All timing relays are suitable for snap-on mounting onto TH 35 standard mounting rails according to IEC 60715. The enclosure complies with DIN 43880, 1 MW.



Dimensions

Note:

The activation of loads parallel to the start input is not permissible when using AC control voltage (see diagrams).



Diagrams

Order No. scheme

Digit of the Order No.	1st. - 5th	6th	7th		8th	9th	10th	11th	12th
	□□□□□	□	□	–	□	□	□	□	0
Timing relays in industrial enclosure, 17.5 mm	**7 P V 1 5**								
Functions/time setting ranges		□	□						
Connection type					□				
Contacts						□			
Rated control supply voltage							□	□	
Example	**7 P V 1 5**	**0**	**8**	**–**	**1**	**A**	**W**	**3**	**0**

Note:

The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quoted in the catalog in the Selection and ordering data.

Benefits

- Wide voltage range 12 to 240 V AC/DC
- High switching capacity, e.g. AC-15 at 230 V, 3 A
- Combination voltage, e.g. 24 V AC/DC and 200 to 240 V AC
- Changes to the time setting range during operation
- Changes to the function in the de-energized state
- High level of functionality and a high repeat accuracy of timer settings
- Integrated surge suppressor
- Function charts printed on the side of the device for reliable device adjustment

Application

Timing relays are used in control, starting and protective circuits for all switching operations involving time delays, e.g. in functional buildings, airports, industrial buildings etc.

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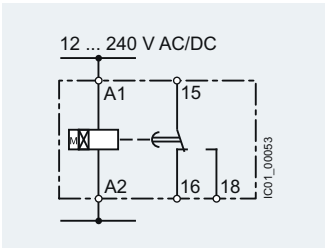
7PV15 timing relays in enclosure, 17.5 mm

Technical specifications

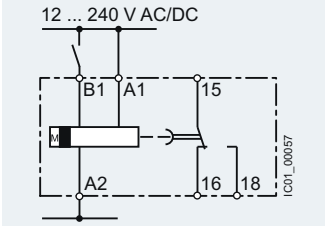
Type		7PV15
Rated insulation voltage Pollution degree 2, overvoltage category III	V AC	300
Permissible ambient temperature		
• During operation	°C	-25 ... +55
• During storage	°C	-40 ... +70
Operating range at excitation[1]		0.85 ... 1.1 x U_s at V AC/DC, 50/60 Hz 0.8 ... 1.25 x U_s 24 V DC 0.95 ... 1.05 times the rated frequency
Rated operational current I_e		
• AC-15 at 24 ... 240 V, 50 Hz	A	3
• DC-13 at		
- 24 V	A	1
- 125 V	A	0.2
Uninterrupted thermal current I_{th}	A	5
Mechanical endurance Operating cycles		1 x 10^6
Electrical endurance Operating cycles at I_e		1 x 10^5
Connection type		**Screw terminals**
• Terminal screw		M3 (for standard screwdriver, size 2 and Pozidriv 2)
• Solid	mm^2	1 x (0.2 ... 2.5)
• Finely stranded with end sleeve	mm^2	1 x (0.25 ... 1.5)
• Finely stranded without end sleeve	mm^2	1 x (0.2 ... 1.5)
• AWG cables, solid or stranded	AWG	1 x (24 ... 14)
• Tightening torque	Nm	0.4 ... 0.5

[1] If nothing else is stated.

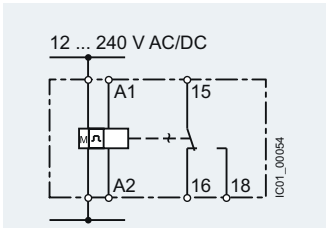
7PV15 internal circuit diagrams (terminal designation to DIN 46199, Part 5)



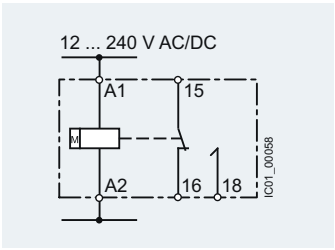
7PV15 08.-1AW30
With ON-delay



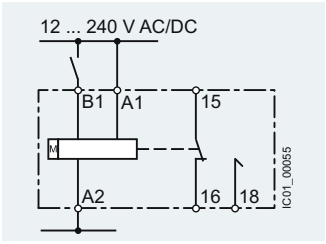
7PV15 08.-1AW30
OFF-delay



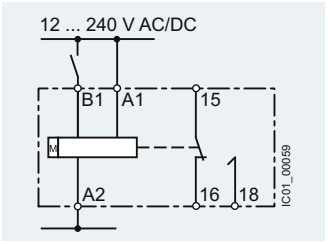
7PV15 08.-1AW30
Flashing, starting with interval



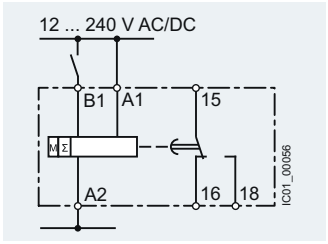
7PV15 08.-1AW30
Passing make contact



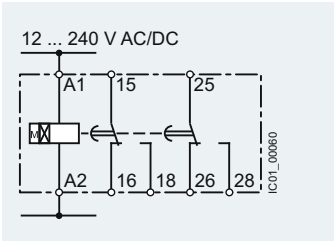
7PV15 08.-1AW30
Passing break contact,
with auxiliary voltage



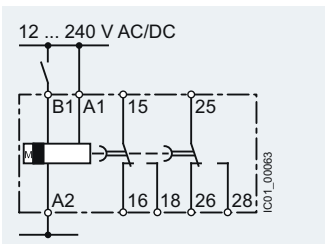
7PV15 08.-1AW30
Pulse-forming,
with auxiliary voltage



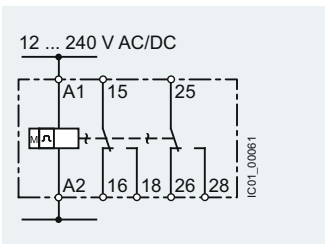
7PV15 08.-1AW30
Additive ON-delay,
with auxiliary voltage



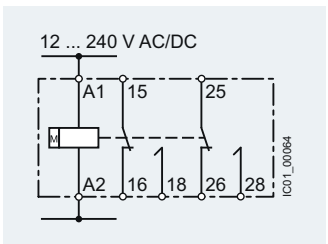
7PV15 08.-1BW30
With ON-delay



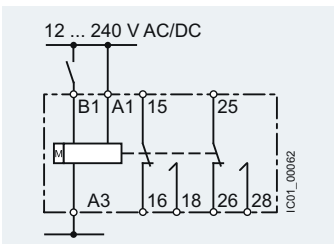
7PV15 08.-1BW30
OFF-delay,
with auxiliary voltage



7PV15 08.-1BW30
Flashing, starting with interval



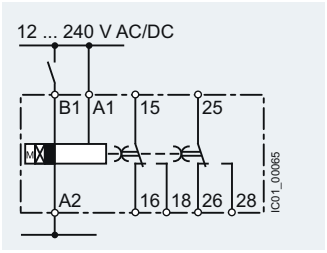
7PV15 08.-1BW30
Passing make contact



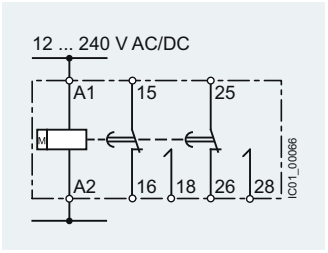
7PV15 08.-1BW30
Pulse-forming,
with auxiliary voltage

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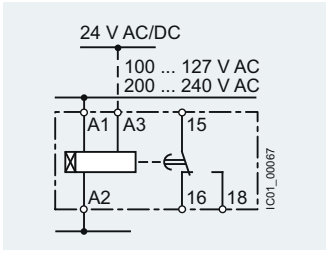
7PV15 timing relays in enclosure, 17.5 mm



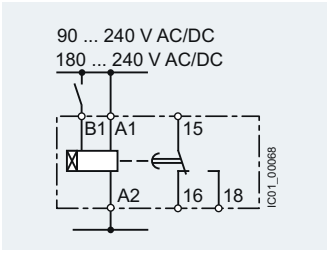
7PV15 08.-1BW30
ON and OFF-delay



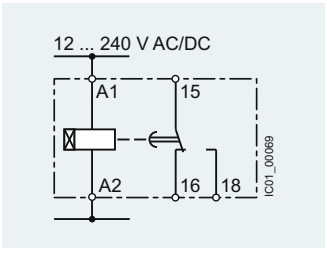
7PV15 08.-1BW30
Fixed pulse
after response delay



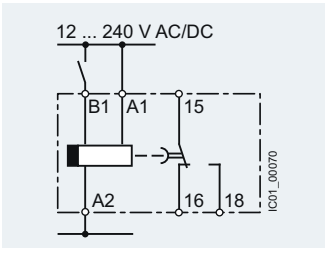
7PV15 1.-1AQ30, 7PV15 1.-1AP30
With ON-delay



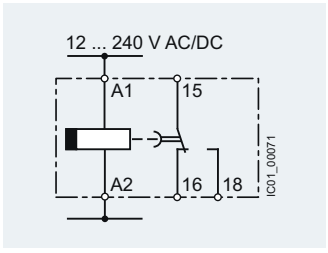
7PV15 18-1AJ30, 7PV15 18-1AN30
With ON-delay



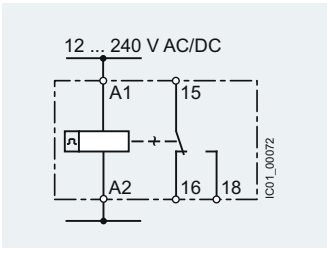
7PV15 18-1AW30
With ON-delay



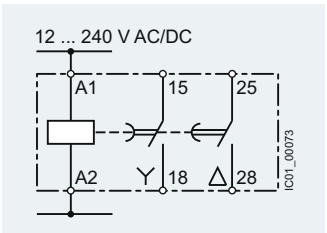
7PV15 38-1AW30
OFF-delay,
with auxiliary voltage



7PV15 40-1AW30
OFF-delay,
without auxiliary voltage



7PV15 58-1AW30
Clock-pulse relay



7PV15 78-1BW30
Wye-delta

10

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7PV15 timing relays in enclosure, 17.5 mm

Selection and ordering data

Solid-state timing relays for general use and in control systems, mechanical engineering and infrastructure with:

- 1 or 2 CO contacts
- Multifunction or monofunction
- Wide voltage range or combination voltage
- Single or selectable time setting ranges
- Switch position indication and voltage indication by LED


7PV15 08-1AW30


7PV15 12-1AP30


7PV15 18-1AW30


7PV15 38-1AW30


7PV15 40-1AW30


7PV15 58-1AW30


7PV15 78-1BW30

Version	Time setting range *t* adjustable by rotary switch to	Rated control supply voltage U_s 50/60 Hz AC V	Rated control supply voltage U_s DC V	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
7PV15 08 timing relays, multifunction, 7 time setting ranges									
The functions can be adjusted by means of rotary switches. The same potential must be applied to terminals A. and B.									
With LED and 1 CO contact, 7 functions	0.05 ... 1 s 0.5 ... 10 s 5 ... 100 s 30 s ... 10 min 3 min ... 1 h 30 min ... 10 h 5 ... 100 h	12 ... 240	12 ... 240	▶	**7PV15 08-1AW30**		1	1 unit	41H
With LED and 2 CO contacts, 7 functions		12 ... 240	12 ... 240	▶	**7PV15 08-1BW30**		1	1 unit	41H
7PV15 1. timing relays, ON-delay, 1 time setting range									
With LED and 1 CO contact	0.05 ... 1 s	24/200 ... 240	24	▶	**7PV15 11-1AP30**		1	1 unit	41H
	0.5 ... 10 s	24/100 ... 127	24	▶	**7PV15 12-1AQ30**		1	1 unit	41H
		24/200 ... 240	24	▶	**7PV15 12-1AP30**		1	1 unit	41H
	5 ... 100 s	24/100 ... 127	24	▶	**7PV15 13-1AQ30**		1	1 unit	41H
		24/200 ... 240	24	▶	**7PV15 13-1AP30**		1	1 unit	41H
7PV15 18 timing relays, ON-delay, 7 time setting ranges									
With LED and 1 CO contact	0.05 ... 1 s 0.5 ... 10 s 5 ... 100 s 30 s ... 10 min 3 min ... 1 h 30 min ... 10 h 5 ... 100 h	12 ... 240	12 ... 240	▶	**7PV15 18-1AW30**		1	1 unit	41H
		90 ... 127	90 ... 127	▶	**7PV15 18-1AJ30**		1	1 unit	41H
		180 ... 240	180 ... 240	▶	**7PV15 18-1AN30**		1	1 unit	41H
7PV15 38 timing relays, OFF-delay, with auxiliary voltage, 7 time setting ranges									
With LED and 1 CO contact	0.05 ... 1 s 0.5 ... 10 s 5 ... 100 s 30 s ... 10 min 3 min ... 1 h 30 min ... 10 h 5 ... 100 h	12 ... 240	12 ... 240	▶	**7PV15 38-1AW30**		1	1 unit	41H
7PV15 40 timing relays, OFF-delay, without auxiliary voltage, 7 time setting ranges									
With LED and 1 CO contact	0.05 ... 1 s 0.15 ... 3s 0.3 ... 6 s 0.5 ... 10 s 1.5 ... 30 s 3 ... 60 s 5 ... 100 s	12 ... 240	12 ... 240	▶	**7PV15 40-1AW30**		1	1 unit	41H
7PV15 58 timing relays, clock-pulse relay, 7 time setting ranges									
With LED and 1 CO contact	0.05 ... 1 s 0.5 ... 10 s 5 ... 100 s 30 s ... 10 min 3 min ... 1 h 30 min ... 10 h 5 ... 100 h	12 ... 240	12 ... 240	▶	**7PV15 58-1AW30**		1	1 unit	41H
7PV15 78 timing relays, wye-delta function, 7 time setting ranges									
With LED and 2 NO contacts, dead interval 0.05 ... 1 s adjustable	0.05 ... 1 s 0.5 ... 10 s 5 ... 100 s 30 s ... 10 min 3 min ... 1 h 30 min ... 10 h 5 ... 100 h	12 ... 240	12 ... 240	▶	**7PV15 78-1BW30**		1	1 unit	41H

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



SIRIUS 3RT19 timing relays

Simply by being plugged in place, the SIRIUS 3RT19 timing relays enable different functionalities required for the assembly of starters to be realized in the feeder. At the same time the timing relays for mounting onto contactors reduce the wiring work required within the feeder and save space in the control cabinet

A protection circuit (varistor) is integrated in each module.

The solid-state timing relay with semiconductor output uses two plug-in contacts to actuate the contactor underneath by means of a semiconductor after the set time has elapsed.

The time-delay auxiliary switch is supplied with power directly by two plug-in contacts through the coil terminals of the contactor, in parallel with A1/A2.

The switching state feedback is performed by a mechanical switching state indicator (plunger).

Order No. scheme

Digit of the Order No.	1st - 5th	6th	7th		8th	9th	10th	11th	12th
	□□□□□	□	□	–	□	□	□	□	□
Time module and contactor control units	**3 R T 1 9**								
Size		□	□						
Type of accessories and spare parts					□				
Version						□			
Rated control supply voltage							□		
Time setting ranges								□	
Connection type									□
Example	**3 R T 1 9**	**2**	**6**	**–**	**2**	**E**	**J**	**1**	**1**

Note:

The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quoted in the catalog in the Selection and ordering data.

Technical specifications

According to IEC 61812-1 (DIN VDE 0435 Part 2021)

Type		**Solid-state timing relay blocks with semiconductor output** **3RT19 .6-2C** **3RT19 .6-2D**	**Solid-state time-delay auxiliary switch blocks** **3RT19 .6-2E** **3RT19 .6-2F** **3RT19 .6-2G**
Rated insulation voltage U_i Pollution degree 3 Overvoltage category III according to DIN VDE 0110	V AC	300	
Permissible ambient temperature			
• During operation	°C	-25 ... +60	
• During storage	°C	-40 ... +80	
Operating range of excitation		0.8 ... 1.1 x U_S, 0.95 ... 1.05 times the rated frequency	0.85 ... 1.1 x U_S, 0.95 ... 1.05 times the rated frequency
Rated operational currents I_e			
• AC-140, DC-13	A	0.3 at 3RT19 16; 0.5 at 3RT19 26	--
• AC-15, 24 ... 400 V, 50 Hz	A	--	3
• DC-13, 24 V	A	--	1
• DC-13, 125 V	A	--	0.2
• DC-13, 250 V	A	--	0.1
Mechanical endurance	Operating cycles	100 x 10^6	10 x 10^6
Electrical endurance at I_e	Operating cycles	100 x 10^6	1 x 10^5
Connection type		**Screw terminals**	
• Terminal screw		M3 (for standard screwdriver, size 2 and Pozidriv 2)	
• Solid	mm^2	1 x (0.5 ... 4)/2 x (0.5 ... 2.5)	
• Finely stranded with end sleeve	mm^2	1 x (0.5 ... 2.5)/2 x (0.5 ... 1.5)	
• AWG cables, solid or stranded	AWG	2 x (20 ... 14)	
• Tightening torque	Nm	0.8 … 1.2	

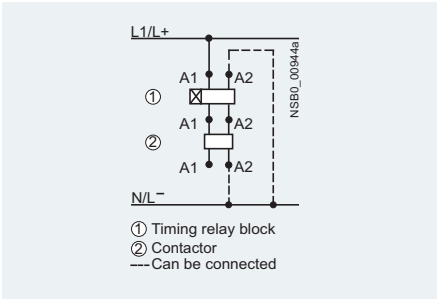
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SIRIUS 3RT19 timing relays for mounting onto contactors

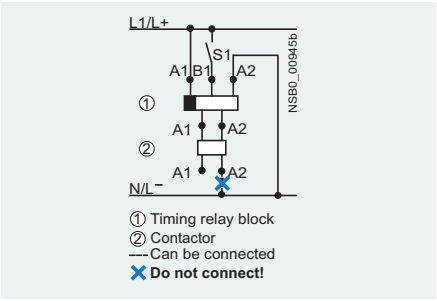
3RT19 internal circuit diagrams (terminal designation acc. to DIN 46199, Part 5)

Solid-state timing relay blocks

For 3RT10 contactors in sizes S0 to S3 and 3RH11 contactor relays

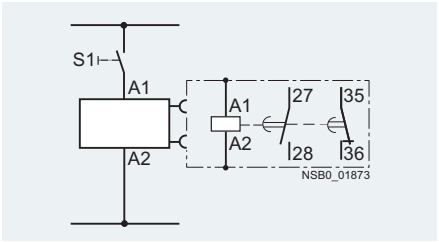


3RT19 26-2C
With ON-delay

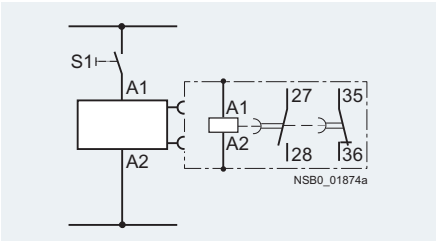


3RT19 26-2D
OFF-delay
(with auxiliary voltage)

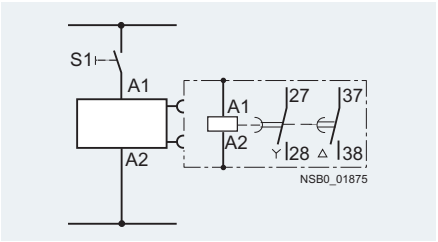
Solid-state time-delay auxiliary switch blocks



3RT19 26-2E
With ON-delay



3RT19 26-2F
With OFF-delay
(without auxiliary voltage)



3RT19 26-2G
Wye-delta function

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Selection and ordering data

For contactors Type	Version	Time setting range t s	Rated control supply voltage U_s V	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
For sizes S0 to S12[1]									
 3RT19 26-2...	**Terminal designations acc. to EN 46199-5**								
3RT10 2, 3RT10 3, 3RT10 4	• ON-delay								
	1 NO + 1 NC	0.05 ... 1	24 AC/DC	D	**3RT19 26-2EJ11**		1	1 unit	41H
		0.5 ... 10		▶	**3RT19 26-2EJ21**		1	1 unit	41H
		5 ... 100		A	**3RT19 26-2EJ31**		1	1 unit	41H
		0.05 ... 1	100 ... 127 AC	C	**3RT19 26-2EC11**		1	1 unit	41H
		0.5 ... 10		▶	**3RT19 26-2EC21**		1	1 unit	41H
		5 ... 100		D	**3RT19 26-2EC31**		1	1 unit	41H
		0.05 ... 1	200 ... 240 AC	D	**3RT19 26-2ED11**		1	1 unit	41H
		0.5 ... 10		▶	**3RT19 26-2ED21**		1	1 unit	41H
		5 ... 100		B	**3RT19 26-2ED31**		1	1 unit	41H
	• OFF-delay without auxiliary voltage[2]								
	1 NO + 1 NC	0.05 ... 1	24 AC/DC	▶	**3RT19 26-2FJ11**		1	1 unit	41H
		0.5 ... 10		▶	**3RT19 26-2FJ21**		1	1 unit	41H
		5 ... 100		▶	**3RT19 26-2FJ31**		1	1 unit	41H
		0.05 ... 1	100 ... 127 AC	D	**3RT19 26-2FK11**		1	1 unit	41H
		0.5 ... 10		▶	**3RT19 26-2FK21**		1	1 unit	41H
		5 ... 100		C	**3RT19 26-2FK31**		1	1 unit	41H
		0.05 ... 1	200 ... 240 AC	D	**3RT19 26-2FL11**		1	1 unit	41H
		0.5 ... 10		A	**3RT19 26-2FL21**		1	1 unit	41H
		5 ... 100		A	**3RT19 26-2FL31**		1	1 unit	41H
	• Wye-delta function (varistor integrated)								
	1 NO delayed + 1 NO instantaneous, dead time 50 ms	1.5 ... 30	24 AC/DC	▶	**3RT19 26-2GJ51**		1	1 unit	41H
			100 ... 127 AC	▶	**3RT19 26-2GC51**		1	1 unit	41H
			200 ... 240 AC	▶	**3RT19 26-2GD51**		1	1 unit	41H
For sizes S0 to S3, with semiconductor output									
3RT10 2, 3RT10 3, 3RT10 4[2]	**For mounting onto coil terminals on top of the contactors** The electrical connection between the relay block and the corresponding contactor is established by screwing the two connecting pins of the timing relay block to coil terminals A1/A2 on top of the contactor.								
 3RT19 26-2C...	• ON-delay, two-wire design (varistor integrated)								
		0.05 ... 1	24 ... 66 AC/DC	D	**3RT19 26-2CG11**		1	1 unit	41H
		0.5 ... 10		B	**3RT19 26-2CG21**		1	1 unit	41H
		5 ... 100		D	**3RT19 26-2CG31**		1	1 unit	41H
		0.05 ... 1	90 ... 240 AC/DC	▶	**3RT19 26-2CH11**		1	1 unit	41H
		0.5 ... 10		▶	**3RT19 26-2CH21**		1	1 unit	41H
		5 ... 100		▶	**3RT19 26-2CH31**		1	1 unit	41H
 3RT19 26-2D...	• OFF-delay with auxiliary voltage (varistor integrated)								
		0.05 ... 1	24 ... 66 AC/DC	D	**3RT19 26-2DG11**		1	1 unit	41H
		0.5 ... 10		D	**3RT19 26-2DG21**		1	1 unit	41H
		5 ... 100		D	**3RT19 26-2DG31**		1	1 unit	41H
		0.05 ... 1	90 ... 240 AC/DC	C	**3RT19 26-2DH11**		1	1 unit	41H
		0.5 ... 10		D	**3RT19 26-2DH21**		1	1 unit	41H
		5 ... 100		C	**3RT19 26-2DH31**		1	1 unit	41H

[1] The terminals A1 and A2 for the rated control supply voltage of the solid-state time-delay auxiliary switch block must be connected to the corresponding contactor by connecting cables.

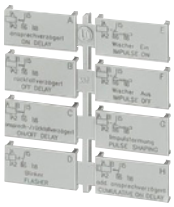
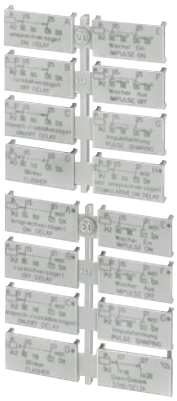
[2] Not for 3RT10 4 contactor with 24 to 42 V rated control supply voltage.

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Accessories

Selection and ordering data

Accessories for 3RP15 and 3RP20

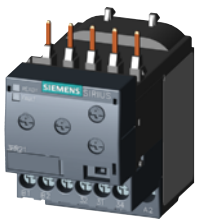
	Version	Function	Identification letter	Use	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Label sets for 3RP15 and 3RP20										
	Accessory for 3RP15 05 and 3RP20 (not included in the scope of supply). The label set offers the possibility of labeling timing relays with the set function in English and German.									
 3RP19 01-0A	1 label set (1 unit) with 8 functions	With ON-delay	A	For devices with 1 CO contact and 3RP15 05-.RW30	C	**3RP19 01-0A**		1	5 units	41H
		OFF-delay with auxiliary voltage	B							
		ON-delay and OFF-delay with auxiliary voltage	C							
		Flashing, starting with interval	D							
		Passing make contact	E							
		Passing break contact with auxiliary voltage	F							
		Pulse-forming with auxiliary voltage	G							
		Additive ON-delay with auxiliary voltage	H							
 3RP19 01-0B	1 label set (1 unit) with 16 functions	With ON-delay	A	For devices with 2 CO contacts	C	**3RP19 01-0B**		1	5 units	41H
		OFF-delay with auxiliary voltage	B							
		ON-delay and OFF-delay with auxiliary voltage	C							
		Flashing, starting with interval	D							
		Passing make contact	E							
		Passing break contact with auxiliary voltage	F							
		Pulse-forming with auxiliary voltage	G							
		Additive ON-delay with auxiliary voltage and instantaneous contact	H•							
		ON-delay and instantaneous contact	A•							
		OFF-delay with auxiliary voltage and instantaneous contact	B•							
		ON-delay and OFF-delay with auxiliary voltage and instantaneous contact	C•							
		Flashing, starting with interval, and instantaneous contact	D•							
		Passing make contact and instantaneous contact	E•							
		Passing break contact with auxiliary voltage and instantaneous contact	F•							
		Pulse-forming with auxiliary voltage and instantaneous contact	G•							
		Wye-delta function	Y∆							
Blank labels for 3RP15 and 3RP20										
	Blank labels, 20 mm x 7 mm, pastel turquoise[1]			For 3RP15, 3RP20	D	**3RT19 00-1SB20**		100	340 units	41B
Covers and push-in lugs for 3RP15										
 3RP19 03	**Push-in lugs** For screw fixing, 2 units are required for each device			For 3RP15 with 1 or 2 CO contacts	B	**3RP19 03**		1	10 units	41H
 3RP19 02	**Sealable covers** for securing against unauthorized adjustment of setting knobs			For 3RP15 with 1 or 2 CO contacts	B	**3RP19 02**		1	5 units	41H

[1] PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH (see Chapter 16, "Appendix" → "External Partners") .

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview





Features	3RR21	3RR22	Benefits
General data			
Sizes	S00, S0	S00, S0	• Are coordinated with the dimensions, connections and technical characteristics of the other devices in the SIRIUS modular system (contactors, soft starters, etc.) • Permit the mounting of slim and compact load feeders in widths of 45 mm (S00 and S0) • Simplify configuration
Current range	S00: 1.6 ... 16 A S0: 4 ... 40 A	S00: 1.6 ... 16 A S0: 4 ... 40 A	• Is adapted to the other devices in the SIRIUS modular system • Just a single version per size with a wide setting range enables easy configuration
Permissible ambient temperature			
• During operation	-25 ... +60 °C	-25 ... +60 °C	• Suitable for applications in the control cabinet, worldwide
Monitoring functions			
Current overshoot	✓ (Two-phase)	✓ (Three-phase)	• Provides optimum inverse-time delayed protection of loads against excessive temperature rises due to overload • Enables detection of filter blockages or pumping against closed gate valves • Enables drawing conclusions about wear, poor lubrication or other maintenance-relevant phenomena
Current undershoot	✓ (Two-phase)	✓ (Three-phase)	• Enables detection of overload due to a slipping or torn belt • Guarantees protection of pumps against dry running • Facilitates monitoring of the functions of resistive loads such as heaters • Permits energy savings through monitoring of no-load operation
Apparent current monitoring	✓	✓ (Selectable)	• Precision current monitoring especially in a motor's rated and upper torque range
Active current monitoring	--	✓ (Selectable)	• Optimum current monitoring over a motor's entire torque range through the patented combination of power factor and apparent current monitoring
Range monitoring	✓ (Two-phase)	✓ (Three-phase)	• Simultaneous monitoring of current overshoot and undershoot with a singe device
Phase failure, open circuit	✓ (Two-phase)	✓ (Three-phase)	• Minimizes heating of induction motors during phase failure through immediate disconnection • Prevents operation of hoisting equipment with reduced load carrying capacity
Phase sequence monitoring	--	✓ (Selectable)	• Prevents starting of motors, pumps or compressors in the wrong direction of rotation
Internal ground-fault detection (residual current monitoring)	--	✓ (Selectable)	• Provides optimum protection of loads against high-resistance short circuits or ground faults due to moisture, condensed water, damage to the insulation material, etc. • Eliminates the need for additional special equipment • Saves space in the control cabinet • Reduces wiring outlay and costs
Blocking current monitoring	--	✓ (Selectable)	• Minimizes heating of induction motors when blocked during operation through immediate disconnection • Minimizes mechanical loading of the system by acting as an electronic shear pin

✓ Available
-- Not available

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SIRIUS 3RR2 Monitoring Relays for Mounting onto 3RT2 Contactors

General data





Features	3RR21	3RR22	Benefits
Features			
RESET function	✓	✓	• Allows manual or automatic resetting of the relay • Resetting directly on the device or by switching the control supply voltage off and on (remote RESET)
ON-delay time	0 ... 60 s	0 ... 99 s	• Enables motor starting without evaluation of the starting current • Can be used for monitoring motors with lengthy start-up
Tripping delay time	0 ... 30 s	0 ... 30 s	• Permits brief threshold value violations during operation • Prevents frequent warnings and disconnections with currents near the threshold values
Operating and indicating elements	LEDs and rotary potentiometers	Displays and buttons	• For setting the threshold values and delay times • For selectable functions • For quick and selective diagnostics • Displays for permanent display of measured values
Integrated contacts	1 CO contact	1 CO, 1 semiconductor output	• Enable disconnection of the system or process when there is an irregularity • Can be used to output signals
Design of load feeders			
Short-circuit strength up to 100 kA at 690 V (in conjunction with the corresponding fuses or the corresponding motor starter protector)	✓	✓	• Provides optimum protection of the loads and operating personnel in the event of short circuits due to insulation faults or faulty switching operations
Electrical and mechanical matching to 3RT2 contactors	✓	✓	• Simplifies configuration • Reduces wiring outlay and costs • Enables stand-alone installation as well as space-saving direct mounting
Spring-type terminals for main circuit and auxiliary circuits	✓ (optional)	✓ (optional)	• Enables fast connections • Permits vibration-resistant connections • Enables maintenance-free connections
More features			
Suitable for single- and three-phase loads	✓	✓	• Enables the monitoring of single-phase systems through parallel infeed at the contactor or looping the current through the three phase connections
Wide setting ranges	✓	✓	• Reduce the number of variants • Minimize the configuration outlay and costs • Minimize storage overheads, storage costs, tied-up capital
Wide voltage supply range	✓ (optional)	✓ (optional)	• Reduces the number of variants • Minimizes the configuring outlay and costs • Minimizes storage overhead, storage costs, tied-up capital

✓ Available

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Possible combinations of 3RR2 monitoring relays with 3RT2 contactors

Monitoring Relays	Current range	**Contactors** (type, size, rating)	
		3RT20 1	**3RT20 2**
		S00	S0
Type	A	3/4/5.5/7.5 kW	5.5/7.5/11/15/18.5 kW
3RR21 41	1.6 ... 16	✓	With stand-alone installation support
3RR22 41	1.6 ... 16	✓	With stand-alone installation support
3RR21 42	4 ... 40	With stand-alone installation support	✓
3RR22 42	4 ... 40	With stand-alone installation support	✓

✓ Available

Order No. scheme

Digit of the Order No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th
	□□□	□	□	□	□	–	□	□	□	□	**0**
Monitoring relays	**3 R R**										
SIRIUS 2nd generation		**2**									
Type of setting			□								
Type of monitoring relay				□							
Size					□						
Connection methods							□				
Number and type of outputs								□			
Signal type of the control supply voltage									□	□	
Example	**3 R R**	**2**	**1**	**4**	**1**	**–**	**1**	**A**	**A**	**3**	**0**

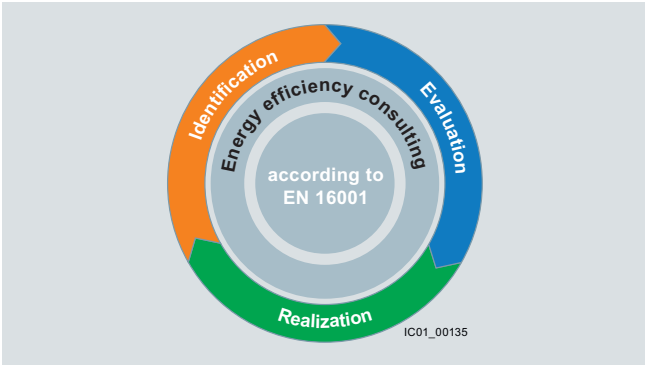
Note:

The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quoted in the catalog in the Selection and ordering data.

Benefits

Advantages through energy efficiency



Overview of the energy management process

We offer you a unique portfolio for industrial energy management, using an energy management system that helps to optimally define your energy needs. We split up our industrial energy management into three phases – Identification, Evaluation and Realization – and we support you with the appropriate hardware and software solutions in every process phase.

The innovative products of the SIRIUS industrial controls portfolio can also make a substantial contribution to a plant's energy efficiency (www.siemens.com/sirius/energysaving).

The 3RR2 monitoring relays make the following contribution to the energy efficiency of the plant as a whole:

- Shutdown in the event of no-load operation (e.g. pump no-load operation)
- Load shedding of predefined loads in the event of current overshoots

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SIRIUS 3RR2 Monitoring Relays for Mounting onto 3RT2 Contactors

Current monitoring

Overview



SIRIUS 3RR22 42 and 3RR21 42 current monitoring relays

The SIRIUS 3RR2 current monitoring relays are suitable for the load monitoring of motors or other loads.
In two or three phases they monitor the rms value of AC currents for overshooting or undershooting of set threshold values.

Whereas apparent current monitoring is used above all in connection with the rated torque or in case of overload, the active current monitoring option can be used to observe and evaluate the load factor over a motor's entire torque range.

The 3RR2 current monitoring relays can be integrated directly in the feeder by mounting onto the 3RT2 contactor; separate wiring of the main circuit is therefore superfluous. No separate transformers are required.

For a line-oriented configuration or simultaneous use of an overload relay, terminal brackets for stand-alone installation are available for separate standard rail mounting.

Versions

Basic versions

The basic versions with two-phase apparent current monitoring, a CO contact output and analog adjustability provide a high level of monitoring reliability especially in the rated and overload range.

Standard versions

The standard versions monitor the current in three phases with selectable active current monitoring. They have additional diagnostics options such as residual current monitoring and phase sequence monitoring, and they are also suitable for monitoring motors below the rated torque. These devices have an additional independent semiconductor output, an actual value display, and are digitally adjustable.

Both versions are available optionally with screw terminals or spring-type terminals, in each case for sizes S00 and S0.

Benefits

- Directly mountable onto 3RT2 contactors and 3RA23 reversing contactor assemblies, i. e. no additional wiring outlay in the main circuit
- Optimally coordinated with the technical characteristics of the 3RT2 contactors
- No separate current transformer required
- Versions with wide voltage supply range
- Variably adjustable to overshoot, undershoot or range monitoring
- Freely configurable delay times and RESET response
- Display of ACTUAL value and status messages
- All versions with removable control current terminals
- All versions with screw terminals or spring-type terminals
- Simple determination of the threshold values through direct reference to actually measured values for setpoint loading
- Range monitoring and selectable active current measurement mean that only one device for monitoring a motor is required along the entire torque curve
- In addition to current monitoring it is also possible to monitor for broken cables, phase failure, phase sequence, residual current and motor blocking.

Application

- Monitoring of current overshoot and undershoot
- Monitoring of broken conductors
- Monitoring of no-load operation and load shedding, e.g. in the event of a torn V-belt or no-load operation of a pump
- Monitoring of overload, e.g. on pumps due to a dirty filter system
- Monitoring the functionality of electrical loads such as heaters
- Monitoring of wrong phase sequence on mobile equipment such as compressors or cranes
- Monitoring of high-resistance short circuits, e.g. due to damaged insulation or dampness

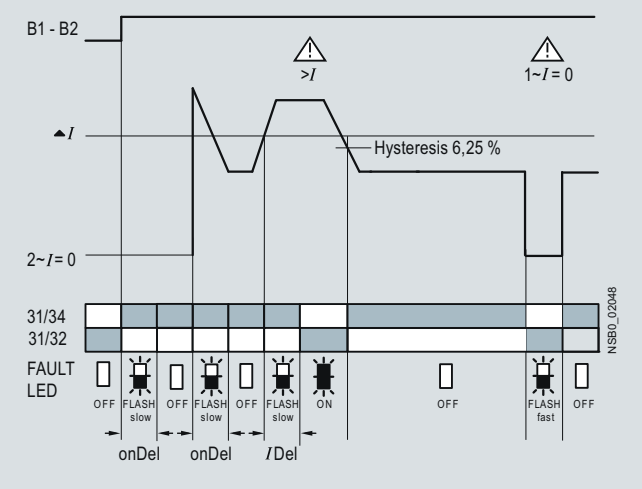
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Technical specifications

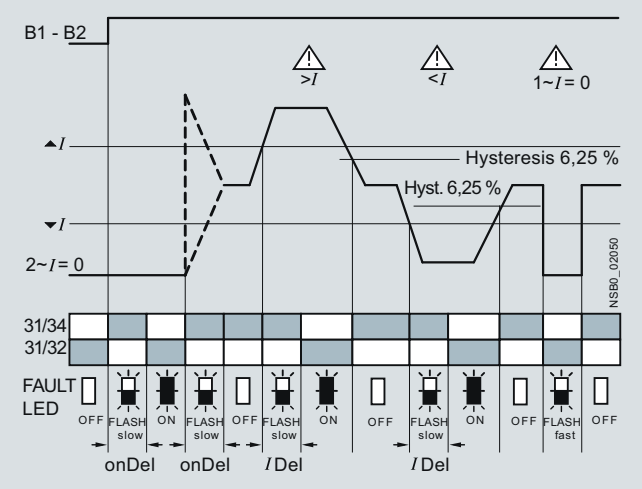
Function charts of 3RR21 4.-.A.30 basic version, analogically adjustable

Closed-circuit principle upon application of the control supply voltage

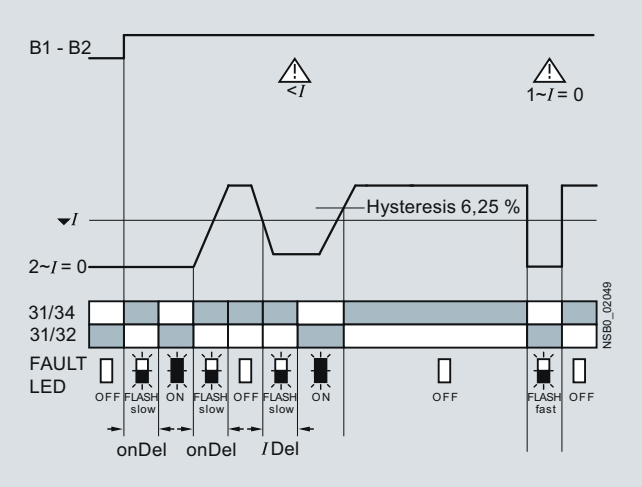
Current overshoot



Range monitoring



Current undershoot



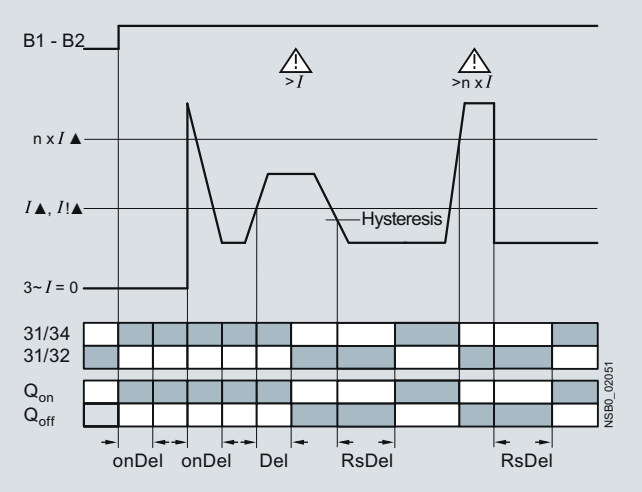
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Current monitoring

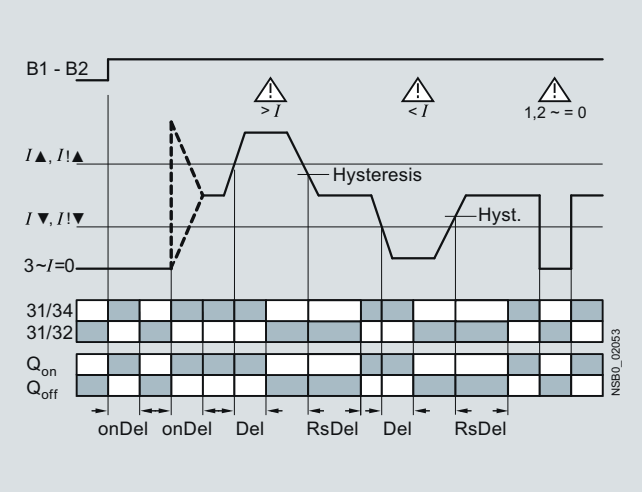
Function charts of 3RR22 4.-.F.30 standard version, digitally adjustable

With the closed-circuit principle selected upon application of the control supply voltage

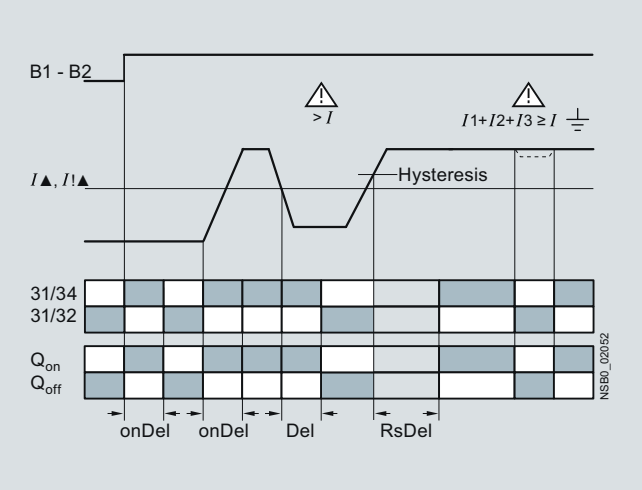
Current overshoot



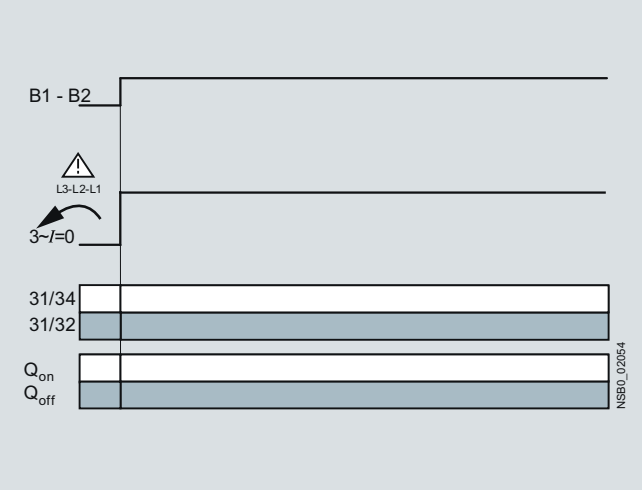
Range monitoring



Current undershoot with residual current monitoring



Phase sequence monitoring



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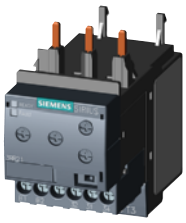
Selection and ordering data

SIRIUS 3RR2 current monitoring relays

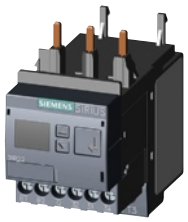
- For load monitoring of motors or other loads
- Multi-phase monitoring of undercurrent and overcurrent
- Starting and tripping delay can be adjusted separately
- Tripping delay 0 to 30 s
- Auto or manual RESET

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H


3RR21 41-1AW30


3RR21 42-1AW30


3RR22 41-1FW30


3RR22 42-1FW30


3RR21 41-2AA30


3RR22 41-2FA30

Size	Measuring range	Hysteresis	Control supply voltage U_s	DT	Screw terminals	DT	Spring-type terminals
	A	A	V		Order No. / Price per PU		Order No. / Price per PU
Basic versions							
Analogically adjustable, closed-circuit principle, 1 CO, 2-phase current monitoring, apparent current monitoring, start-up delay 0 ... 60 s							
S00	1.6 ... 16	6.25 % of threshold value	24 AC/DC	A	**3RR21 41-1AA30**	A	**3RR21 41-2AA30**
			24 ... 240 AC/DC	A	**3RR21 41-1AW30**	A	**3RR21 41-2AW30**
S0	4 ... 40	6.25 % of threshold value	24 AC/DC	A	**3RR21 42-1AA30**	A	**3RR21 42-2AA30**
			24 ... 240 AC/DC	A	**3RR21 42-1AW30**	A	**3RR21 42-2AW30**
Standard versions							
Digitally adjustable, LCD, open-circuit or closed-circuit principle, 1 CO, 1 semiconductor output, 3-phase current monitoring, active current or apparent current monitoring, phase sequence monitoring, residual current monitoring, blocking current monitoring, reclose delay time 0 ... 300 min, start-up delay 0 ... 99 s, separate settings for warning and alarm thresholds							
S00	1.6 ... 16	0.1 ... 3	24 AC/DC	A	**3RR22 41-1FA30**	A	**3RR22 41-2FA30**
			24 ... 240 AC/DC	A	**3RR22 41-1FW30**	A	**3RR22 41-2FW30**
S0	4 ... 40	0.1 ... 8	24 AC/DC	A	**3RR22 42-1FA30**	A	**3RR22 42-2FA30**
			24 ... 240 AC/DC	A	**3RR22 42-1FW30**	A	**3RR22 42-2FW30**

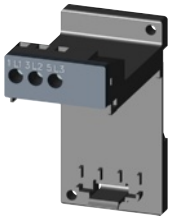
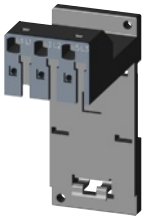
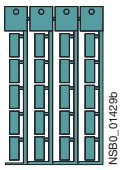
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*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Current monitoring

Accessories

	Use	Version	Size	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Terminal brackets for stand-alone installation[1]									
 3RU29 16-3AA01	For 3RR2	For separate mounting of the overload relays or monitoring relays; screw and snap-on mounting onto TH 35 standard mounting rail			**Screw terminals**				
		• Screw connection	S00	▶	**3RU29 16-3AA01**		1	1 unit	41F
			S0	▶	**3RU29 26-3AA01**		1	1 unit	41F
 3RU29 26-3AC01					**Spring-type terminals**				
		• Spring-type connection	S00	B	**3RU29 16-3AC01**		1	1 unit	41F
			S0	B	**3RU29 26-3AC01**		1	1 unit	41F
Blank labels									
 3RT19 00-1SB20	For 3RR2	**Unit labeling plates[2]** For SIRIUS devices							
		20 mm x 7 mm, pastel turquoise		D	**3RT19 00-1SB20**		100	340 units	41B
Sealable covers									
	For 3RR2	**Sealable covers** For securing against unintentional or unauthorized adjustment of settings		A	**3RR29 40**		1	5 units	41H
	For 3RR21	**Sealing foil** For securing against unauthorized adjustment of setting knobs		▶	**3TK28 20-0AA00**		1	1 unit	41L
Tools for opening spring-type terminals									
 3RA29 08-1A	For auxiliary circuit connections	**Screwdrivers** For all SIRIUS devices with spring-type terminals 3.0 mm x 0.5 mm, length approx. 200 mm, titanium gray/black, partially insulated		A	**Spring-type terminals** **3RA29 08-1A**		1	1 unit	41B
Manuals									
		System Manuals for Industrial Controls – SIRIUS Innovations							
		• German		C	**3ZX1 012-0RA01-1AB1**		1	1 unit	401
		• English		C	**3ZX1 012-0RA01-1AC1**		1	1 unit	401
		• French		C	**3ZX1 012-0RA01-1AD1**		1	1 unit	401
		• Spanish		C	**3ZX1 012-0RA01-1AE1**		1	1 unit	401
		Configuration Manuals for Configuring SIRIUS Innovations – Selection Data for Load Feeders in Fuseless and Fused Designs							
		• German		C	**3ZX1 012-0RA21-1AB0**		1	1 unit	401
		• English		C	**3ZX1 012-0RA21-1AC0**		1	1 unit	401
		Configuration Manuals for 3UG45/3UG46, 3RR21/3RR22 monitoring relays							
		• German		C	**3ZX1 012-0UG40-0AB0**		1	1 unit	401
		• English		C	**3ZX1 012-0UG40-0AC0**		1	1 unit	401

[1] The accessories are identical to those of the 3RU21 thermal overload relays and the 3RB3 solid-state overload relays see Chapter 7.

[2] PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH (see Chapter 16, "Appendix" → "External Partners") .

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Order No. scheme

Digit of the Order No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th
	□□□	□	□	□	□	–	□	□	□	□	□
Monitoring Relays	**3 U G**										
generation		□									
Type of setting			□								
Functions				□	□						
Connection methods							□				
Contacts								□			
Control supply voltage									□		
Signal type of the control supply voltage										□	
Special version											□
Example	**3 U G**	**4**	**5**	**1**	**1**	**–**	**1**	**A**	**N**	**2**	**0**

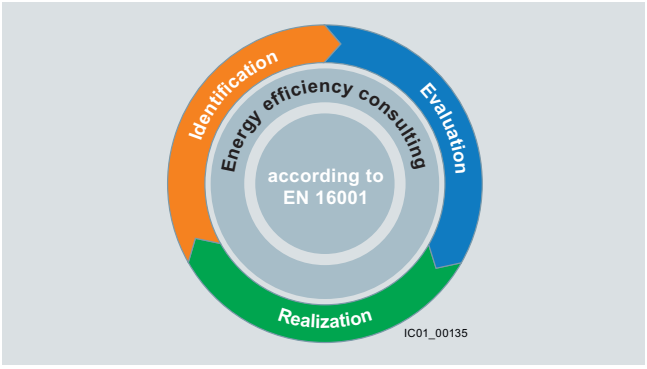
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Benefits

Advantages through energy efficiency



Overview of the energy management process

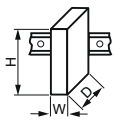
We offer you a unique portfolio for industrial energy management, using an energy management system that helps to optimally define your energy needs. We split up our industrial energy management into three phases – Identification, Evaluation and Realization – and we support you with the appropriate hardware and software solutions in every process phase.

The innovative products of the SIRIUS industrial controls portfolio can also make a substantial contribution to a plant's energy efficiency (www.siemens.com/sirius/energysaving).

The 3UG4 monitoring relays contribute to energy efficiency throughout the plant as follows:

- Shutdown in the event of no-load operation (e.g. pump no-load operation)
- Reactive-power compensation by means of power factor monitoring
- Load shedding of predefined loads in the event of current overshoots

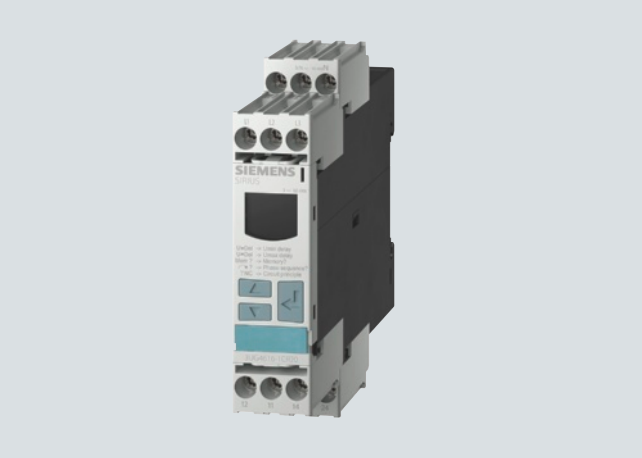
Technical specifications

General data			
Type			**3UG**
Dimensions (W x H x D)			
• For 2 terminal blocks			
- Screw terminals		mm	22.5 x 83 x 91
- Spring-type terminals		mm	22.5 x 84 x 91
• For 3 terminal blocks			
- Screw terminals		mm	22.5 x 92 x 91
- Spring-type terminals		mm	22.5 x 94 x 91
• For 4 terminal blocks			
- Screw terminals		mm	22.5 x 103 x 91
- Spring-type terminals		mm	22.5 x 103 x 91
Permissible ambient temperature			
• During operation		°C	-25 ... +60
Connection type			**Screw terminals**
• Terminal screw			M3 (for standard screwdriver, size 2 and Pozidriv 2)
• Solid		mm^2	1 x (0.5 ... 4)/2 x (0.5 ... 2.5)
• Finely stranded with end sleeve		mm^2	1 x (0.5 ... 2.5)/2 x (0.5 ... 1.5)
• AWG cables, solid or stranded		AWG	2 x (20 ... 14)
Connection type			**Spring-type terminals**
• Solid		mm^2	2 x (0.25 ... 1.5)
• Finely stranded, with end sleeves acc. to DIN 46228		mm^2	2 x (0.25 ... 1.5)
• Finely stranded		mm^2	2 x (0.25 ... 1.5)
• AWG cables, solid or stranded		AWG	2 x (24 ... 16)

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Line monitoring

Overview



SIRIUS 3UG46 15 monitoring relay

Solid-state line monitoring relays provide maximum protection for mobile machines and plants or for unstable networks. Network and voltage faults can thus be detected early and rectified before far greater damage ensues.

Depending on the version, the relays monitor phase sequence, phase failure with and without N conductor monitoring, phase asymmetry, undervoltage or overvoltage.

Phase asymmetry is evaluated as the difference between the greatest and the smallest phase voltage relative to the greatest phase voltage. Undervoltage or overvoltage exists when at least one phase voltage deviates by 20 % from the set rated system voltage or the directly set limit values are overshot or undershot. The rms value of the voltage is measured.

With the 3UG46 17 or 3UG46 18 relay, a wrong direction of rotation can also be corrected automatically.

Benefits

- Can be used without auxiliary voltage in any network from 160 to 630 V AC worldwide thanks to wide voltage range
- Variably adjustable to overshoot, undershoot or range monitoring
- Freely configurable delay times and RESET response
- Width 22.5 mm
- Permanent display of ACTUAL value and network fault type on the digital versions
- Automatic correction of the direction of rotation by distinguishing between power system faults and wrong phase sequence
- All versions with removable terminals
- All versions with screw terminals or spring-type terminals

Application

The relays are used above all for mobile equipment, e.g. air conditioning compressors, refrigerating containers, building site compressors and cranes.

Function	Application
Phase sequence	• Direction of rotation of the drive
Phase failure	• A fuse has tripped • Failure of the control supply voltage • Broken cable
Phase asymmetry	• Overheating of the motor due to asymmetrical voltage • Detection of asymmetrically loaded networks
Undervoltage	• Increased current on a motor with corresponding overheating • Unintentional resetting of a device • Network collapse, particularly with battery power
Overvoltage	• Protection of a plant against destruction due to overvoltage

Technical specifications

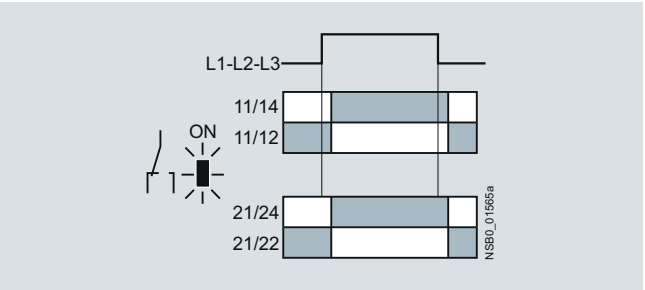
3UG45 11 monitoring relays

The 3UG45 11 phase sequenced relay monitors the phase sequence in a three-phase network. No adjustments are required for operation. The device has an internal power supply and works using the closed-circuit principle. If the phase sequence at the terminals L1-L2-L3 is correct, the output relay picks up after the delay time has elapsed and the LED is lit. If the phase sequence is wrong, the output relay remains in its rest position.

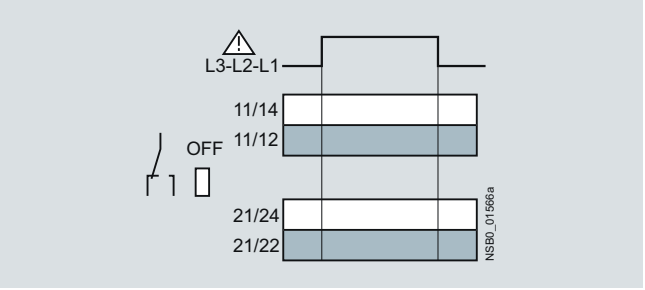
Note:

When one phase fails, connected loads (motor windings, lamps, transformers, coils, etc.) create a feedback voltage at the terminal of the failed phase due to the network coupling. Because the 3UG45 11 relays are not resistant to voltage feedback, such a phase failure is not detected. Should this be required, then the 3UG45 12 monitoring relay must be used.

Correct phase sequence



Wrong phase sequence



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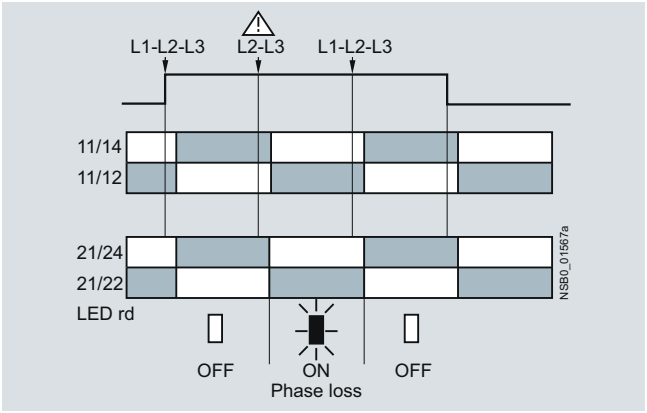
3UG45 12 monitoring relays

The 3UG45 12 line monitoring relay monitors three-phase networks with regard to phase sequence, phase failure and phase unbalance of 10 %. Thanks to a special measuring method, a phase failure is reliably detected in spite of the wide voltage range from 160 to 690 V and feedback through the load of up to 90 %. The device has an internal power supply and works using the closed-circuit principle. No adjustments are required. When the mains voltage is switched on, the green LED is lit. If the phase sequence at the terminals L1-L2-L3 is correct, the output relay picks up. If the phase sequence is wrong, the red LED flashes and the output relay remains in its rest position. If a phase fails, the red LED is permanently lit and the output relay drops.

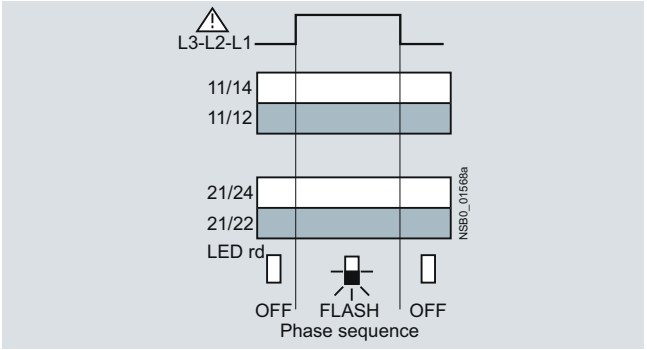
Note:

The red LED is a fault diagnostic indicator and does not show the current relay status. The 3UG45 12 monitoring relay is suitable for line frequencies of 50/60 Hz.

Phase failure



Wrong phase sequence



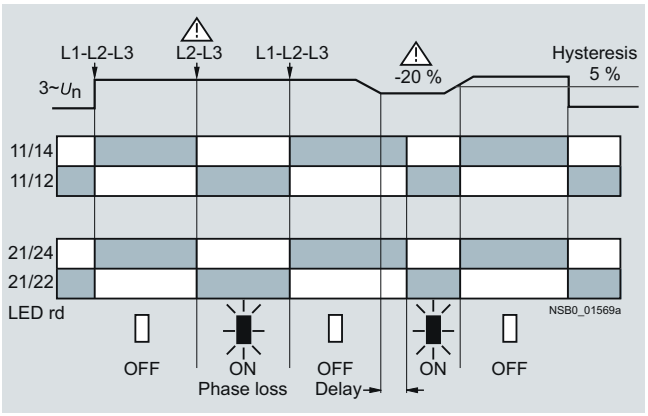
3UG45 13 monitoring relays

The 3UG45 13 line monitoring relay monitors three-phase networks with regard to phase sequence, phase failure, phase asymmetry and undervoltage of 20 %. The device has an internal power supply and works using the closed-circuit principle. The hysteresis is 5 %. The integrated response delay time is adjustable from 0 to 20 s and responds to undervoltage. If the direction is incorrect, the device switches off immediately. Thanks to a special measuring method, a phase failure is reliably detected in spite of the wide voltage range from 160 to 690 V and feedback through the load of up to 80%. When the mains voltage is switched on, the green LED is lit. If the phase sequence at the terminals L1-L2-L3 is correct, the output relay picks up. If the phase sequence is wrong, the red LED flashes and the output relay remains in its rest position. If a phase fails, the red LED is permanently lit and the output relay drops.

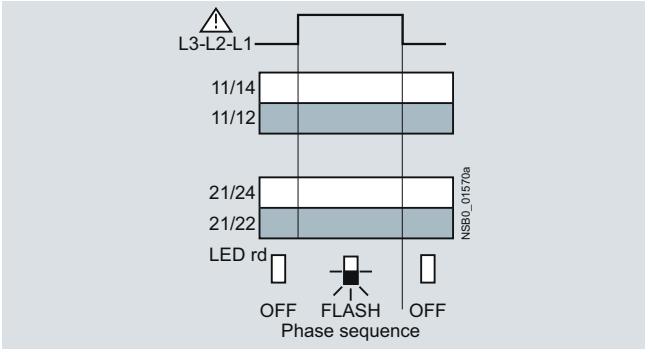
Note:

The red LED is a fault diagnostic indicator and does not show the current relay status. The 3UG45 13 monitoring relay is suitable for line frequencies of 50/60 Hz.

Phase failure and undervoltage



Wrong phase sequence



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Line monitoring

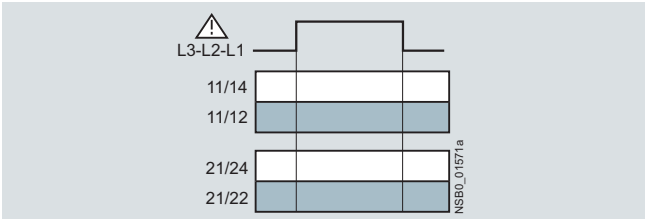
3UG46 14 monitoring relays

The 3UG46 14 line monitoring relay has a wide voltage range and an internal power supply. The device is equipped with a display and is parameterized using three buttons. It monitors three-phase networks with regard to phase asymmetry from 5 to 20 %, phase failure, undervoltage and phase sequence. The hysteresis is adjustable from 1 to 20 V. In addition the device has a response delay and ON-delay from 0 to 20 s in each case. The integrated response delay time responds to phase asymmetry and undervoltage. If the direction is incorrect, the device switches off immediately. Thanks to a special measuring method, a phase failure is reliably detected in spite of the wide voltage range from 160 to 690 V and feedback through the load of up to 80%.

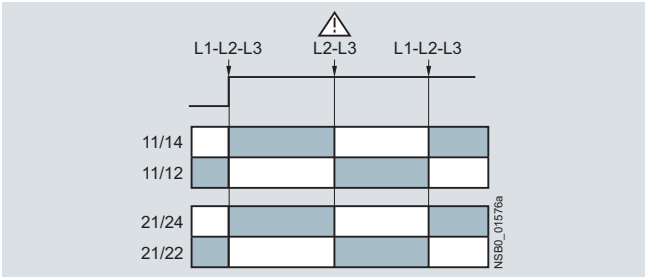
The 3UG46 14 monitoring relay can be operated on the basis of either the open-circuit or closed-circuit principle and with manual or auto RESET.

With the closed-circuit principle selected

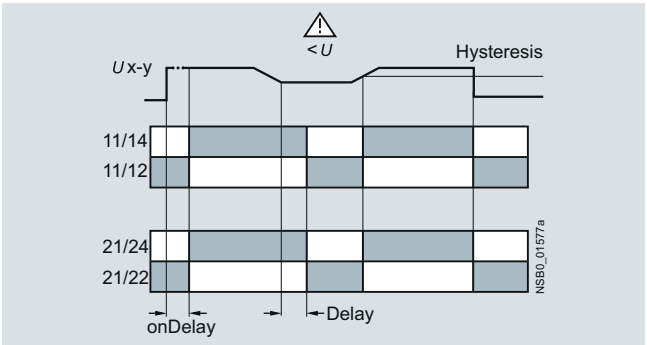
Wrong phase sequence



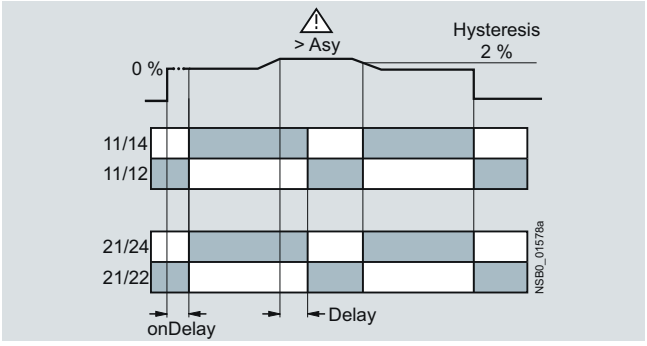
Phase failure



Undervoltage



Unbalance



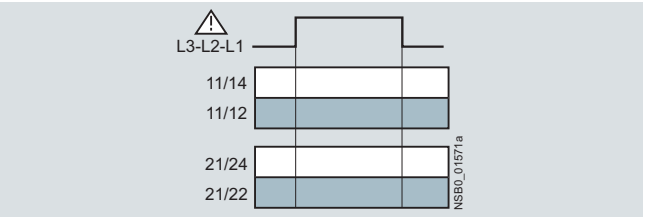
3UG46 15/ 3UG46 16 monitoring relays

The 3UG46 15/3UG46 16 line monitoring relay has a wide voltage range and an internal power supply. The device is equipped with a display and is parameterized using three buttons. The 3UG46 15 device monitors three-phase networks with regard to phase failure, undervoltage, overvoltage and phase sequence. The 3UG46 16 monitoring relay monitors the neutral conductor as well. The hysteresis is adjustable from 1 to 20 V. In addition the device has two separately adjustable delay times for overvoltage and undervoltage from 0 to 20 s in each case. If the direction is incorrect, the device switches off immediately. Thanks to a special measuring method, a phase failure is reliably detected in spite of the wide voltage range from 160 to 690 V and feedback through the load of up to 80%.

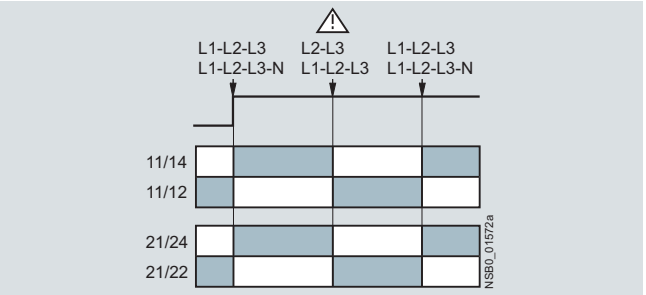
The 3UG46 15/ 3UG46 16 monitoring relay can be operated on the basis of either the open-circuit or closed-circuit principle and with manual or auto RESET.

With the closed-circuit principle selected

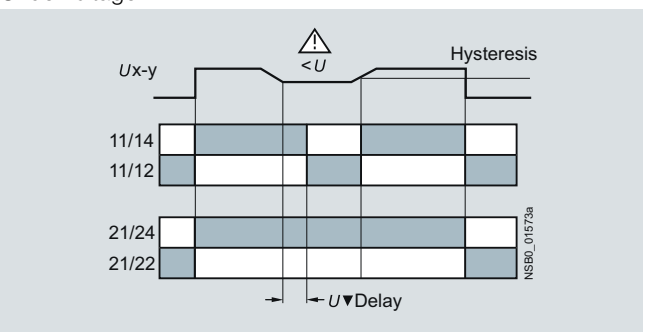
Wrong phase sequence



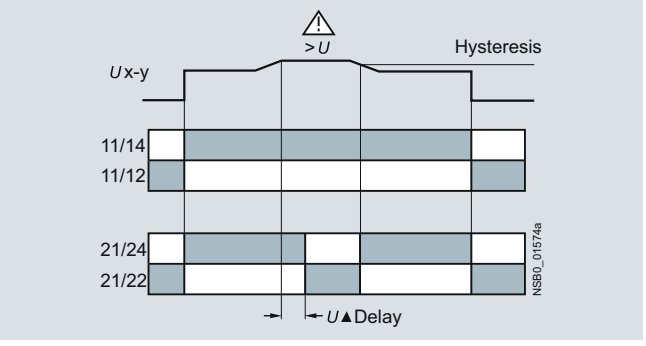
Phase failure



Undervoltage



Overvoltage



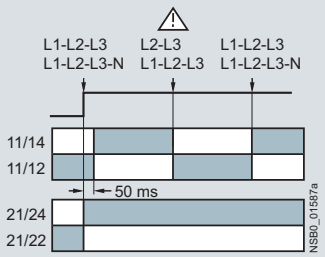
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3UG46 17/ 3UG46 18 monitoring relays

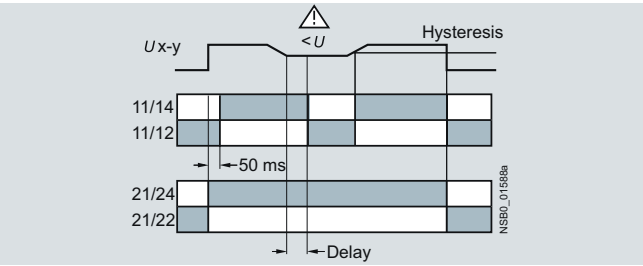
The 3UG46 17/ 3UG46 18 line monitoring relay has an internal power supply and can automatically correct a wrong direction of rotation. Thanks to a special measuring method, a phase failure is reliably detected in spite of the wide voltage range from 160 to 690 V AC and feedback through the load of up to 80 %.
The device is equipped with a display and is parameterized using three buttons. The 3UG46 17 line monitoring relay monitors three-phase networks with regard to phase sequence, phase failure, phase unbalance, undervoltage and overvoltage. The 3UG46 18 monitoring relay monitors the neutral conductor as well. The hysteresis is adjustable from 1 to 20 V. In addition the device has delay times from 0 to 20 s in each case for overvoltage, undervoltage, phase failure and phase unbalance. The 3UG46 17/ 3UG46 18 monitoring relay can be operated on the basis of either the open-circuit or closed-circuit principle and with manual or auto RESET.
The one changeover contact is used for warning or disconnection in the event of power system faults (voltage, unbalance), the other responds only to a wrong phase sequence. In conjunction with a contactor reversing assembly it is thus possible to change the direction automatically.

With the closed-circuit principle selected

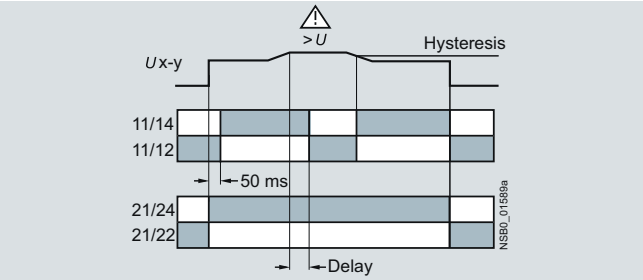
Phase failure



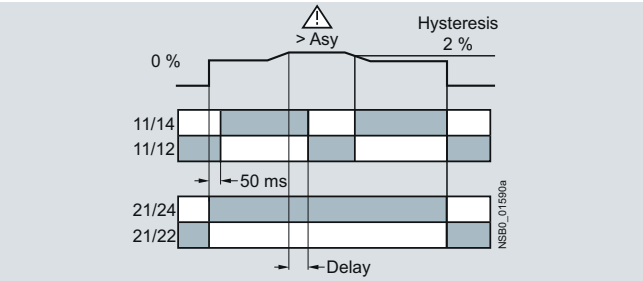
Undervoltage



Overvoltage

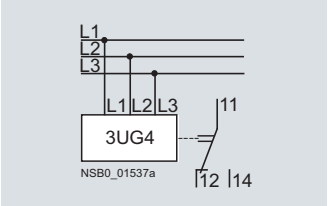


Unbalance

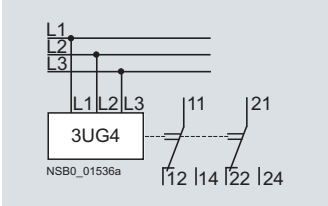


Type		3UG45 11 ... 3UG45 13, 3UG46 14 ... 3UG46 18
General data		
Rated insulation voltage U_i Pollution degree 3 Overvoltage category III acc. to VDE 0110	V	690
Rated impulse withstand voltage	kV	6
Control circuit		
Load capacity of the output relay • Conventional thermal current I_{th}	A	5
Rated operational current I_e at • AC-15/24 ... 400 V • DC-13/24 V • DC-13/125 V • DC-13/250 V	 A A A A	 3 1 0.2 0.1
Minimum contact load at 17 V DC	mA	5
Electrical endurance AC-15	Million operating cycles	0.1
Mechanical endurance	Million operating cycles	10

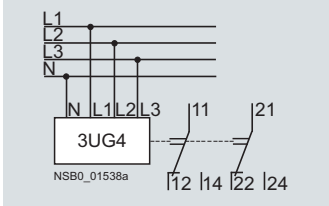
Circuit diagrams



3UG45 11-.A,
3UG45 12-.A



3UG45 11-.B, 3UG45 12-.B,
3UG45 13, 3UG46 14,
3UG46 15, 3UG46 17



3UG46 16,
3UG46 18

Note:
It is not necessary to protect the measuring circuit for device protection. The protective device for line protection depends on the cross-section used.

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Line monitoring

Selection and ordering data

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H


3UG45 11-1AP20


3UG46 15-1CR20


3UG46 16-1CR20


3UG46 17-1CR20


3UG46 18-1CR20


3UG45 11-2BP20


3UG45 12-2BR20

Adjustable hysteresis	Under-voltage detec-tion	Over-voltage detec-tion	Stabiliza-tion time adjustable stDEL	Tripping delay time adjustable Del	Version of auxiliary contacts	Measurable mains voltage[1]	DT	Screw terminals	DT	Spring-type terminals
			s	s	CO contact	V		Order No. Price per PU		Order No. Price per PU
Monitoring of phase sequence										
Auto-RESET										
--	--	--	--	--	1	160 … 260 AC	A	**3UG45 11-1AN20**	B	**3UG45 11-2AN20**
					2		A	**3UG45 11-1BN20**	B	**3UG45 11-2BN20**
					1	320 … 500 AC	A	**3UG45 11-1AP20**	A	**3UG45 11-2AP20**
					2		A	**3UG45 11-1BP20**	B	**3UG45 11-2BP20**
					1	420 … 690 AC	B	**3UG45 11-1AQ20**	B	**3UG45 11-2AQ20**
					2		B	**3UG45 11-1BQ20**	B	**3UG45 11-2BQ20**
Monitoring of phase sequence, phase failure and phase unbalance										
Auto-RESET, closed-circuit principle, unbalance threshold permanently 10 %										
--	--	--	--	--	1	160 … 690 AC	A	**3UG45 12-1AR20**	A	**3UG45 12-2AR20**
					2		A	**3UG45 12-1BR20**	A	**3UG45 12-2BR20**
Monitoring of phase sequence, phase failure, unbalance and undervoltage										
Analogically adjustable, Auto-RESET, closed-circuit principle, unbalance and undervoltage threshold permanently 20 %										
5 % of set value	✓	--	--	0.1 … 20	2	160 … 690 AC	A	**3UG45 13-1BR20**	A	**3UG45 13-2BR20**
Digitally adjustable, auto or manual RESET, open-circuit or closed-circuit principle, unbalance threshold 0 or 5 ... 20 %										
Adjustable 1 ... 20 V	✓	--	0.1 ... 20	0.1 … 20	2	160 … 690 AC	A	**3UG46 14-1BR20**	A	**3UG46 14-2BR20**
Monitoring of phase sequence, phase failure, overvoltage and undervoltage										
Digitally adjustable, Auto-RESET or manual RESET, open-circuit or closed-circuit principle										
Adjustable 1 ... 20 V	✓	✓	--	0.1 … 20[2]	2[2]	160 … 690 AC	A	**3UG46 15-1CR20**	A	**3UG46 15-2CR20**
Monitoring of phase sequence, phase and N conductor failure, overvoltage and undervoltage										
Digitally adjustable, Auto-RESET or manual RESET, open-circuit or closed-circuit principle										
Adjustable 1 ... 20 V	✓	✓	--	0.1 … 20[2]	2[2]	90… 400 AC against N	A	**3UG46 16-1CR20**	A	**3UG46 16-2CR20**
Automatic correction of the direction of rotation in case of wrong phase sequence, phase failure, phase unbalance, overvoltage and undervoltage										
Digitally adjustable, auto or manual RESET, open-circuit or closed-circuit principle, unbalance threshold 0 or 5 ... 20 %										
Adjustable 1 ... 20 V	✓	✓	--	0.1 … 20	2[3]	160 … 690 AC	A	**3UG46 17-1CR20**	B	**3UG46 17-2CR20**
Automatic correction of the direction of rotation in case of wrong phase sequence, phase and N conductor failure, phase unbalance, overvoltage and undervoltage										
Digitally adjustable, auto or manual RESET, open-circuit or closed-circuit principle, unbalance threshold 0 or 5 ... 20 %										
Adjustable 1 ... 20 V	✓	✓	--	0.1 … 20	2[3]	90 … 400 AC against N	A	**3UG46 18-1CR20**	B	**3UG46 18-2CR20**

✓ Function available
-- Function not available

Accessories see page 10/102.

[1] Absolute limit values.
[2] 1 CO contact each and 1 tripping delay time each for U_{min} and U_{max}.
[3] 1 CO contact each for power system fault and phase sequence correction.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



SIRIUS 3UG46 31 monitoring relay

The relays monitor single-phase AC voltages (rms value) and DC voltages against the set threshold value for overshoot and undershoot. The devices differ with regard to their power supply (internal or external).

Benefits

- Versions with wide voltage supply range
- Variably adjustable to overshoot, undershoot or range monitoring
- Freely configurable delay times and RESET response
- Width 22.5 mm
- Display of ACTUAL value and status messages
- All versions with removable terminals
- All versions with screw terminals or spring-type terminals

Application

- Protection of a plant against destruction due to overvoltage
- Switch-on of a plant at a defined voltage and higher
- Protection from undervoltage due to overloaded control supply voltages, particularly with battery power
- Threshold switch for analog signals from 0.1 to 10 V

Technical specifications

3UG46 33 monitoring relays

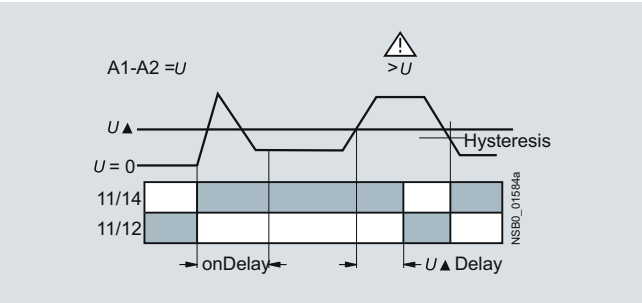
The 3UG46 33 voltage monitoring relay has an internal power supply and performs overshoot, undershoot or range monitoring of the voltage depending on how it is parameterized. The device is equipped with a display and is parameterized using three buttons.

The operating and measuring range extends from 17 to 275 V AC/DC. The threshold values for overshoot or undershoot can be freely configured within this range. If one of these threshold values is reached, the output relay responds according to the set principle of operation as soon as the tripping delay time has elapsed. This delay time U_{Del} can be set from 0.1 to 20 s like the ON-delay time on_{Del}.

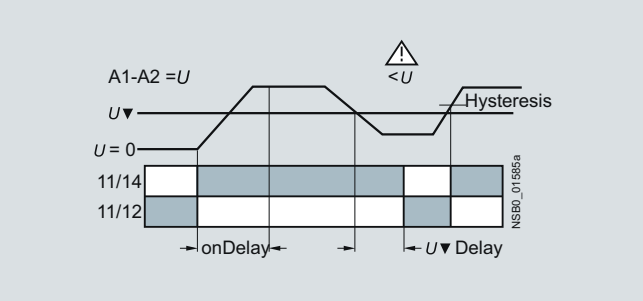
The hysteresis is adjustable from 0.1 to 150 V. The device can be operated on the basis of either the open-circuit or closed-circuit principle and with manual or auto RESET. One output changeover contact is available as signaling contact.

With the closed-circuit principle selected

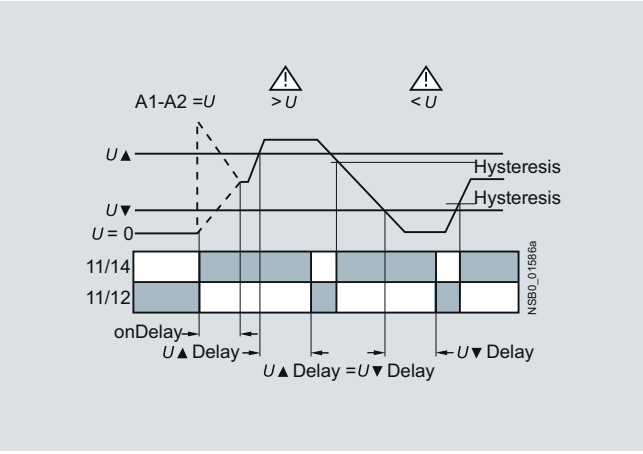
Overvoltage



Undervoltage



Range monitoring



10

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Voltage monitoring

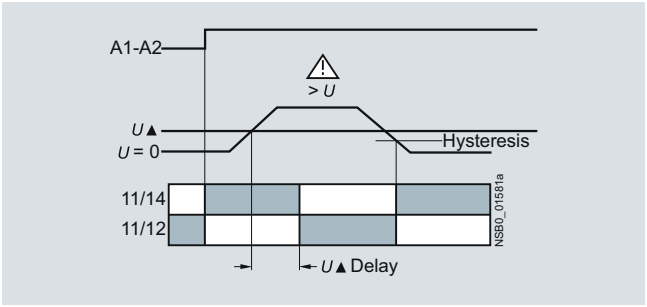
3UG46 31/ 3UG46 32 monitoring relays

The 3UG46 31/3UG46 32 voltage monitoring relay is supplied with an auxiliary voltage of 24 V AC/DC or 24 to 240 V AC/DC and performs overshoot, undershoot or range monitoring of the voltage depending on how it is parameterized. The device is equipped with a display and is parameterized using three buttons.

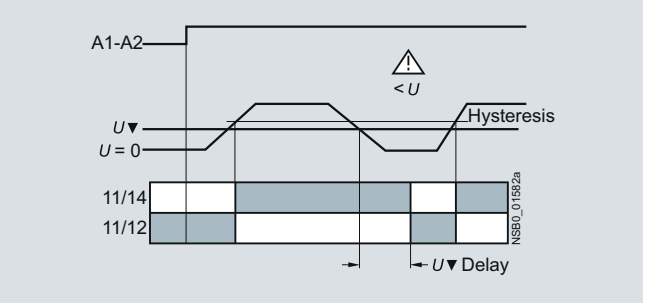
The measuring range extends from 0.1 to 60 V or 10 to 600 V AC/DC. The threshold values for overshoot or undershoot can be freely configured within this range. If one of these threshold values is reached, the output relay responds according to the set principle of operation as soon as the delay time has elapsed. This delay time U_{Del} can be set from 0.1 to 20 s. The hysteresis can be set from 0.1 to 30 V or 0.1 to 300 V. The device can be operated on the basis of either the open-circuit or closed-circuit principle and with manual or auto RESET. One output changeover contact is available as signaling contact.

With the closed-circuit principle selected

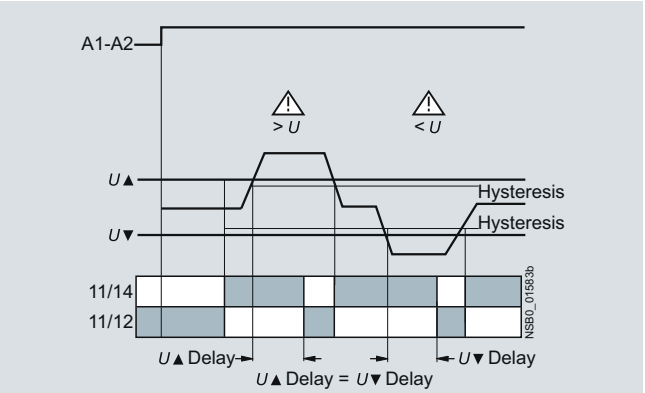
Overvoltage



Undervoltage

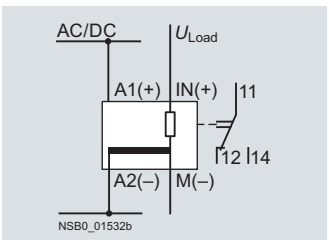


Range monitoring

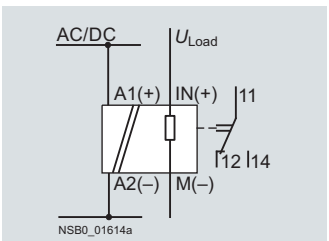


Type		3UG46 31	3UG46 32	3UG46 33
General data				
Rated insulation voltage U_i Pollution degree 3 Overvoltage category III acc. to EN 60664-1	V	690		
Rated impulse withstand voltage U_{imp}	kV	6		
Measuring circuit				
Permissible measuring range single-phase AC/DC voltage	V	0.1 … 68	10 … 650	17 … 275
Setting range single-phase voltage	V	0.1 ... 60	10 ... 600	17 ... 275
Measuring frequency	Hz	40 ... 500		
Control circuit				
Load capacity of the output relay • Conventional thermal current I_{th}	A	5		
Rated operational current I_e at • AC-15/24 ... 400 V • DC-13/24 V • DC-13/125 V • DC-13/250 V	 A A A A	 3 1 0.2 0.1		
Minimum contact load at 17 V DC	mA	5		

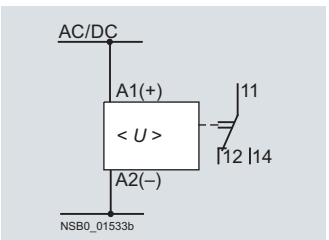
Circuit diagrams



3UG46 31-.AA30,
3UG46 32-.AA30



3UG46 31-.AW30,
3UG46 32-.AW30



3UG46 33

Note:

It is not necessary to protect the measuring circuit for device protection. The protective device for line protection depends on the cross-section used.

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Selection and ordering data

- Digital adjustable, with illuminated LC display
- Auto or manual RESET
- Open or closed-circuit principle
- 1 CO contact

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H



3UG46 31-1AA30



3UG46 33-2AL30

Measuring range	Adjustable hysteresis	Rated control supply voltage U_s	DT	Screw terminals	DT	Spring-type terminals
				Order No. / Price per PU		Order No. / Price per PU
V	V	V				
Internal power supply without auxiliary voltage, ON-delay and tripping delay times can be adjusted separately 0.1 ... 20 s						
17 … 275 AC/DC	0.1 ... 150	17 … 275 AC/DC[1]	A	**3UG46 33-1AL30**	A	**3UG46 33-2AL30**
Supplied from an external auxiliary voltage, tripping delay time adjustable 0.1 ... 20 s						
0.1 … 60 AC/DC	0.1 ... 30	24 AC/DC	A	**3UG46 31-1AA30**	B	**3UG46 31-2AA30**
10 … 600 AC/DC	0.1 ... 300		A	**3UG46 32-1AA30**	B	**3UG46 32-2AA30**
0.1 … 60 AC/DC	0.1 ... 30	24 … 240 AC/DC	A	**3UG46 31-1AW30**	B	**3UG46 31-2AW30**
10 … 600 AC/DC	0.1 ... 300		A	**3UG46 32-1AW30**	B	**3UG46 32-2AW30**

[1] Absolute limit values.

Accessories see page 10/102.

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Current monitoring

Overview



SIRIUS 3UG46 22 monitoring relay

The relays monitor single-phase AC currents (rms value) and DC currents against the set threshold value for overshoot and undershoot. They differ with regard to their measuring ranges and control supply voltage types.

Benefits

- Versions with wide voltage supply range
- Variably adjustable to overshoot, undershoot or range monitoring
- Freely configurable delay times and RESET response
- Width 22.5 mm
- Display of ACTUAL value and status messages
- All versions with removable terminals
- All versions with screw terminals or spring-type terminals

Application

- Overcurrent and undercurrent monitoring
- Monitoring the functionality of electrical loads
- Open-circuit monitoring
- Threshold switch for analog signals from 4 to 20 mA

Technical specifications

3UG46 21/ 3UG46 22 monitoring relays

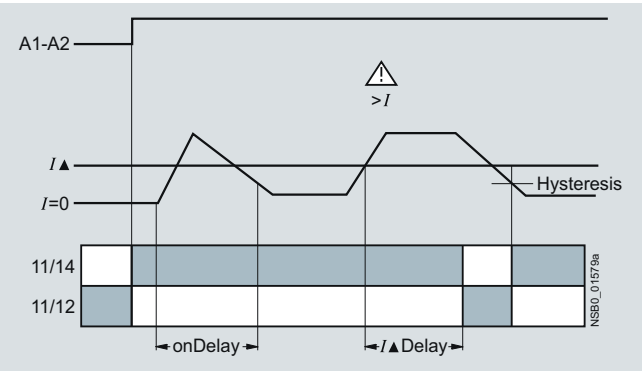
The 3UG46 21 or 3UG46 22 current monitoring relay is supplied with an auxiliary voltage of 24 V AC/DC or 24 to 240 V AC/DC and performs overshoot, undershoot or range monitoring of the current depending on how it is parameterized. The device is equipped with a display and is parameterized using three buttons.

The measuring range extends from 3 to 500 mA or 0.05 to 10 A. The rms value of the current is measured. The threshold values for overshoot or undershoot can be freely configured within this range. If one of these threshold values is reached, the output relay responds according to the set principle of operation as soon as the tripping delay time I_{Del} has elapsed. This time and the ON-delay time on_{Del} are adjustable from 0.1 to 20 s.

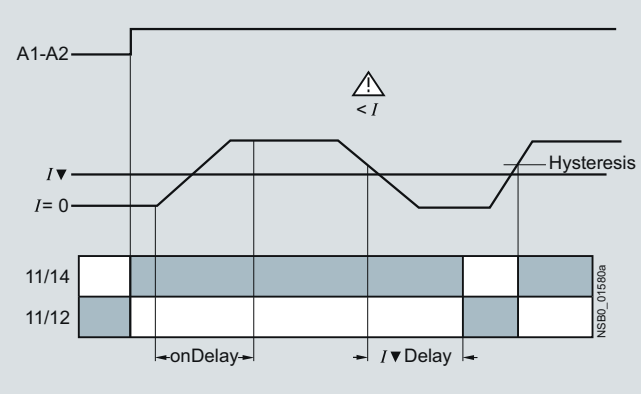
The hysteresis is adjustable from 0.1 to 250 mA or 0.01 to 5 A. The device can be operated with manual or auto RESET and on the basis of either the open-circuit or closed-circuit principle. Following options are available: Response of the output relay when the control supply voltage U_s = ON is applied or not until the lower measurement range limit of the measuring current (I > 3 mA/50 mA) is reached. One output changeover contact is available as signaling contact.

With the closed-circuit principle selected
upon application of the control supply voltage

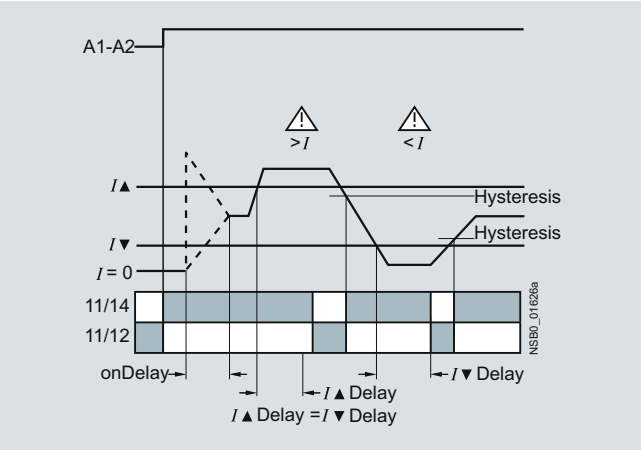
Current overshoot



Current undershoot



Range monitoring



10

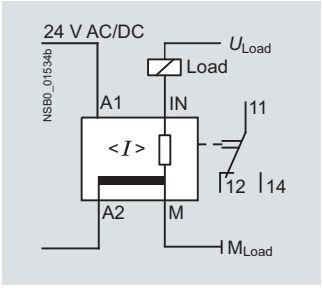
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Type		3UG46 21-.AA	3UG46 21-.AW	3UG46 22-.AA	3UG46 22-.AW
General data					
Rated insulation voltage U_i Pollution degree 3; overvoltage category III acc. to EN 60664-1	V	690			
Rated impulse withstand voltage U_{imp}	kV	6			
Measuring circuit					
Measuring range single-phase AC/DC current	A	0.003 … 0.6		0.05 … 15	
Setting range for single-phase current	A	0.003 ... 0.5		0.05 ... 10	
Load supply voltage	V	24	Max. 300[1] Max. 500[2]	24	Max. 300[1] Max. 500[2]
Control circuit					
Load capacity of the output relay • Conventional thermal current I_{th}	A	5			
Rated operational current I_e at • AC-15/24 ... 400 V • DC-13/24 V • DC-13/125 V • DC-13/250 V	 A A A A	 3 1 0.2 0.1			
Minimum contact load at 17 V DC	mA	5			

1) With protective separation.

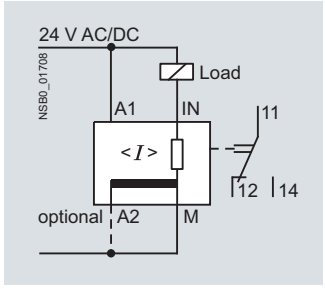
2) With simple separation.

Circuit diagrams



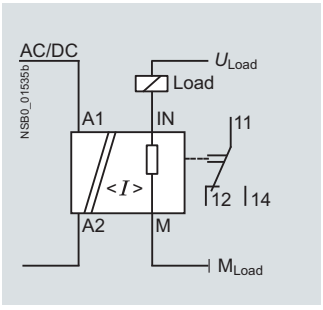
3UG46 21-.AA30,
3UG46 22-.AA30

Operation with separate control circuit and load circuit



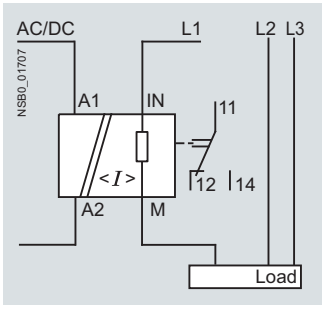
3UG46 21-.AA30,
3UG46 22-.AA30

Operation with joint control circuit and load circuit



3UG46 21-.AW30,
3UG46 22-.AW30

Single-phase operation

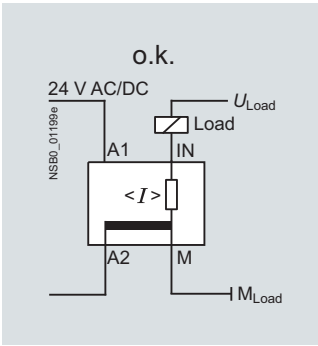


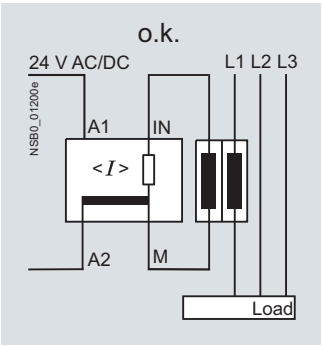
3UG46 21-.AW30,
3UG46 22-.AW30

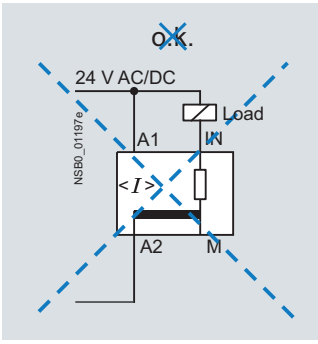
Three-phase operation

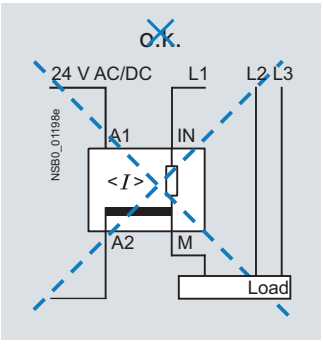
Connection diagram for 24 V AC/DC (only 3UG46 2.-.AA30)

From the following circuit diagrams it is clear that loads in measuring circuits have to be in the current flow upstream from the monitoring relay. Otherwise, the monitoring relay could be destroyed and the short-circuit current could cause damage to the plant.









Configuring note:

A2 and M are electrically connected internally.

For applications in which the load to be monitored and the monitoring relay are supplied from the same power supply, there is no need for connection A2.

The load current must always flow through M or the monitoring relay may be destroyed.

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Current monitoring

Selection and ordering data

- Digital adjustable, with illuminated LC display
- Auto or manual RESET
- Open or closed-circuit principle
- 1 CO contact

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H



3UG46 21-1AA30



3UG46 22-2AW30

Measuring range	Adjustable hysteresis	Rated control supply voltage U_s	DT	Screw terminals	DT	Spring-type terminals
		V		Order No. / Price per PU		Order No. / Price per PU
Monitoring of undercurrent and overcurrent, startup delay and tripping delay times can be adjusted separately 0.1 ... 20 s						
3 … 500 mA AC/DC AC/DC 0.05 … 10 A	0.1 ... 250 mA 0.01 ... 5 A	24 AC/DC[1]	A A	**3UG46 21-1AA30** **3UG46 22-1AA30**	B B	**3UG46 21-2AA30** **3UG46 22-2AA30**
3 … 500 mA AC/DC AC/DC 0.05 … 10 A	0.1 ... 250 mA 0.01 ... 5 A	24 … 240 AC/DC[2]	A A	**3UG46 21-1AW30** **3UG46 22-1AW30**	B A	**3UG46 21-2AW30** **3UG46 22-2AW30**

[1] No electrical separation. Load supply voltage 24 V.

[2] Electrical separation between control circuit and measuring circuit. Load supply voltage for protective separation max. 300 V, for simple isolation max. 500 V.

Accessories see page 10/122.

With AC currents I > 10 A it is possible to use 4NC current transformers as an accessory, see Catalog LV 10.1, Chapter 2.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



SIRIUS 3UG46 41 monitoring relay

The 3UG46 41 power factor and active current monitoring device enables the load monitoring of motors.

Whereas power factor monitoring is used above all for monitoring no-load operation, the active current monitoring option can be used to observe and evaluate the load factor over the entire torque range.

Benefits

- Can be used worldwide thanks to wide voltage range from 90 to 690 V (absolute limit values)
- Monitoring of even small single-phase motors with a no-load supply current below 0.5 A
- Simple determination of threshold values by the direct collection of measured variables on motor loading
- Range monitoring and active current measurement enable detection of cable breaks between control cabinets and motors, as well as phase failures
- Power factor or active current can be selected as measurement principle
- Width 22.5 mm
- All versions with removable terminals

Application

- No-load monitoring and load shedding, such as in the event of a V-belt tear
- Underload monitoring in the low performance range, e.g. in the event of pump no-load operation
- Monitoring of overload, e.g. due to a dirty filter system
- Simple power factor monitoring in networks for control of compensation equipment
- Broken cable between control cabinet and motor

Technical specifications

3UG46 41 monitoring relays

The 3UG46 41 monitoring relay is self-powered and serves the single-phase monitoring of the p.f or performs overshoot, undershoot or range monitoring of the active current depending on how it is parameterized. The load to be monitored is connected upstream of the IN terminal. The load current flows through the terminals IN and Ly/N. The setting range for the power factor is 0.1 to 0.99 and for the active current I_{res} 0.2 to 10 A. If the control supply voltage is switched on and no load current flows, the display will show I < 0.2 and a symbol for overrange, underrange or range monitoring. If the motor is now switched on and the current exceeds 0.2 A, the set ON delay time begins. During this time, if the set limit values are fallen below or exceeded, this does not lead to a relay reaction of the changeover contact. If the operational flowing active current and/or the power factor value falls below or exceeds the respective set threshold value, the spike delay begins. When this time has expired, the relay changes its switch position. The relevant measured variables for overshooting and undershooting in the display flashes. If the monitoring of active current undershooting is deactivated (I_{res}▼= OFF) and the load current drops below the lower measurement range threshold (0.2 A), then the CO contacts remain unchanged. If a threshold value is set for the monitoring of active current undershooting, then undershooting of the measurement range threshold (0.2 A) will result in a response of the CO contacts.

The relay operates either according to the open-circuit or closed-circuit principle.

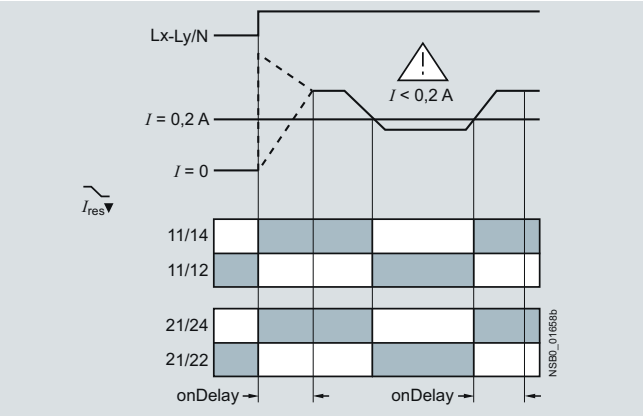
If the device is set to Auto-RESET (Memory = No), depending on the set principle of operation, the switching relay returns to its initial state and the flashing ends when the hysteresis threshold is reached.

If manual RESET is selected in the menu (Memory = Yes), the switching relay remains in its current switching state and the current measured value and the symbol for undershooting and overshooting continues to flash, even when the measured variable reaches a permissible value again. This stored fault status can be reset by pressing the UP▲ and DOWN▼ key simultaneously for 2 seconds, or by switching the control supply voltage off and back on again.

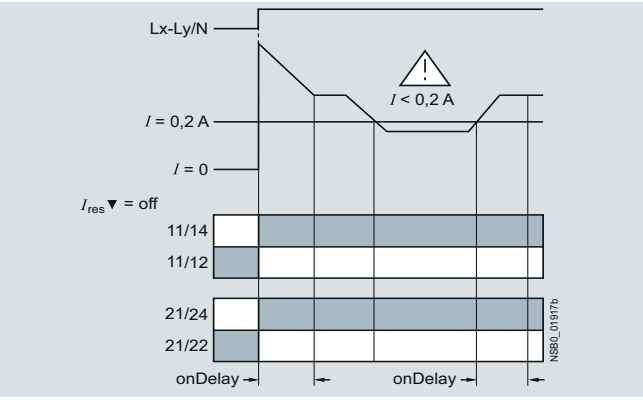
With the closed-circuit principle selected

Response in the event of undershooting the measurement range limit

- With activated monitoring of I_{res}▼



- With deactivated monitoring of active current undershooting

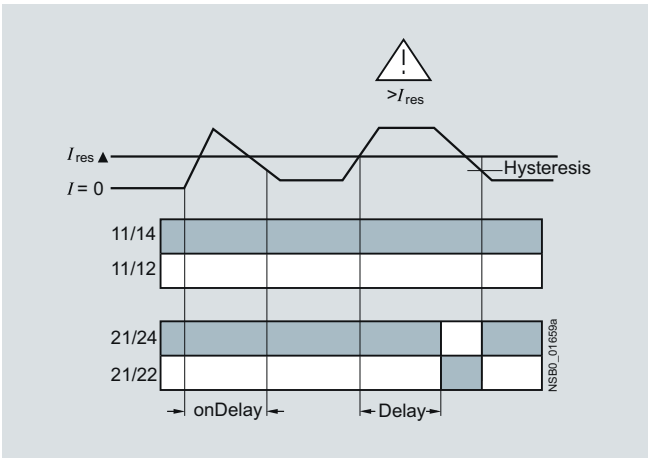


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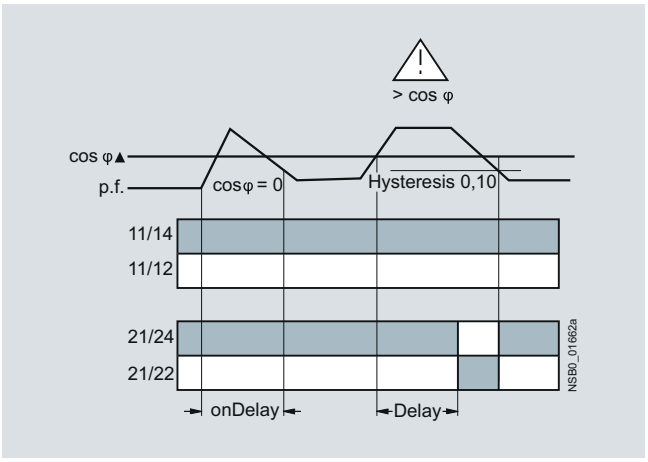
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Power factor and active current monitoring

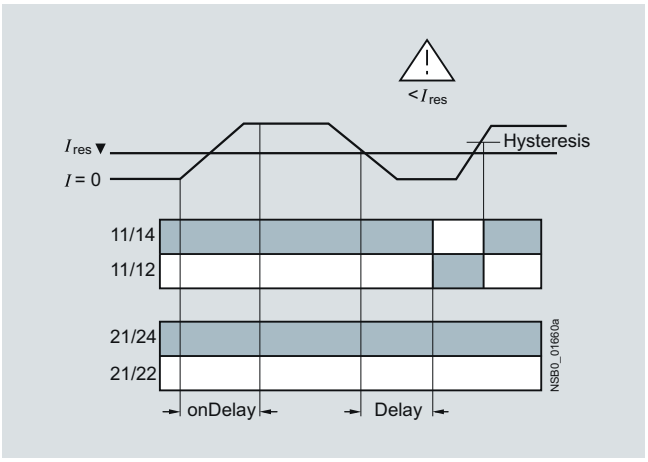
Overshooting of active current



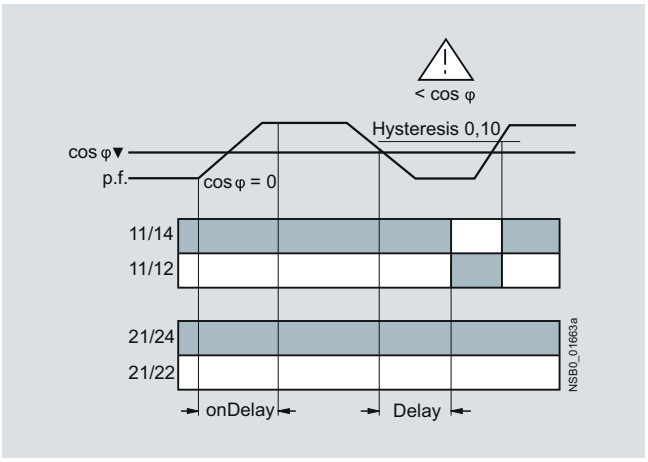
Overshooting of power factor



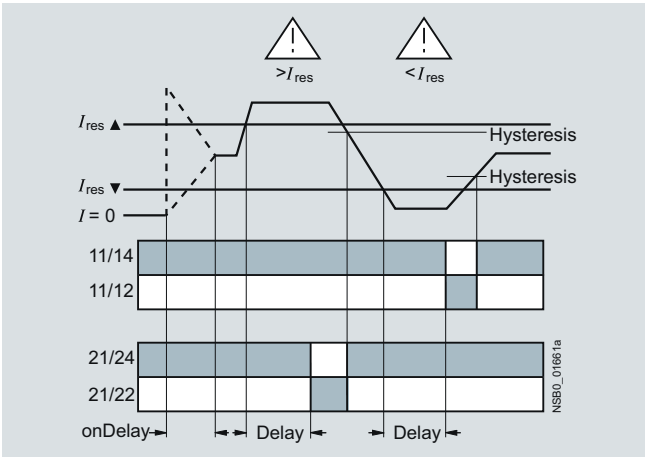
Undershooting of active current



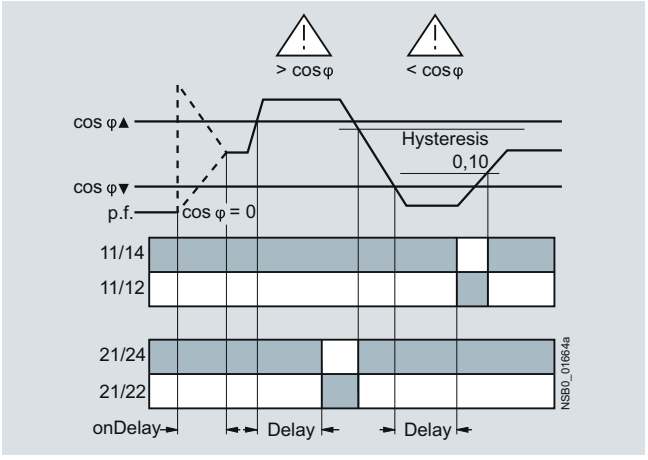
Undershooting of power factor



Range monitoring of active current



Range monitoring of power factor



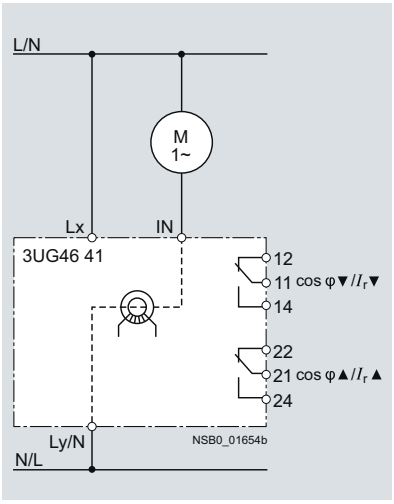
Legend

p.f.: power factor

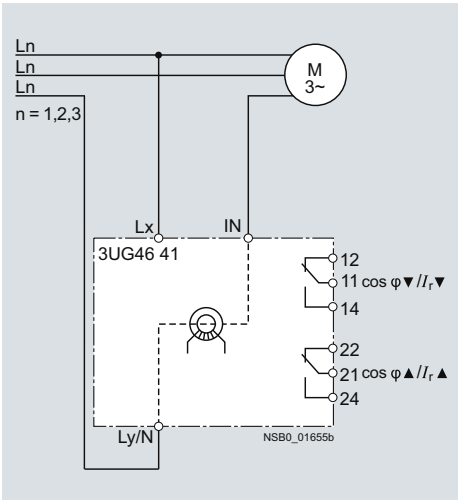
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Type		3UG46 41
General data		
Rated insulation voltage U_i Pollution degree 3 Overvoltage category III acc. to VDE 0110	V	690
Rated impulse withstand voltage	kV	6
Control circuit		
Number of CO contacts for auxiliary contacts		2
Load capacity of the output relay • Conventional thermal current I_{th}	A	5
Rated operational current I_e at • AC-15/24 ... 400 V • DC-13/24 V • DC-13/125 V • DC-13/250 V	 A A A A	 3 1 0.2 0.1
Minimum contact load at 17 V DC	mA	5

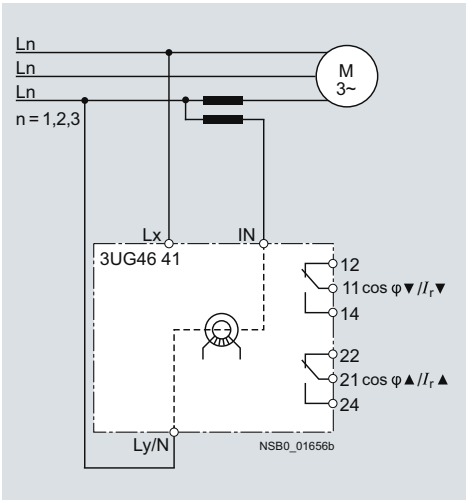
Circuit diagrams



Single-phase motors



Three-phase motors



Three-phase motors with transformers for currents > 10 A

Selection and ordering data

- For monitoring the power factor and the active current I_{res} (p.f. x I)
- Suitable for single- and three-phase currents
- Digital adjustable, with illuminated LC display
- Overshoot, undershoot or range monitoring adjustable
- Upper and lower threshold value can be adjusted separately
- Permanent display of actual value and tripping state
- 1 changeover contact each for undershoot/overshoot

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H

Measuring range		Adjustable hysteresis		ON-delay time adjustable onDel	Tripping delay time adjustable I▲Del/ I▼Del, φ▲Del/ φ▼Del	Rated control supply voltage U_s [1] 50/60 Hz AC	DT	Screw terminals		DT	Spring-type terminals	
For power factor	For active current I_{res}	For power factor	For active current I_{res}					Order No.	Price per PU		Order No.	Price per PU
P.f.	A	P.f.	A	s	s	V						
0.10 ... 0.99	0.2 ... 10.0	0.1	0.1 ... 2.0	0 ... 99	0.1 ... 20.0	90 ... 690	A	**3UG46 41-1CS20**		B	**3UG46 41-2CS20**	

[1] Absolute limit values.

Accessories see page 10/102.

With active AC currents I_{res} >10 A it is possible to use 4NC current transformers as an accessory, see Catalog LV 10.1, Chapter 2.

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Residual current monitoring: Residual-current monitoring relays

Overview



SIRIUS 3UG46 24 monitoring relay

The 3UG46 24 residual-current monitoring relay is used together with the 3UL22 summation current transformer for plant monitoring.

Benefits

- Can be used worldwide thanks to wide voltage range from 90 to 690 V (absolute limit values)
- Variable threshold values for warning and disconnection
- Freely configurable delay times and RESET response
- Permanent display of the actual value and fault diagnostics via the display
- High level of flexibility and space saving through installation of the converter outside the control cabinet
- Width 22.5 mm
- All versions with removable terminals

Application

- Monitoring of plants in which residual currents can occur, e.g. due to dust deposits or moisture, porous cables and leads or capacitive residual currents

Technical specifications

3UG46 24 monitoring relays

The main conductor and any neutral conductor to which a load is connected, are routed through the opening of the annular strip-wound core of a summation current transformer. A secondary winding is placed around this annular strip-wound core to which the monitoring relay is connected.

If operation of a plant is fault-free, the sum of the inflowing and outward currents equals zero. In this case, no voltage is induced in the secondary winding of the summation current transformer.

However, if an insulation fault occurs downstream of the residual current operated circuit breaker, the sum of the inflowing currents is greater than that of the outward currents.

The differential current - the residual current - induces a secondary current in the secondary winding of the transformer. This current is evaluated in the monitoring relay and is used on the one hand to display the actual residual current and on the other, to switch the relay if the set warning or tripping threshold is overshot.

If the measured residual current exceeds the set warning value, the associated changeover contact instantly changes the switching state and an indication appears on the display. If the measured residual current exceeds the set tripping value, the set delay time begins and the associated relay symbol flashes. On expiry of this time, the associated changeover contact changes the switching state.

ON-delay time for motor start

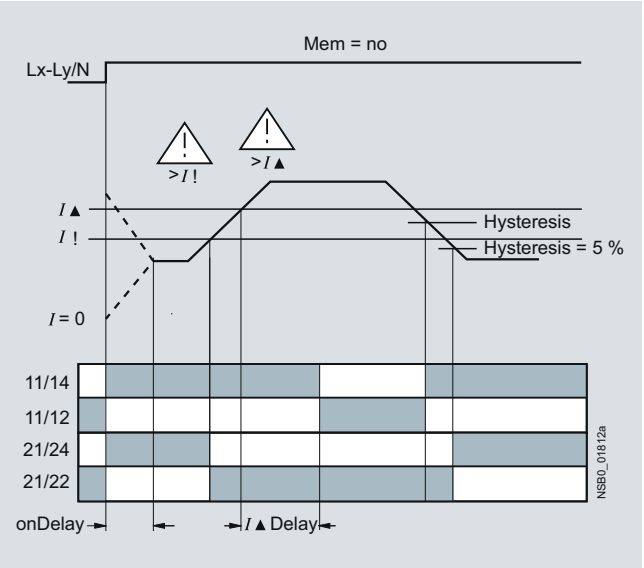
To be able to start an motor, once the auxiliary voltage has been applied for an adjustable ON-delay time, and depending on whether the open-circuit or closed-circuit principle is selected, the output relay switches to the GO state.

The changeover contacts do not react if the set threshold value is overshot during this period.

With the closed-circuit principle selected

Residual current monitoring with Auto-RESET (Memory = no)

If the device is set to Auto-RESET (Memory = No), the relay switches for the tripping value once the value falls below the set hysteresis threshold and the display stops flashing. The associated relay changes its switching state if the value falls below the fixed hysteresis value of 5 % of the warning value. Any overshoots are therefore not stored.



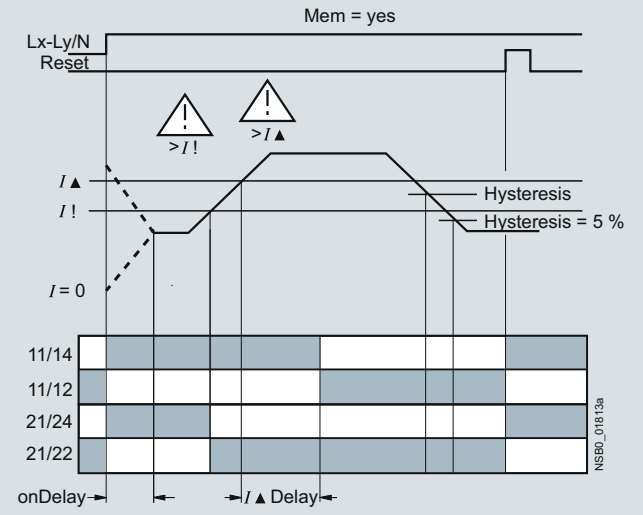
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Residual current monitoring with Manual RESET (Memory = yes)

If Manual RESET is selected in the menu, the output relay remains in its current switching state and the current measured value and the symbol for overshooting continues to flash, even when the measured residual current returns to a permissible value. This stored fault status can be reset by pressing the UP▲ and DOWN▼ key simultaneously for > 2 seconds, or by switching the control supply voltage off and back on again.

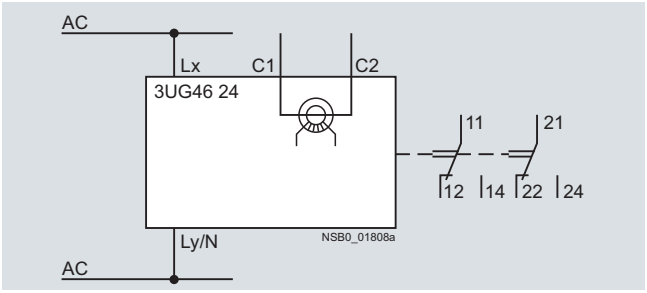
Note:

The neutral conductor must not be grounded downstream of the summation current transformer as this may impair the function of the residual current monitoring device.



Type		3UG46 24
General data		
Rated insulation voltage U_i Pollution degree 3 Overvoltage category III acc. to VDE 0110	V	690
Rated impulse withstand voltage	kV	6
Control circuit		
Number of CO contacts for auxiliary contacts		2
Load capacity of the output relay Conventional thermal current I_{th}	A	5
Rated operational current I_e at • AC-15/24 ... 400 V • DC-13/24 V • DC-13/125 V • DC-13/250 V	 A A A A	 3 1 0.2 0.1
Minimum contact load at 17 V DC	mA	5

Circuit diagram



3UG46 24

Note:

It is not necessary to protect the measuring circuit for device protection. The protective device for line protection depends on the cross-section used.

10

Selection and ordering data

- For monitoring residual currents $I_{\Delta n}$ 0.3 to 40 A
- For 3UL22 summation current transformers with feed-through opening 40 to 120 mm
- Digital adjustable, with illuminated LC display
- Separately adjustable limit value and warning threshold
- Permanent display of actual value and tripping state
- 1 CO contact each for limit violation and warning threshold

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H

Display range	Setting range	Hysteresis		ON / tripping delay time adjustable	Rated control supply voltage U_s [2]	DT	Screw terminals Order No.	Price per PU	DT	Spring-type terminals Order No.	Price per PU
		Limit value	Warning value								
A	A	A	A	s	V						
10 ... 120 % of $I_{\Delta n}$	10 ... 100 % of $I_{\Delta n}$	LSB [1] up to 50 % of $I_{\Delta n}$	5 % of $I_{\Delta n}$	0.1 ... 20	90 ... 690	A	**3UG46 24-1CS20**		B	**3UG46 24-2CS20**	

[1] LSB: Smallest adjustable value, transformer-dependent, ≤ 1 % of $I_{\Delta n}$.

[2] Absolute limit values.

Accessories see page 10/102.
3UL22 summation current transformers see page 10/84.

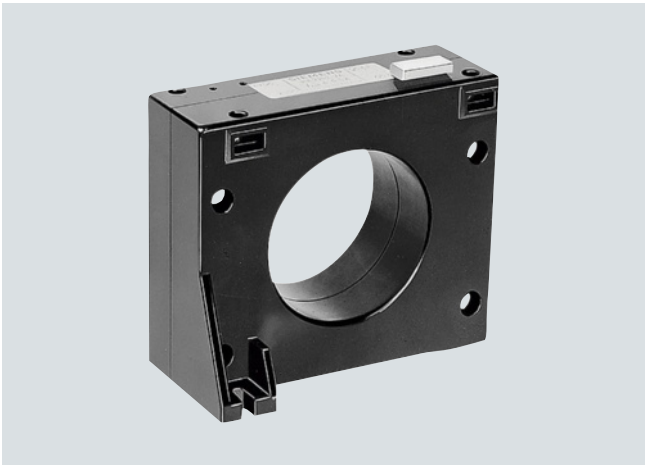
* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3UG Monitoring Relays for Stand-Alone Installation

Residual current monitoring: Summation current transformers

Overview

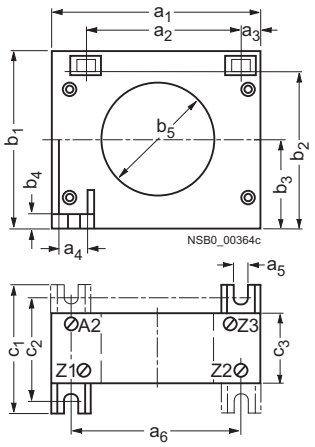


SIRIUS 3UL22 summation current transformers

The 3UL22 summation current transformers detect fault currents in machines and plants. Together with the 3UG46 24 residual-current monitoring relay or the SIMOCODE 3UF motor management and control device they enable residual-current and ground-fault monitoring.

Technical specifications

Dimensional drawings



Type	a_1	a_2	a_3	a_4	a_5	a_6	b_1	b_2	b_3	b_4	b_5	c_1	c_2	c_3
3UL22 01	100	75	10	15	for M4	80	85	72.5	42.5	7.5	40	65	50	40
3UL22 02	125	95	10	15	for M4	100	110	97.5	55	7.5	65	70	60	45
3UL22 03	200	165	20	20	for M4	170	200	100	100	10	120	85	70	55

Selection and ordering data

Feed-through opening diameter	Rated insulation voltage U_i	Rated fault current $I_{\Delta n}$	For Protodur cable, can be fed through	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
mm	V	A	max. mm^2						
Summation current transformers (essential accessory for 3UG46 24 or SIMOCODE 3UF)									
40	690	0.3	4 x 95	B	**3UL22 01-1A**		1	1 unit	41H
		0.5		B	**3UL22 01-2A**		1	1 unit	41H
		1		B	**3UL22 01-3A**		1	1 unit	41H
65	690	0.3	4 x 240	B	**3UL22 02-1A**		1	1 unit	41H
		0.5		B	**3UL22 02-2A**		1	1 unit	41H
		1		B	**3UL22 02-3A**		1	1 unit	41H
		6		C	**3UL22 02-1B**		1	1 unit	41H
		10		C	**3UL22 02-2B**		1	1 unit	41H
		16		C	**3UL22 02-3B**		1	1 unit	41H
		25		C	**3UL22 02-4B**		1	1 unit	41H
		40		C	**3UL22 02-5B**		1	1 unit	41H
120	1000	0.3	8 x 300	B	**3UL22 03-1A**		1	1 unit	41H
		0.5		B	**3UL22 03-2A**		1	1 unit	41H
		1		B	**3UL22 03-3A**		1	1 unit	41H
		6		C	**3UL22 03-1B**		1	1 unit	41H
		10		C	**3UL22 03-2B**		1	1 unit	41H
		16		C	**3UL22 03-3B**		1	1 unit	41H
		25		C	**3UL22 03-4B**		1	1 unit	41H
		40		C	**3UL22 03-5B**		1	1 unit	41H

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



SIRIUS 3UG45 8. insulation monitor

Isolation monitoring relays are used for monitoring the insulation resistance between ungrounded single or three-phase AC supplies and a protective conductor.

Ungrounded, i. e. isolated networks (IT networks) are always used where high demands are placed on the reliability of the power supply, e. g. emergency lighting systems. IT systems are supplied via an isolating transformer or by power supplies such as batteries or a generator. While an initial insulation fault between a phase conductor and the ground effectively grounds the conductor, as a result no circuit has been closed, so it is possible to continue work in safety (single-fault safety). However, the fault must be rectified as quickly as possible before a second insulation fault occurs (e. g. according to DIN VDE 0100-410). For this purpose insulation monitoring relays are used, which constantly measure the resistance to ground of the phase conductor and the neutral conductor, reporting a fault immediately if insulation resistance falls below the set value so that either a controlled shutdown can be performed or the fault can be rectified without interrupting the power supply.

Two series

- 3UG45 81 insulation monitoring relays for ungrounded AC networks
- 3UG45 82, 3UG45 83 insulation monitoring relays for ungrounded DC and AC networks

Benefits

- Devices for AC and DC systems
- All devices have a wide control supply voltage range
- Direct connection to networks with mains voltages of up to 690 V AC and 1000 V DC by means of a voltage reducer module
- For AC mains: Frequency range 15 ... 400 Hz
- Monitoring of broken conductors
- Monitoring of setting errors
- Safety in use thanks to integrated system test after startup
- Option of resetting and testing (by means of pushbutton on front or using control contact)
- New predictive measurement principle allows very fast response times

Application

IT networks are used for example:

- In emergency power supplies
- In safety lighting systems
- In industrial production facilities with high availability requirements (chemical industry, automobile manufacturing, printing plants)
- In shipping and railways
- For mobile generators (aircraft)
- For renewable energies, such as wind energy and photovoltaic power plants
- In the mining industry

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Insulation monitoring

Technical specifications

General data

Type		3UG45 81-1AW30	3UG45 82-1AW30	3UG45 83-1AW30
Setting range for the setpoint response values				
• 1 ... 100 kΩ		✓	✓	✓
• 2 ... 200 kΩ		--	--	✓
Rated voltage of the network being monitored				
• 0 ... 250 V AC		--	✓	--
• 0 ... 440 V AC		✓	--	✓
• 0 ... 690 V AC		--	--	✓ 1)
• 0 ... 300 V DC		--	✓	--
• 0 ... 600 V DC		--	--	✓
• 0 ... 1000 V DC		--	--	✓ 1)
Max. leakage capacitance of the system				
• 10 µF		✓	✓	--
• 20 µF		--	--	✓
Output contacts				
• 1 CO		✓	✓	--
• 2 CO or 1 CO + 1 CO, adjustable		--	--	✓
Number of limit values				
• 1		✓	✓	--
• 1 or 2, adjustable		--	--	✓
Principle of operation		Closed-circuit principle	Closed-circuit principle	Open-circuit/closed-circuit principle, adjustable
Rated control supply voltage				
• 24 ... 240 V AC/DC		✓	✓	✓
Rated frequency				
• 13.5 ... 440 Hz		--	--	✓
• 45 ... 65 Hz		✓	✓	--
Auto or manual RESET		✓ Adjustable	✓ Adjustable	✓ Adjustable
Remote-RESET		✓ Via control input	✓ Via control input	✓ Via control input
Non-volatile error memory		--	--	✓ Adjustable
Broken wire detection		--	--	✓ Adjustable
Replacement for				
Rated control supply voltage U_s	Voltage range of the network being monitored			
3UG30 81-1AK20 110 ... 130/220 ... 240 V AC/DC	3 x 230/400 V AC	✓	--	--
3UG30 81-1AW30 24 ... 240 V AC/DC	3 x 230/400 V AC	✓	--	--
3UG30 82-1AW30 24 ... 240 V AC/DC	24 ... 240 V DC	--	✓	--

✓ Available

-- Not available

1) With voltage reducer module.

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Overview



SIRIUS 3UG45 81 insulation monitor

The 3UG45 81 insulation monitoring relays are used to monitor insulation resistance in accordance with IEC 61557-8 in ungrounded AC networks with rated voltages of up to 400 V.

These devices can monitor control circuits (single-phase) and main circuits (three phase).

They measure insulation resistances between system cables and system ground. If the value falls below the threshold value, the output relays are switched to fault status.

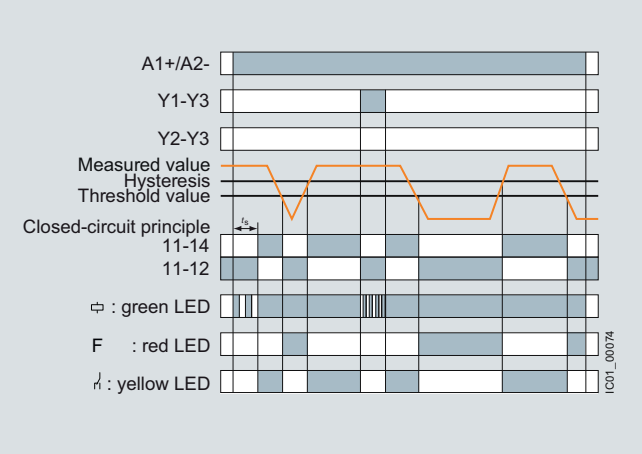
In the case of 3UG45 81 a higher-level DC measuring signal is used. The higher-level DC measuring signal and the resulting current are used to determine the value of the insulation resistance of the network which is to be measured.

Technical specifications

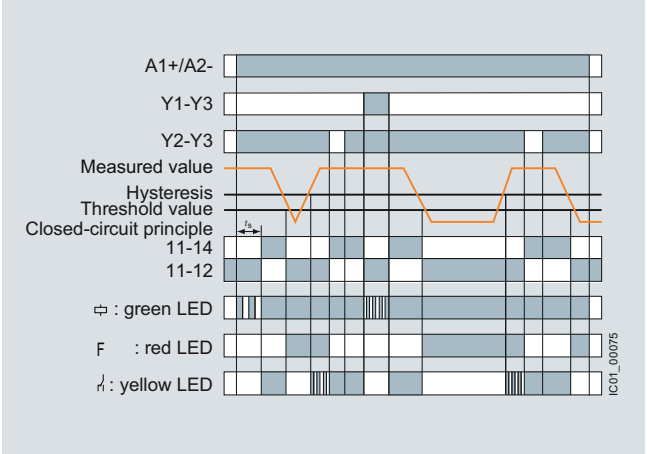
3UG45 81 monitoring relays

With the closed-circuit principle selected

Insulation resistance monitoring without fault storage, with auto RESET



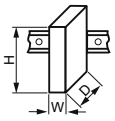
Insulation resistance monitoring with fault storage and manual RESET



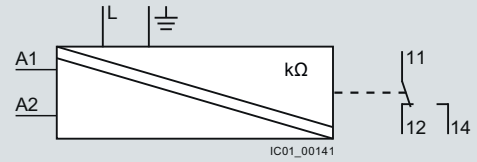
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Insulation monitoring for ungrounded AC networks

Type			3UG45 81
Dimensions (W x H x D)		mm	22.5 x 100 x 100
Connection type			**Screw terminals**
• Solid • Finely stranded with end sleeve • AWG cables, solid or stranded		mm^2 mm^2 AWG	2 x (0.5 ... 4) 2 x (0.75 ... 2.5) 2 x (20 ... 14)
General data			
Rated insulation voltage U_i Pollution degree 3 Overvoltage category III acc. to IEC 60664		V	400 supply circuit/measuring circuit 300 supply circuit/output circuit
Rated impulse withstand voltage		kV	6
Rated control supply voltage		V	24 ... 240 AC/DC
Rated frequency		Hz	15 ... 400
Measuring circuit			
Rated system voltage of the network being monitored		V	0 ... 400
Rated frequency of the network being monitored		Hz	50 ... 60
Setting range for insulation resistance		kΩ	1 ... 100
Control circuit			
Load capacity of the output relay • Conventional thermal current I_{th}		A	4
Rated operational current I_e at • AC-15/24 ... 400 V • DC-13/24 V		A A	3 2
Minimum contact load at 24 V DC		mA	10

Circuit diagram



3UG45 81

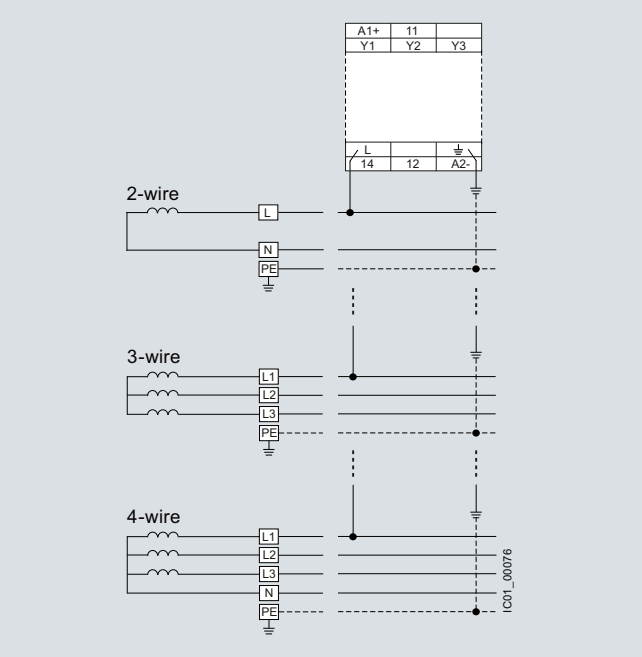
Note:

It is not necessary to protect the measuring circuit for device protection. The protective device for line protection depends on the cross-section used.

10

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Connection diagrams for networks up to 400 V AC



Selection and ordering data

- Auto or manual RESET
- Closed-circuit principle
- 1 CO contact
- Fault memory adjustable using control input (S2-S3)
- Reset by means of pushbutton on front or using control input (S2-S3)
- Test by means of pushbutton on front or using control input (S1-S3)

	Rated system voltage U_n	Measuring range U_e	Rated control supply voltage U_s	System leakage capacitance	DT	**Screw terminals**	PU (UNIT, SET, M)	PS*	PG
	V AC	kΩ	V	µF		Order No. / Price per PU			
Insulation monitors for ungrounded AC networks									
	0 ... 400	1 ... 110	24 ... 240 AC/DC	max. 10	B	**3UG45 81-1AW30**	1	1 unit	41H

3UG45 81-1AW30

Accessories see page 10/102.

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Insulation monitoring for ungrounded DC and AC networks

Overview



SIRIUS 3UG45 82 and 3UG45 83 insulation monitors

The 3UG45 82 and 3UG45 83 insulation monitoring relays are used to monitor insulation resistance in ungrounded IT AC or DC networks in accordance with IEC 61557-8.

They measure insulation resistances between system cables and system ground. If the value falls below the threshold value, the output relays are switched to fault status. With these devices, which are suitable for both AC and DC networks, a pulsed test signal is fed into the network to be monitored and the isolation resistance is determined.

The pulsed test signal changes its form according to insulation resistance and network loss capacitance. The changed form is used to predict the changed insulation resistance.

If the predicted insulation resistance matches the insulation resistance calculated in the next measurement cycle, and is lower than the threshold value, the output relays are activated or deactivated, depending on the device configuration. This measurement principle is also suitable for identifying symmetrical insulation faults.

3UG49 83 voltage reducer modules

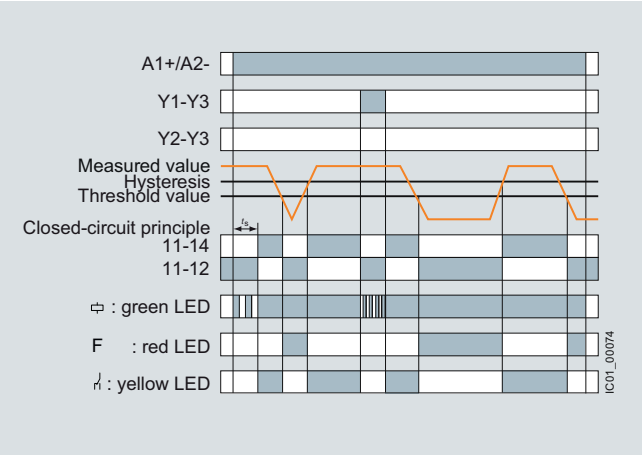
The 3UG49 83 passive voltage reducer module can be used to allow the 3UG45 83 insulation monitoring relay to be used for insulation monitoring of IT networks with rated voltages of up to 690 V AC and 1000 V DC.

Technical specifications

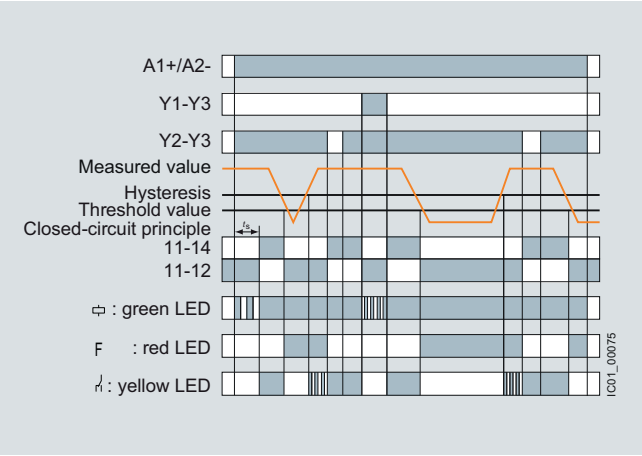
3UG45 82 monitoring relays

With the closed-circuit principle selected

Insulation resistance monitoring without fault storage, with auto RESET



Insulation resistance monitoring with fault storage and manual RESET

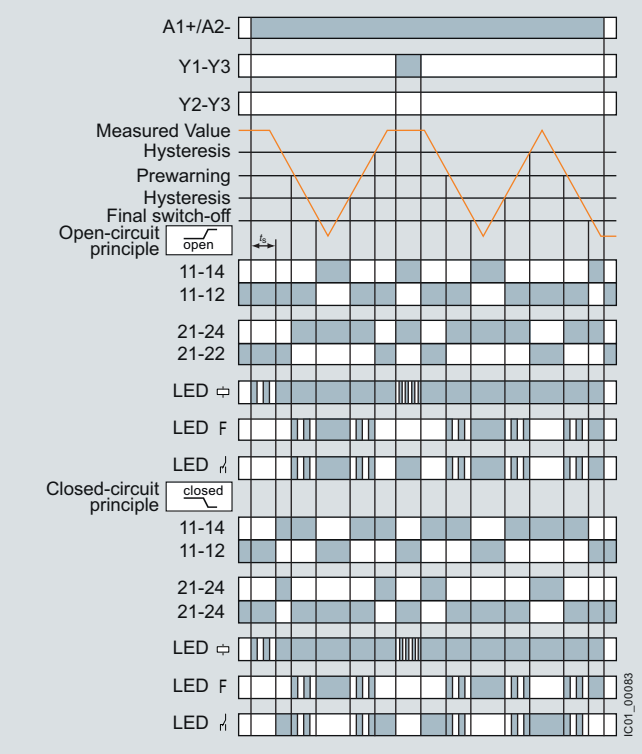


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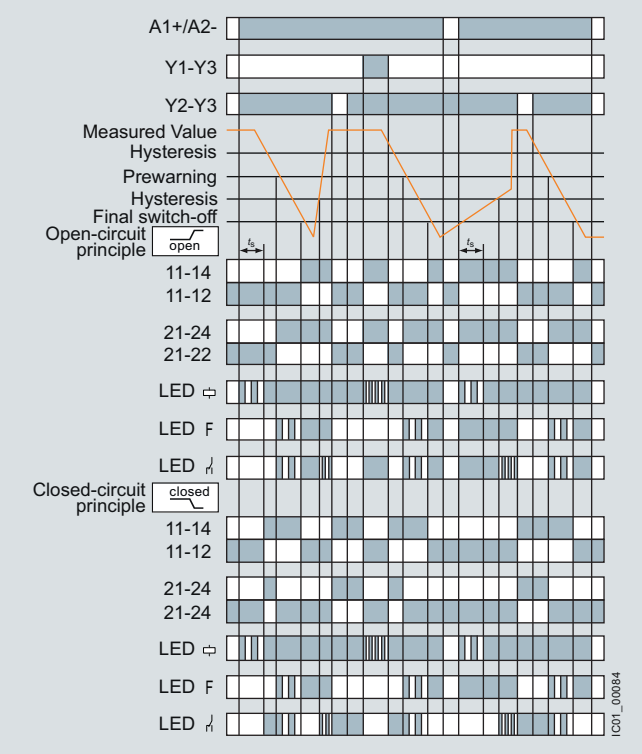
3UG45 83 monitoring relays

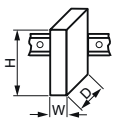
With the closed-circuit principle selected

Insulation resistance monitoring without fault storage, with auto RESET



Insulation resistance monitoring with fault storage and manual RESET

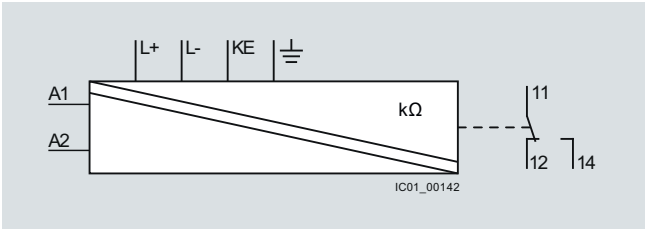


Type		3UG45 82	3UG45 83
Dimensions (W x H x D) 	mm	22.5 x 100 x 100	45 x 100 x 100
Connection type		**Screw terminals**	
• Solid • Finely stranded with end sleeve • AWG cables, solid or stranded	mm^2 mm^2 AWG	2 x (0.5 ... 4) 2 x (0.75 ... 2.5) 2 x (20 ... 14)	
General data			
Rated insulation voltage U_i Pollution degree 3 Overvoltage category III acc. to IEC 60664	V	400 supply circuit/measuring circuit 300 supply circuit/output circuit	400 supply circuit/measuring circuit 300 supply circuit/output circuit, 300 output circuit 1/output circuit 2
Rated impulse withstand voltage	kV	6	
Rated control supply voltage	V	24 ... 240 AC/DC	
Rated frequency	Hz	15 ... 400	
Measuring circuit			
Rated system voltage of the network being monitored	V	0 ... 250 AC, 0 ... 300 DC	0 ... 300 AC, 0 ... 690 AC with 3UG49 83 0 ... 600 DC, 0 ... 1000 DC with 3UG49 83
Rated frequency of the network being monitored	Hz	DC or 15 ... 400	
Setting range for insulation resistance	kΩ	1 ... 100	1 ... 100 2 ... 200 for 2nd limit value (disconnectable)
Control circuit			
Number of CO contacts for auxiliary contacts		1	2 or 1 + 1, adjustable
Load capacity of the output relay • Conventional thermal current I_{th}	A	4	
Rated operational current I_e at • AC-15/24 ... 400 V • DC-13/24 V	 A A	 3 2	
Minimum contact load at 24 V DC	mA	10	

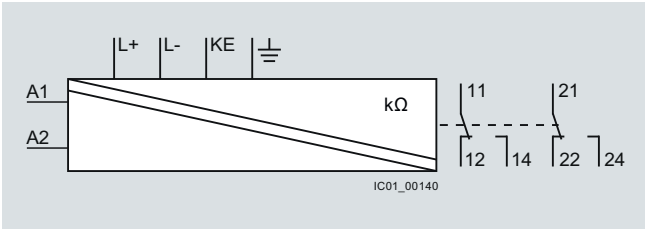
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Insulation monitoring for ungrounded DC and AC networks

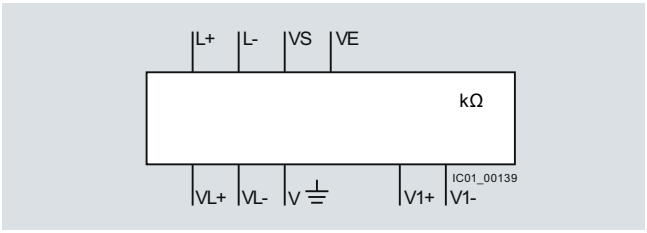
Circuit diagrams



3UG45 82



3UG45 83



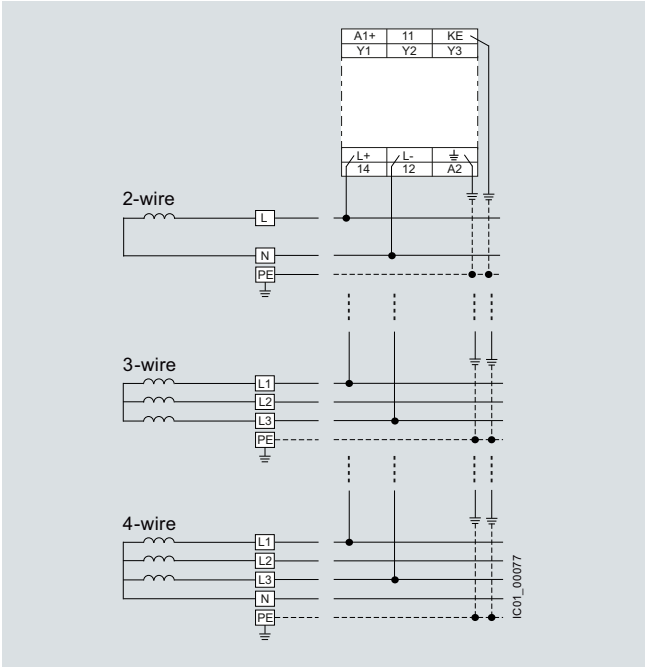
3UG49 83

Note:
It is not necessary to protect the measuring circuit for device protection. The protective device for line protection depends on the cross-section used.

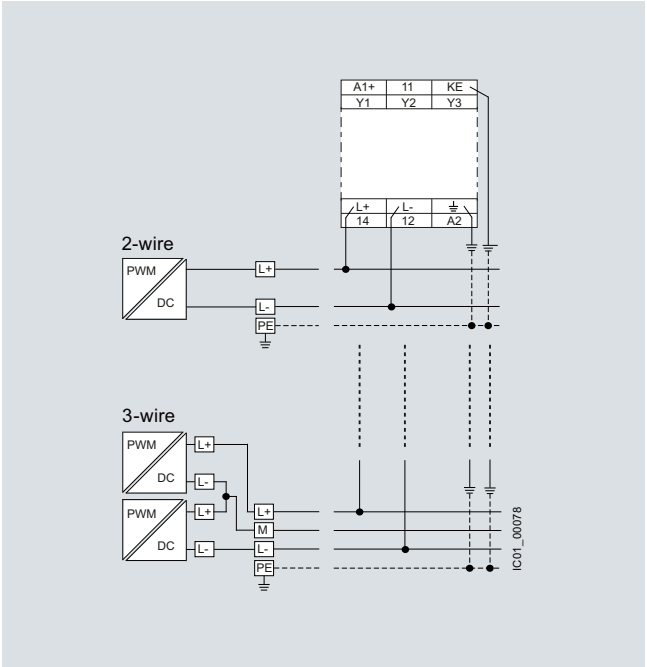
Connection diagrams

3UG45 82

AC network, 2-wire, 3-wire or 4-wire



DC network, 2-wire or 3-wire



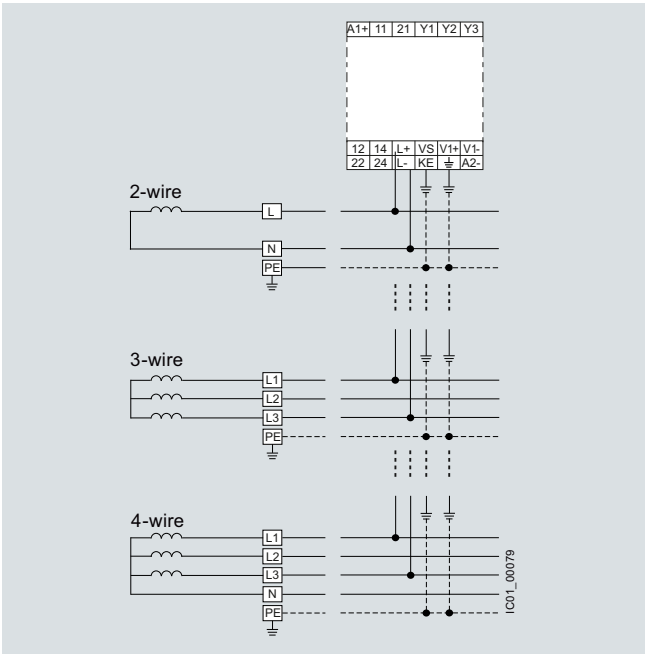
Note:

L+ and L- can be connected to any wire, but each to a different wire. $U_n \leq 250$ V AC or 300 V DC.

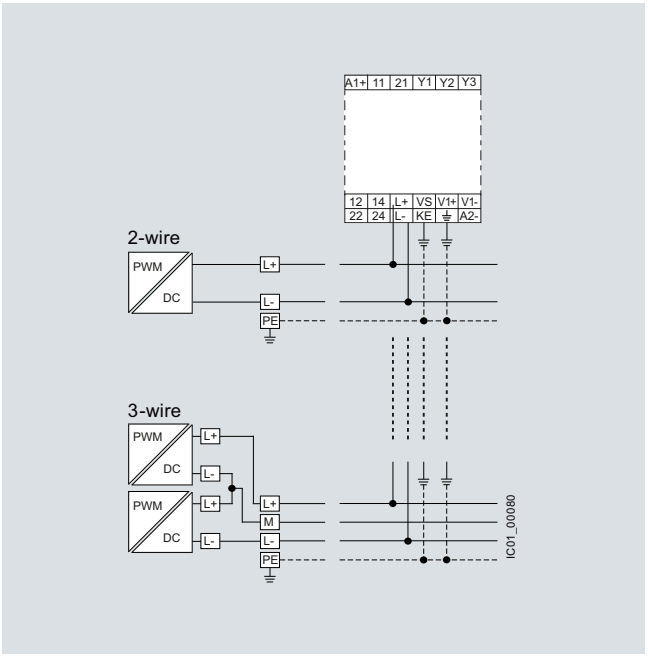
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3UG45 83

AC network, 2-wire, 3-wire or 4-wire



DC network, 2-wire or 3-wire

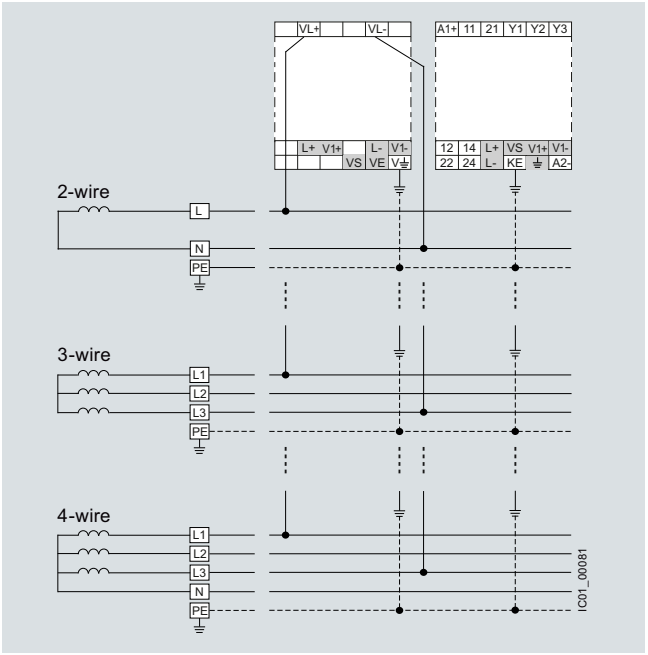


Note:

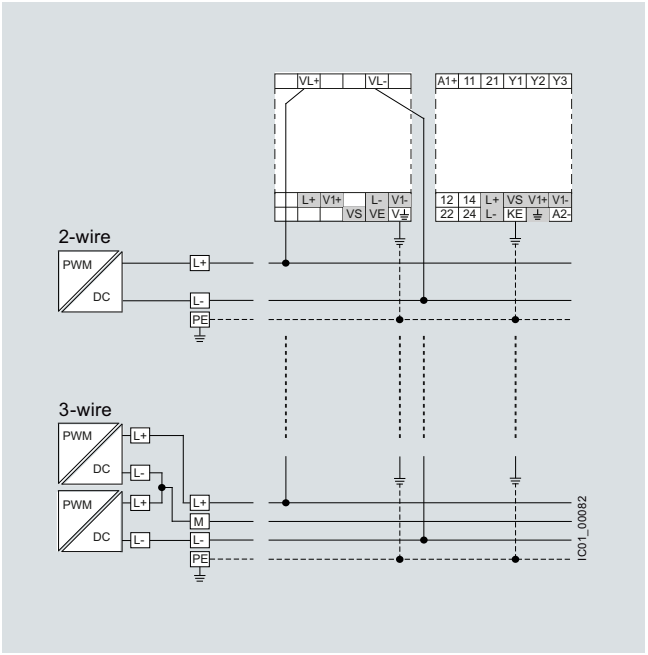
L+ and L- can be connected to any wire, but each to a different wire. $U_n \leq 400$ V AC or 600 V DC.
Use a voltage reducer module to monitor systems with higher voltages.

3UG49 83 voltage reducer modules

AC network, 2-wire, 3-wire or 4-wire



DC network, 2-wire or 3-wire



Note:

L+ and L- can be connected to any wire, but each to a different wire. $U_n \leq 400$ V AC or 600 V DC.
Use a voltage reducer module to monitor systems with higher voltages.

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SIRIUS 3UG Monitoring Relays for Stand-Alone Installation

Insulation monitoring for ungrounded DC and AC networks

Selection and ordering data

- Auto or manual RESET
- 3UG45 82: Open-circuit principle
  3UG45 83: Open-circuit or closed-circuit principle, adjustable
- 1 or 2 CO contacts
- Fault memory adjustable using control input (S2-S3)
- Reset by means of pushbutton on front or using control input (S2-S3)
- Test by means of pushbutton on front or using control input (S1-S3)
- 3UG45 83: Non-volatile fault storage can be configured
- 3UG45 83: 2 separate limit values (e.g. for warning and disconnection) or 2 CO contacts for one limit value (e.g. for a local alarm and signaling to the PLC via separate circuits) can be configured

Note:

With the 3UG49 83-1A coupling unit, connection to networks with a voltage of up to 690 V AC and 1000 V DC is possible, see below.

	Rated system voltage U_n	System leakage capacitance	Output relay	Measuring range U_e	Broken wire detection in the measuring range	DT	Screw terminals ⊕ Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	V	µF		kΩ							
SIRIUS 3UG45 82 insulation monitors											
 3UG45 82-1AW30	0 ... 250 AC	max. 10	1 CO	1 ... 110	✓	B	**3UG45 82-1AW30**		1	1 unit	41H
SIRIUS 3UG45 83 insulation monitors											
 3UG45 83-1AW30	0 ... 400 AC, 0 ... 600 DC [1]	max. 20	2 CO or 1 CO + 1 CO, adjustable	1 ... 110, 2 ... 200 for 2nd limit value, adjustable	✓ adjustable	B	**3UG45 83-1CW30**		1	1 unit	41H
	3UG45 83 voltage reducer modules										
 3UG49 83-1A	For extending the mains voltage range to max. 690 V AC and 1000 V DC					B	**3UG49 83-1A**		1	1 unit	41H

✓ Available

[1] With 3UG49 83-1A voltage reducer module suitable also for the insulation monitoring of IT networks up to 690 V AC and 1000 V DC.

Accessories see page 10/102.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



SIRIUS 3UG45 01 monitoring relays

The 3UG45 01 level monitoring relay is used together with 2- or 3-pole sensors to monitor the levels of conductive liquids.

Benefits

- Can be used worldwide thanks to wide voltage range from 24 to 240 V (absolute limit values)
- individually shortenable 2 and 3-pole wire electrodes for easy mounting from above/below
- Bow electrodes for installing from the side, for higher filling heights and minimum space requirements
- Can be flexibly adapted to different conductive liquids through analog setting of the sensitivity from 2 to 200 kΩ
- Compensation for wave movements through tripping delay times from 0.1 to 10 seconds
- Upstream or downstream function selectable
- All versions with removable terminals
- All versions with screw terminals or spring-type terminals

Application

- Single-point and two-point level monitoring
- Overflow protection
- Dry run protection
- Leak monitoring

Technical specifications

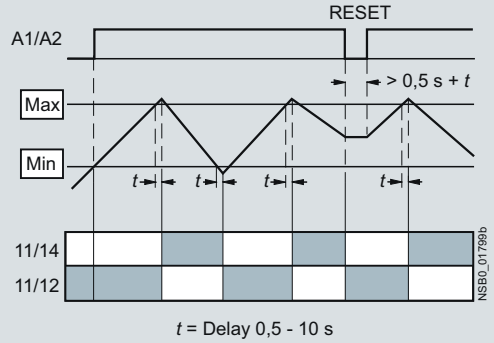
3UG45 01 monitoring relays

The principle of operation of the 3UG45 01 level monitoring relay is based on measuring the electrical resistance of the liquid between two immersion sensors and a reference terminal. If the measured value is lower than the sensitivity set at the front, the output relay changes its switching state. In order to exclude electrolytic phenomena in the liquid, the sensors are supplied with alternating current.

Two-point control

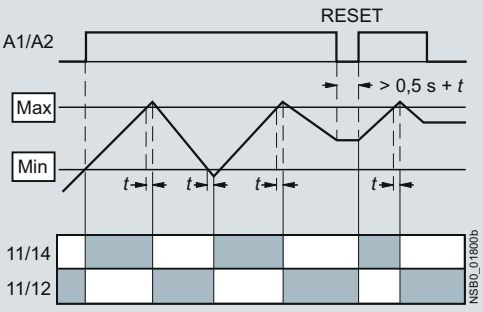
The output relay changes its switching state as soon as the liquid level reaches the maximum sensor, while the minimum sensor is submerged. The relay returns to its original switching state as soon as the minimum sensor no longer has contact with the liquid.

OVER, two-point control



t = Delay 0,5 - 10 s

UNDER, two-point control



t = Delay 0,5 - 10 s

Note:

It is also possible to connect other resistance sensors to the Min and Max terminals in the range 2 to 200 kW, e.g. photoresistors, temperature sensors, encoders based on resistance, etc. The monitoring relay can therefore also be used for other applications as well as for monitoring the levels of liquids.

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Level monitoring: Level monitoring relays

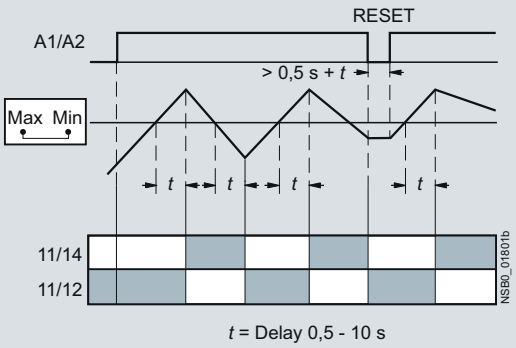
Single-point control

If only one level is being controlled, the terminals for Min and Max on the monitoring relay are bridged. The output relay changes its switching state as soon as the liquid level is reached and returns to its original switching state once the sensor no longer has contact with the liquid.

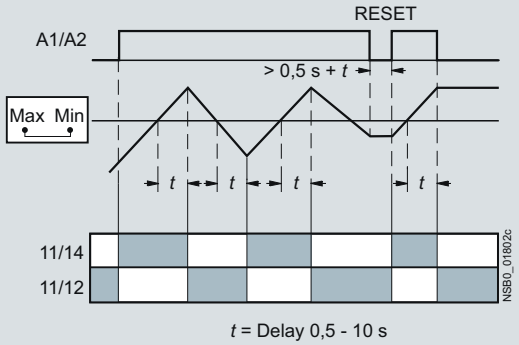
In order to prevent premature tripping of the switching function caused by wave motion or frothing, even though the set level has not been reached, it is possible to delay this function by 0.5 ... 10 s.

For safe resetting, the control supply voltage must be interrupted for at least the set delay time of +0.5 s.

OVER, single-point control



UNDER, single-point control

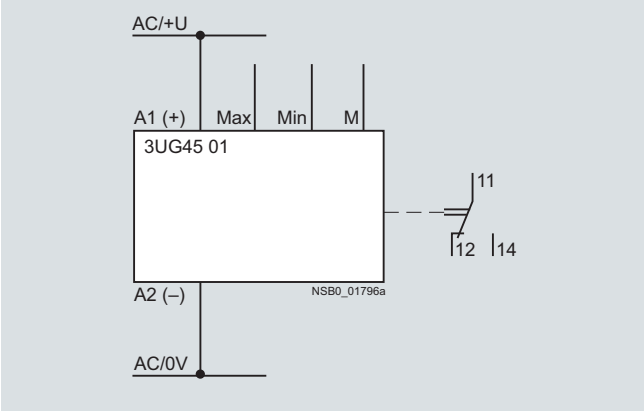


Type		3UG45 01
General data		
Rated insulation voltage U_i Pollution degree 3, Overvoltage category III acc. to VDE 0110	V	300
Rated impulse withstand voltage	kV	4
Measuring circuit		
Electrode current, max. (typ. 70 Hz)	mA	1
Electrode voltage, max. (typ. 70 Hz)	V	15
Sensor feeder cable	m	max. 100
Conductor capacity of sensor cable[1)]	nF	max. 10
Control circuit		
Load capacity of the output relay Conventional thermal current I_{th}	A	5
Rated operational current I_e at • AC-15/24 ... 400 V • DC-13/24 V • DC-13/125 V • DC-13/250 V	 A A A A	 3 1 0.2 0.1
Minimum contact load at 17 V DC	mA	5

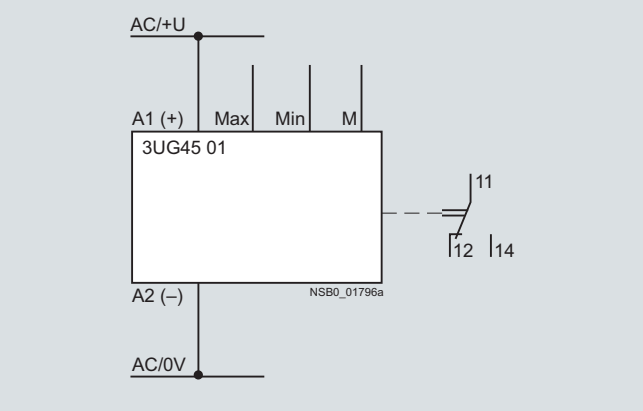
[1)] The sensor cable does not necessarily have to be shielded, but we do not recommend installing this cable parallel to the power supply lines. It is also possible to use a shielded cable, whereby the shield has to be connected to the M terminal.

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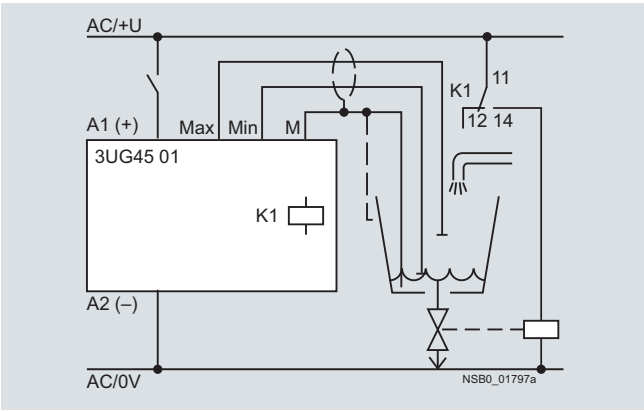
Circuit diagrams



Schematic circuit diagram



Circuit example of two-point control with outlet monitoring



Circuit example of single-point control with inlet monitoring

Selection and ordering data

- For level monitoring of electrically conductive liquids
- Control principle: inlet or sequence control adjustable per rotary switch
- Single-point and two-point control possible
- Analogically adjustable sensitivity (specific resistance of the liquid)
- Analogically adjustable tripping delay time
- 1 yellow LED for displaying the relay state
- 1 green LED for displaying the applied control supply voltage
- 1 CO contact

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H

Sensitivity	Tripping delay time	Rated control supply voltage U_s	DT	Screw terminals		DT	Spring-type terminals	
				Order No.	Price per PU		Order No.	Price per PU
kΩ	s	V AC/DC						
2 ... 200	0.5 ... 10	24[1]	A	**3UG45 01-1AA30**		A	**3UG45 01-2AA30**	
		24 ... 240	A	**3UG45 01-1AW30**		A	**3UG45 01-2AW30**	

[1] The rated control supply voltage and the measuring circuit are not electrically separated.

Accessories see page 10/102.

For level monitoring sensors see page 10/98.

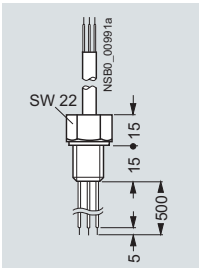
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Level monitoring: Level monitoring sensors

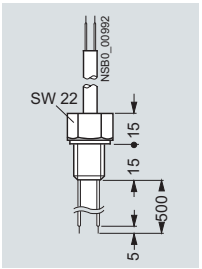
Technical specifications

Type		3UG32 07-3A three-pole	3UG32 07-2A two-pole	3UG32 07-2B two-pole	3UG32 07-1B single-pole	3UG32 07-1C single-pole
Length	mm	500	500	--	--	--
Insulation Teflon insulation (PTFE)		Yes	Yes	Yes	--	Yes
installation		Vertical	Vertical	Lateral	Lateral	Lateral
Screw-in gland width A/F		22				
Thread	inch	R 3/8				
Connecting cable	mm^2	3 x 0.5, 2 m long				
Operating temperature	°C	90				
Operating pressure	bar	10				
Cable/electrode assignment						
• Cable brown		Center electrode	Not assignable	Gland	Gland	Gland
• Cable white		Not assignable	Not assignable	Not assignable	Electrode	Electrode
• Cable green		Not assignable	--	Not assignable	--	--

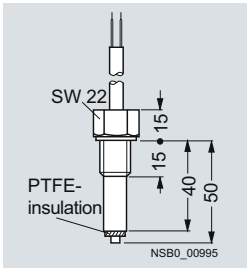
Dimensional drawings



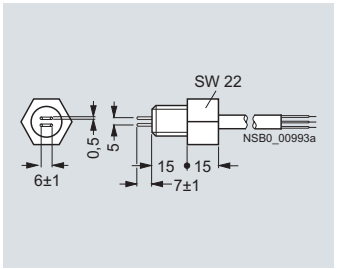
3UG32 07-3A



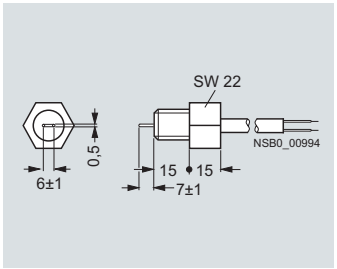
3UG32 07-2A



3UG32 07-1C



3UG32 07-2B



3UG32 07-1B

Selection and ordering data

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Level monitoring sensors (essential accessory)							
	The wire electrodes can be cut or bent to the required length before or after installation. The Teflon insulation must be removed over a length of approx. 5 mm.						
 3UG32 07-3A	**Three-pole wire electrodes, 500 mm long** For 2-point liquid level control in an insulating tank. One electrode each for the min. and max. value and a common reference electrode.	▶	**3UG32 07-3A**		1	1 unit	41H
 3UG32 07-2A	**Two-pole wire electrodes, 500 mm long** For alarm indication in the event of overflow or low level and for 2-point liquid level control, when the conductive tank is used as the reference electrode.	▶	**3UG32 07-2A**		1	1 unit	41H
 3UG32 07-2B	**Two-pole bow electrodes** Thanks to the small space requirements due to lateral fitting, ideal for use in small containers and pipes, as a leak monitor and level monitor or for warning of water entering an enclosure.	▶	**3UG32 07-2B**		1	1 unit	41H
 3UG32 07-1B	**Single-pole bow electrodes for lateral fitting** As a max. value electrode for lateral fitting or for alarm indication in conductive tanks or pipes.	▶	**3UG32 07-1B**		1	1 unit	41H
 3UG32 07-1C	**Single-pole rod electrodes for lateral fitting** For high flow velocities or for intensively sparkling fluids.	C	**3UG32 07-1C**		1	1 unit	41H

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



SIRIUS 3UG46 51 monitoring relay

The 3UG46 51 monitoring relay is used together with a sensor to monitor motor drives for overspeed and/or underspeed.

Furthermore, this relay is ideal for all functions where a continuous pulse signal needs to be monitored (e.g. belt travel monitoring, completeness monitoring, passing monitoring, clock-time monitoring).

Benefits

- Can be used worldwide thanks to wide voltage range from 24 to 240 V (absolute limit values)
- Variably adjustable to overshoot, undershoot or range monitoring
- Freely configurable delay times and RESET response
- Permanent display of actual value and fault type
- Use of up to 10 sensors per revolution on motors rotating extremely slowly
- 2- or 3-wire sensors and sensors with a mechanical switching output or solid-state-output can be connected
- Auxiliary voltage for sensor integrated
- All versions with removable terminals
- All versions with screw terminals or spring-type terminals

Application

- Slip or tear of a belt drive
- Overload monitoring
- Transport monitoring for completeness

Technical specifications

3UG46 51 monitoring relays

The speed monitoring relay operates according to the principle of period duration measurement.

In the monitoring relay, the time between two successive rising edges of the pulse encoder is measured and compared to the minimum and/or maximum permissible period duration calculated from the set limit values for the speed.

Thus, the period duration measurement recognizes any deviation in speed after just two pulses, even at very low speeds or in the case of extended pulse gaps.

By using up to ten pulse encoders evenly distributed around the circumference, it is possible to shorten the period duration, and in turn the response time. By taking into account the number of sensors in the monitoring relay, the speed continues to be indicated in rpm.

ON-delay time for motor start

To be able to start a motor drive, and depending on whether the open-circuit or closed-circuit principle is selected, the output relay switches to the GO state during the ON-delay time, even if the speed is still below the set value.

The ON-delay time is started by either switching on the auxiliary voltage or, if the auxiliary voltage is already applied, by actuating the respective NC contact (e.g. auxiliary contact).

Speed monitoring with Auto-RESET (Memory = no)

If the device is set to Auto-RESET, the output relay switches to the GO state, once the adjustable hysteresis threshold is reached in the range of 0.1 ... 99.9 rpm and the flashing stops. Any overshoots or undershoots are therefore not stored.

Speed monitoring with Manual RESET (Memory = yes)

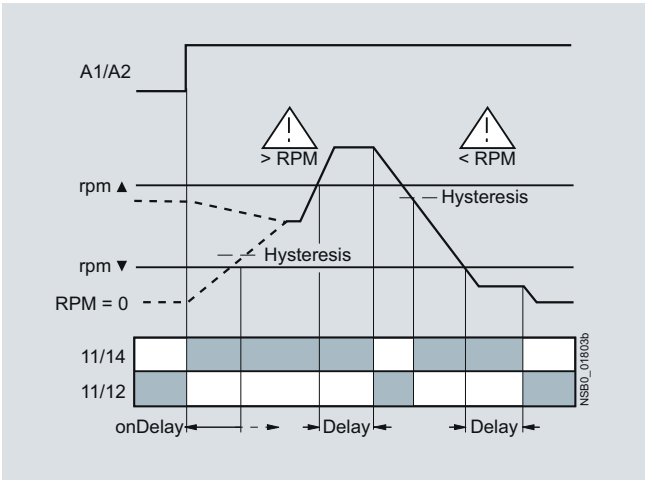
If Manual RESET is selected in the menu, the output relay remains in its current switching state and the current measured value and the symbol for overshooting/undershooting continues to flash, even when the speed returns to a permissible value. This stored fault status can be reset by pressing the UP▲ and DOWN▼ buttons simultaneously for > 2 seconds, by connecting the RESET device terminal to 24 V DC or by switching the control supply voltage off and back on again.

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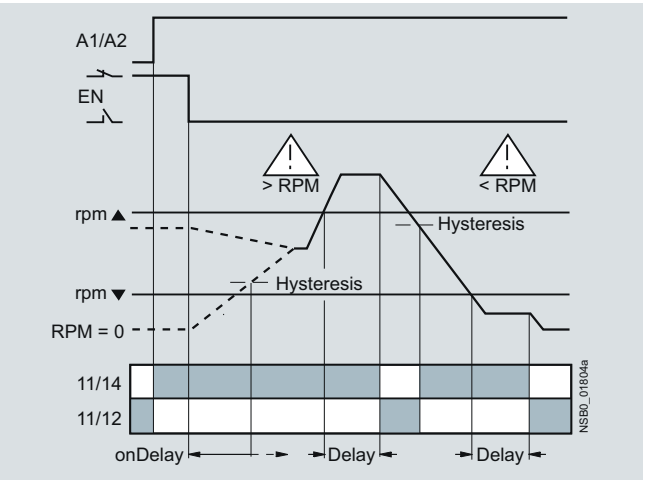
Speed monitoring

With the closed-circuit principle selected

Range monitoring without enable input



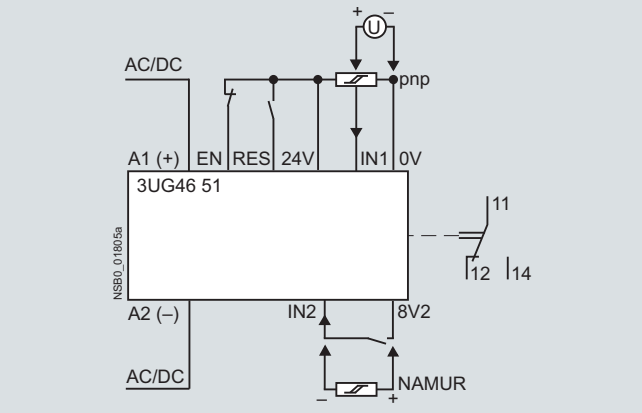
Range monitoring with enable input



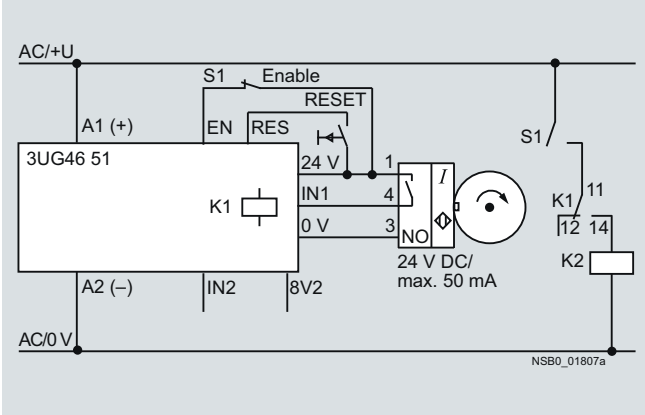
Type		3UG46 51
General data		
Rated insulation voltage U_i Pollution degree 3, Overvoltage category III acc. to VDE 0110	V	300
Rated impulse withstand voltage	kV	4
Measuring circuit		
Sensor supply		
• For three-wire sensor (24 V/0 V)	mA	max. 50
• For 2-wire NAMUR sensor (8V2)	mA	max. 8.2
Signal input		
• IN1	kΩ	16, three-wire sensor, pnp operation
• IN2	kΩ	1, floating contact, 2-wire NAMUR sensor
Voltage level		
• For level 1 at IN1	V	4.5 ... 30
• For level 0 at IN1	V	0 ... 1
Current level		
• For level 1 at IN2	mA	> 2.1
• For level 0 at IN2	mA	< 1.2
Minimum pulse duration of signal	ms	5
Minimum interval between 2 pulses	ms	5
Control circuit		
Number of CO contacts for auxiliary contacts		1
Load capacity of the output relay Conventional thermal current I_{th}	A	5
Rated operational current I_e at		
• AC-15/24 ... 400 V	A	3
• DC-13/24 V	A	1
• DC-13/125 V	A	0.2
• DC-13/250 V	A	0.1
Minimum contact load at 17 V DC	mA	5

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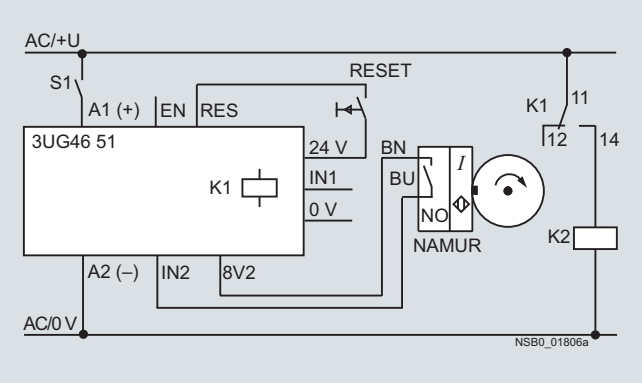
Circuit diagrams



Schematic circuit diagram



Circuit example with enable input



Circuit example without enable input

Selection and ordering data

- For speed monitoring in min^{-1} (rpm)
- Two- or three-wire sensor with mechanical or electronic switching output can be connected
- Two-wire NAMUR sensor can be connected
- Sensor supply 24 V DC/50 mA integrated
- Input frequency 0.1 to 2200 pulses min^{-1} (0.0017 to 36.7 Hz)
- With or without enable signal for the drive to be monitored
- Digital adjustable, with illuminated LC display
- Overshoot, undershoot or range monitoring adjustable
- Number of pulses per revolution can be adjusted
- Upper and lower threshold value can be adjusted separately
- Auto, manual or remote RESET options after tripping
- Permanent display of actual value and tripping state
- 1 CO contact

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H

Measuring range	Hysteresis	ON-delay time	Tripping delay time	Pulses per revolution	Rated control supply voltage U_S AC/DC	DT	Screw terminals	DT	Spring-type terminals
							Order No. / Price per PU		Order No. / Price per PU
rpm	rpm	s	s		V				
0.1 ... 2200	OFF 0.1 ... 99.9	0 ... 900	0.1 ... 99.9	1 ... 10	24 [1]	A	**3UG46 51-1AA30**	A	**3UG46 51-2AA30**
					24 ... 240	A	**3UG46 51-1AW30**	A	**3UG46 51-2AW30**

[1] The rated control supply voltage and the measuring circuit are not electrically separated.

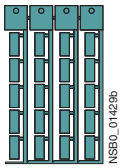
Accessories see page 10/102.

Matching sensors see Catalog ID 10 "Industrial Identification Systems".

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Accessories

Selection and ordering data

	Use	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Blank labels								
 3RT19 00-1SB20	For 3UG4	**Unit labeling plates** For SIRIUS devices						
		20 mm x 7 mm, pastel turquoise[1]	D	**3RT19 00-1SB20**		100	340 units	41B
	For 3UG4	**Inscription labels for sticking** For SIRIUS devices						
		19 mm x 6 mm, pastel turquoise	C	**3RT19 00-1SB60**		100	3 060 units	41B
		19 mm x 6 mm zinc yellow	C	**3RT19 00-1SD60**		100	3 060 units	41B
Push-in lugs and covers								
 3RP19 03	For 3UG4	**Push-in lugs** For screw fixing, 2 units are required for each device	B	**3RP19 03**		1	10 units	41H
 3RP19 02	For 3UG4	**Sealable covers** For securing against unauthorized adjustment of setting knobs	B	**3RP19 02**		1	5 units	41H
	For 3UG45	**Sealing foil** For securing against unauthorized adjustment of setting knobs	►	**3TK28 20-0AA00**		1	1 unit	41L
Covers for insulation monitoring relays								
		Sealable, transparent covers						
 3UG49 81-0C	For 3UG45 81, 3UG45 82		B	**3UG49 81-0C**		1	1 unit	41H
 3UG49 83-0C	For 3UG45 83		B	**3UG49 83-0C**		1	1 unit	41H
Tools for opening spring-type terminals								
 3RA29 08-1A	For auxiliary circuit connections	**Screwdrivers** For all SIRIUS devices with spring-type terminals 3.0 mm x 0.5 mm, length approx. 200 mm, titanium gray/black, partially insulated	A	**Spring-type terminals**  **3RA29 08-1A**		1	1 unit	41B
Manuals								
	For 3UG4	**Configuration Manuals for 3UG45/3UG46, 3RR21/3RR22 monitoring relays**						
		• German	C	**3ZX1 012-0UG40-0AB0**		1	1 unit	401
		• English	C	**3ZX1 012-0UG40-0AC0**		1	1 unit	401

[1] PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH (see Chapter 16, "Appendix" → "External Partners") .

Note:

SIPLUS CMS1000 condition monitoring for bearings

Condition monitoring has become an indispensable aspect of machine and plant monitoring systems. It puts the user in a better position to plan and verify his maintenance operations and to perform them when they are actually necessary.

With the SIPLUS CMS1000 bearing monitor and a sensor, rolling bearings (e.g. motor rolling bearings) are monitored for long-term damage.

The compact system offers:
- Condition monitoring for motor bearings
- Monitoring of motors with rolling bearings based on VDI3832 and ISO DIN 10816-3
- Cost-efficient solution
- Teach mode for easy start-up
- Digitally adjustable with LCD for configuration and display of the diagnostics value
- Adjustable threshold values for warning and alarm
- Two relay outputs for switching in case of warning and alarm
- An acceleration sensor for mounting on the motor to be monitored

More information see at www.siemens.com/siplus-cms.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



SIRIUS 3UG48 monitoring relays

The SIRIUS 3UG4 monitoring relays for electronic and mechanical variables monitor all important characteristics that allow conclusions to be drawn about the functionality of a plant. Both sudden disturbances and gradual changes, which may indicate the need for maintenance, are detected.

Thanks to their relay outputs, the monitoring relays permit direct disconnection of the affected system components and alerting, e.g. by the triggering of a warning light. Thanks to adjustable delay times the 3UG4 monitoring relays can respond very flexibly to brief faults such as voltage dips or load changes and can thus avoid unnecessary alarms and disconnections and increase system availability.

3UG48 monitoring relays for IO-Link

The SIRIUS 3UG48 monitoring relays for IO-Link also offer many other options based upon the monitoring functions of the tried-and-tested SIRIUS 3UG4 monitoring relays:

- Measured value transmission to a controller, incl. resolution and unit, may be parameterizable as to which value is cyclically transmitted
- Transmission of alarm flag to a controller
- Full diagnosis capability by inquiry as to the cause of the fault in the diagnosis data set
- Remote parameterization is also possible, in addition to or instead of local parameterization
- Rapid parameterization of the same devices by duplication of the parameterization in the controller
- Parameter transmission by upload to a controller by IO-Link call or by parameter server (if IO-Link master from IO-Link Specification V 1.1 is used)
- Consistent central data storage in the event of parameter change locally or via a controller
- Automatic reparameterizing when devices are exchanged
- Blocking of local parameterization via IO-Link possible
- Faults are saved in parameterizable and non-volatile fashion to prevent an automatic start-up after voltage failure and make sure diagnosis data is not lost
- By integration to the automation level the option exists of parameterizing the monitoring relay at any time via a display unit or displaying the measured values in a control room or locally at the machine/control cabinet.

Even without communication via IO-Link the devices continue to function fully autonomously:

- Parameterization can take place locally at the device, independently of a controller.
- In the event of failure or before the controller becomes available the monitoring relays work as long as the control supply voltage (24 V DC) is present.
- If the monitoring relays are operated without the controller, the 3UG48 monitoring relays have, thanks to the integrated SIO mode, an additional semiconductor output, which switches when the adjustable warning threshold is exceeded.

Thanks to the combination of autonomous monitoring relay function and integrated IO-Link communication, redundant sensors and/or analog signal converters – which previously took over the transmission of measured values to a controller, leading to considerable extra cost and wiring outlay – are no longer needed.

Because the output relays are still present, the monitoring relays increase the functional reliability of the system, since the controller can only fulfill the control tasks if the current measured values are available, whereas the output relays can also be used for the disconnection of the system if limit values that cannot be reached during operation are exceeded.

The individual 3UG48 monitoring relays for IO-Link offer the following functions in different combinations:

- Phase sequence
- Phase failure, neutral conductor failure
- Phase asymmetry
- Undershooting and/or overshooting of limit values for voltage
- Undershooting and/or overshooting of limit values for current
- Undershooting and/or overshooting of limit values for the power factor
- Monitoring of the active current or the apparent current
- Undershooting and/or overshooting of limit values for speed

Note:

Further information on the IO-Link bus systems see Chapter 2 "Industrial Communication".

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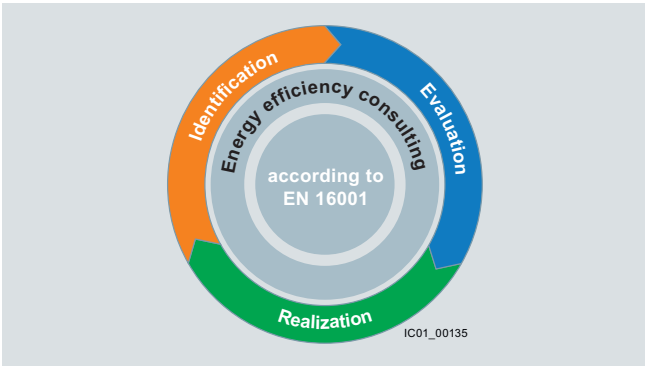
SIRIUS 3UG48 Monitoring Relays for Stand-Alone Installation for IO-Link

General data

Benefits

- Simple cyclical transmission of the current measured values, relay switching states and events to a controller
- Remote parameterization
- Automatic reparameterizing when devices are exchanged
- Simple duplication of identical or similar parameterizations
- Reduction of control current wiring
- Elimination of testing costs and wiring errors
- Reduction of configuration work
- Integration in TIA means clear diagnostics if a fault occurs
- Cost saving and space saving in control cabinet due to the elimination of AI and IO modules as well as analog signal converters and duplicated sensors

Advantages through energy efficiency



Overview of the energy management process

We offer you a unique portfolio for industrial energy management, using an energy management system that helps to optimally define your energy needs. We split up our industrial energy management into three phases – Identification, Evaluation and Realization – and we support you with the appropriate hardware and software solutions in every process phase.

The innovative products of the SIRIUS industrial controls portfolio can also make a substantial contribution to a plant's energy efficiency (www.siemens.com/sirius/energysaving).

The 3UG48 monitoring relays for IO-Link make the following contribution to the energy efficiency of the plant as a whole:

- Shutdown in the event of no-load operation (e.g. pump no-load operation)
- Reactive-power compensation by means of power factor monitoring
- Load shedding of predefined loads in the event of current overshoots

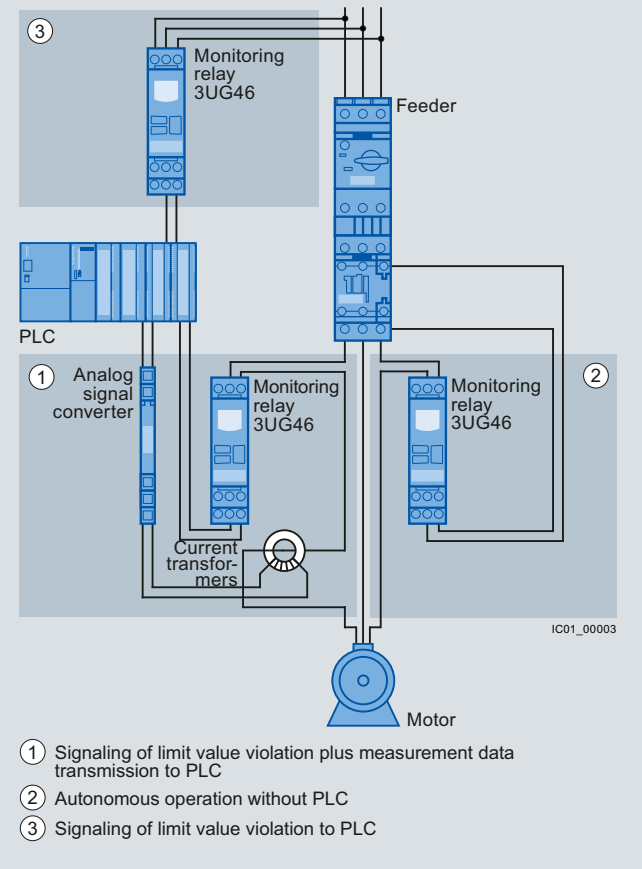
Application

The use of SIRIUS monitoring relays for IO-Link is particularly recommended for machines and plant in which these relays, in addition to their monitoring function, are to be connected to the automation level for the rapid, simple and fault-free provision of the current measured values and/or for remote parameterization.

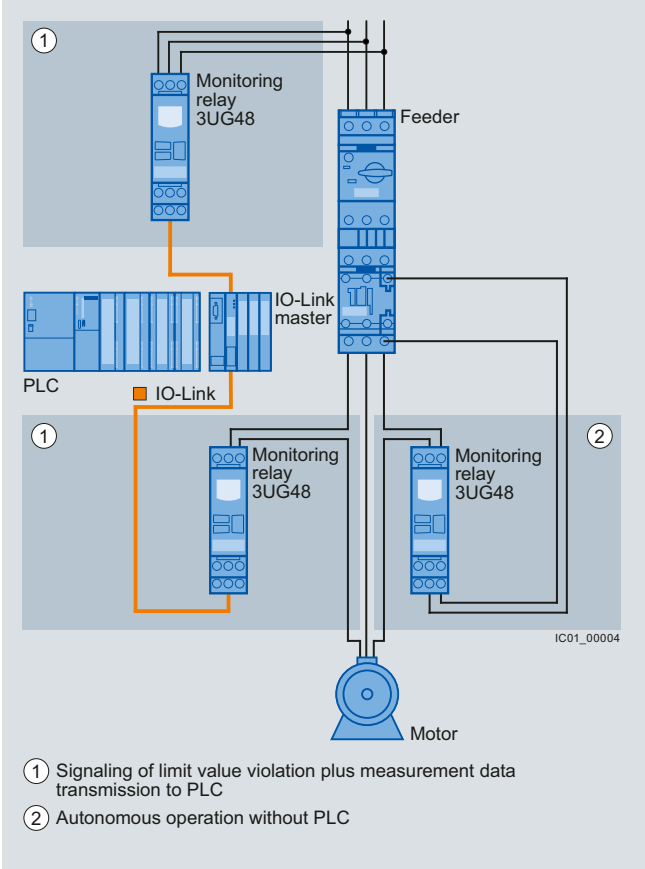
The monitoring relays can either relieve the controller of monitoring tasks or, as a second monitoring entity in parallel to and independent of the controller, increase the reliability in the process or in the system. In addition, the elimination of AI and IO modules allows the width of the controller to be reduced despite significantly expanded functionality.

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Design



Use of conventional monitoring relays



Monitoring relays for IO-Link

Notes:

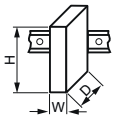
Devices required for the communication via IO-Link:

- Any controller that supports the IO-Link (e.g. ET200S with CPU or S7-300 plus ET200S distributed peripherals, see Catalog ST 70)
- IO-Link master (IO-Link master 4SI IO-Link or 4SI SIRIUS interface module, which can connect all SIRIUS IO-Link devices to a controller, see Chapter 2)

Each monitoring relay requires an IO-Link channel.

10

Technical specifications

General technical specifications			
Type			**3UG48**
Dimensions (W x H x D)			
• For 3 terminal blocks			
- Screw terminals		mm	22.5 x 92 x 91
- Spring-type terminals		mm	22.5 x 94 x 91
• For 4 terminal blocks			
- Screw terminals		mm	22.5 x 103 x 91
- Spring-type terminals		mm	22.5 x 103 x 91
Permissible ambient temperature			
• During operation		°C	-25 ... +60
Connection type			**Screw terminals**
• Terminal screw			M3 (for standard screwdriver, size 2 and Pozidriv 2)
• Solid		mm^2	1 x (0.5 ... 4), 2 x (0.5 ... 2.5)
• Finely stranded with end sleeve		mm^2	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5)
• AWG cables, solid or stranded		AWG	2 x (20 ... 14)
• Tightening torques		Nm	0.8 ... 1.2
Connection type			**Spring-type terminals**
• Solid		mm^2	2 x (0.25 ... 1.5)
• Finely stranded with end sleeves acc. to DIN 46228		mm^2	2 x (0.25 ... 1.5)
• Finely stranded		mm^2	2 x (0.25 ... 1.5)
• AWG cables, solid or stranded		AWG	2 x (24 ... 16)

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SIRIUS 3UG48 Monitoring Relays for Stand-Alone Installation for IO-Link

Line monitoring

Overview



SIRIUS 3UG48 15 monitoring relay

Solid-state line monitoring relays provide maximum protection for mobile machines, plants and hoisting equipment or for unstable networks. Network and voltage faults can thus be detected early and rectified before far greater damage ensues.

The line monitoring relays with IO-Link monitor phase sequence, phase failure (with or without N conductor monitoring), phase asymmetry and undervoltage and/or overvoltage.

Phase asymmetry is evaluated as the difference between the greatest and the smallest phase voltage relative to the greatest phase voltage. Undervoltage or overvoltage exist if the set limit values for at least one phase are overshot or undershot. The rms value of the voltage is measured.

Benefits

- Can be used in any network from 160 to 630 V AC worldwide thanks to wide voltage range
- Variably adjustable to overshoot, undershoot or range monitoring
- Freely configurable delay times and RESET response
- Width 22.5 mm
- Display and transmission of actual value and network fault type to controller
- All versions with removable terminals
- All versions with screw or spring-type terminals

Application

The relays are primarily used for systems which can be moved, such as air-conditioning compressors, refridgerated containers, construction compressors, and cranes.

Function	Application
Phase sequence	• Direction of rotation of the drive
Phase failure	• A fuse has tripped • Failure of the control supply voltage • Broken cable
Phase asymmetry	• Overheating of the motor due to asymmetrical voltage • Detection of asymmetrically loaded networks
Undervoltage	• Increased current on a motor with corresponding overheating • Unintentional resetting of a device • Network collapse, particularly with battery power
Overvoltage	• Protection of a plant against destruction due to overvoltage

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Technical specifications

3UG48 15/3UG48 16 monitoring relays

The 3UG48 15 and 3UG48 16 line monitoring relays have a wide voltage range input and are supplied with power through IO-Link or from an external 24 V DC source.

The device is equipped with a display and is parameterized using three buttons. The 3UG48 15 monitoring relay monitors three-phase networks with regard to phase sequence, phase failure, phase asymmetry, undervoltage and overvoltage. The 3UG48 16 monitoring relay monitors the neutral conductor as well. The hysteresis is adjustable from 1 to 20 V.

The device has two separately adjustable delay times for overvoltage and undervoltage and for line stabilization. If the direction is incorrect or a phase fails, the device switches off immediately. Thanks to a special measuring method, a phase failure is reliably detected in spite of the wide voltage range from and potentially high feedback through the load.

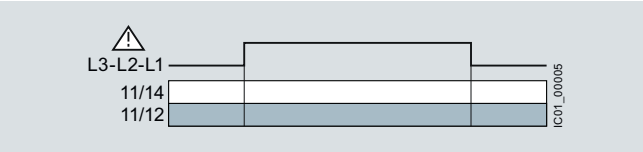
The 3UG48 15 and 3UG48 16 monitoring relays can be operated on the basis of either the open-circuit or closed-circuit principle and with manual or auto RESET.

If manual RESET is selected in the menu (Memory = Yes), the switching relay remains in its current switching state and the current measured value and the symbol for undershooting and overshooting continues to flash, even when the measured variable reaches a permissible value again. This stored fault status can be reset by simultaneously pressing the UP▲ or DOWN▼ key for 2.5 seconds.

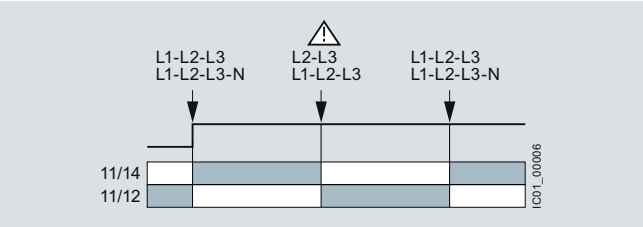
With manual RESET through IO-Link it is possible in addition to set whether error signals are to be deleted when the control supply voltage is switched off and on (as remote RESET) or whether the signals are to be permanently saved even in a voltage failure, with confirmation possible only through local RESET or via IO-Link.

With the closed-circuit principle selected

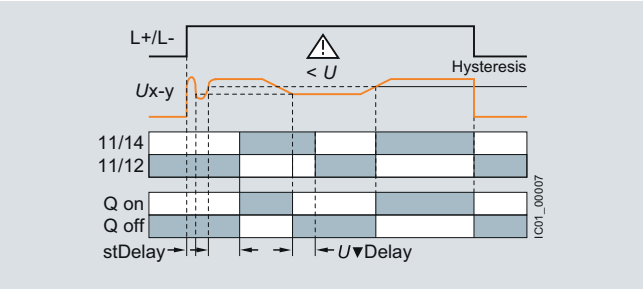
Wrong phase sequence



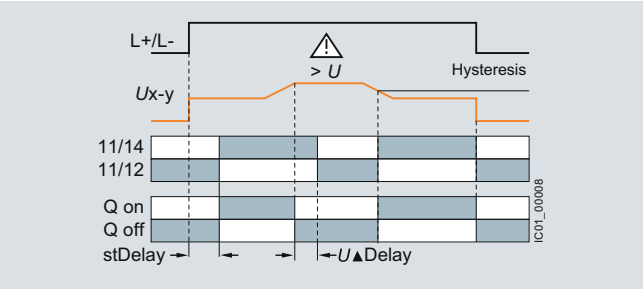
Phase failure



Undervoltage



Overvoltage



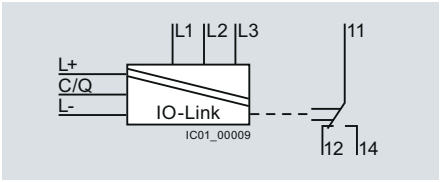
Type		3UG48 15, 3UG48 16
General technical specifications		
Rated insulation voltage U_i Pollution degree 2 Overvoltage category III acc. to VDE 0110	V	690
Rated impulse withstand voltage U_{imp}	kV	6
Control circuit		
Load capacity of the output relay • Conventional thermal current I_{th}	A	5
Rated operational current I_e at • AC-15/24 ... 400 V • DC-13 at - 24 V - 125 V - 250 V	A A A A	3 1 0.2 0.1
Minimum contact load at 17 V DC	mA	5
Electrical endurance AC-15	Million operating cycles	0.1
Mechanical endurance	Million operating cycles	10

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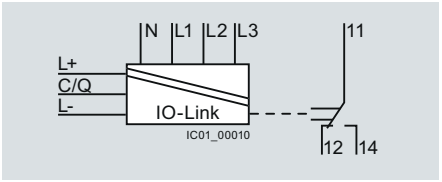
SIRIUS 3UG48 Monitoring Relays for Stand-Alone Installation for IO-Link

Line monitoring

Circuit diagrams



3UG48 15



3UG48 16

Note:
It is not necessary to protect the measuring circuit for device protection. The protective device for line protection depends on the cross-section used.

Selection and ordering data

- Adjustable via IO-Link and locally, with illuminated LCD
- Power supply with 24 V DC via IO-Link or external auxiliary voltage
- Auto or manual RESET
- Open or closed-circuit principle
- 1 CO contact, 1 semiconductor output (in SIO mode)

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H



3UG48 15-1AA40



3UG48 16-1AA40



3UG48 15-2AA40



3UG48 16-2AA40

Adjustable hysteresis	Under-voltage detection	Over-voltage detection	Stabilization time adjustable stDEL	Tripping delay time adjustable Del	Version of auxiliary contacts	Measurable mains voltage[1]	DT	Screw terminals	DT	Spring-type terminals
			s	s		V AC		Order No. / Price per PU		Order No. / Price per PU
Monitoring of phase sequence, phase failure, phase asymmetry, overvoltage and undervoltage										
1 ... 20 V	✓	✓	0.1 … 999.9	0.1 … 999.9	1 CO + 1 Q [2]	160 … 690	A	**3UG48 15-1AA40**	A	**3UG48 15-2AA40**
Monitoring of phase sequence, phase and N conductor failure, phase asymmetry, overvoltage and undervoltage										
1 ... 20 V	✓	✓	0.1 … 999.9	0.1 … 999.9	1 CO + 1 Q [2]	90 … 400 against N	A	**3UG48 16-1AA40**	A	**3UG48 16-2AA40**

✓ Function available

[1] Absolute limit values.

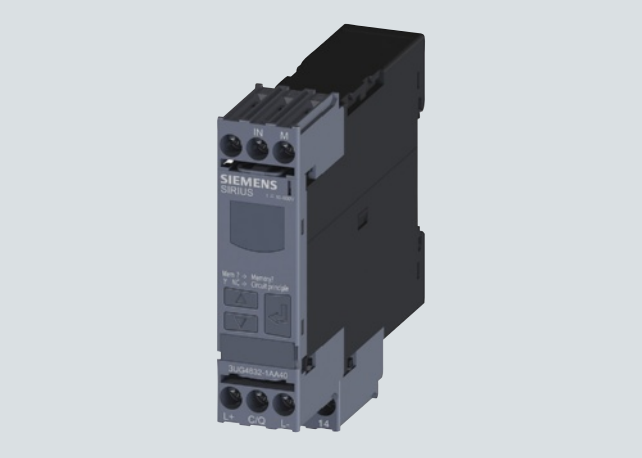
[2] In SIO mode

Accessories see page 10/122.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



SIRIUS 3UG48 32 monitoring relay

The relays monitor single-phase AC voltages (rms value) and DC voltages against the set limit value for overshoot and undershoot.

Benefits

- Variably adjustable to overshoot, undershoot or range monitoring
- Freely configurable delay times and RESET response
- Width 22.5 mm
- Display and transmission of actual value and status messages to controller
- All versions with removable terminals
- All versions with screw or spring-type terminals

Application

- Protection of a plant against destruction due to overvoltage
- Switch-on of a plant at a defined voltage and higher
- Protection from undervoltage due to overloaded control supply voltages, particularly with battery power

Technical specifications

3UG48 32 monitoring relays

The 3UG48 32 voltage monitoring relays are supplied with power through IO-Link or with an external auxiliary voltage of 24 V DC and perform overshoot, undershoot or range monitoring of the voltage depending on how they are parameterized. The devices are equipped with a display and are parameterized by means of three buttons or through IO-Link.

The measuring range extends from 10 to 600 V AC/DC. The threshold values for overshoot or undershoot can be freely configured within this range. If one of these limit values is reached, the output relay responds according to the set principle of operation as soon as the delay time has elapsed. This tripping delay time *U*▲Del/*U*▼Del can be set from 0 to 999.9 s like the ON-delay time. The hysteresis is adjustable from 0.1 to 300 V.

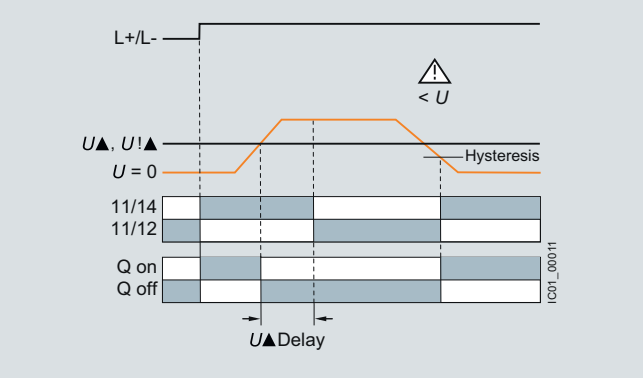
The device can be operated on the basis of either the open-circuit or closed-circuit principle and with manual or auto RESET. One output changeover contact is available as a signaling contact, and a semiconductor output is available in additional in SIO mode.

If manual RESET is selected in the menu (Memory = Yes), the switching relay remains in its current switching state and the current measured value and the symbol for undershooting and overshooting continues to flash, even when the measured variable reaches a permissible value again. This stored fault status can be reset by simultaneously pressing the UP▲ or DOWN▼ key for 2.5 seconds.

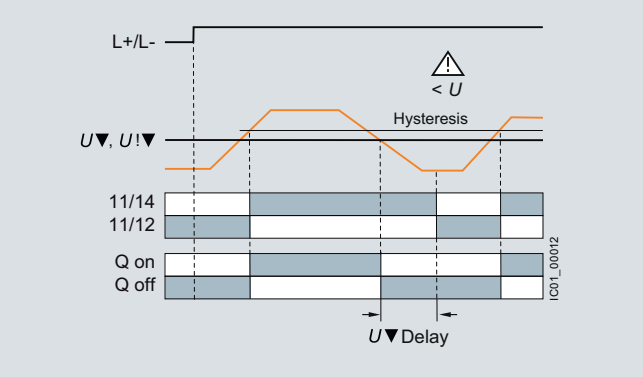
With manual RESET through IO-Link it is possible in addition to set whether error signals are to be deleted when the control supply voltage is switched off and on (as remote RESET) or whether the signals are to be permanently saved even in a voltage failure, with confirmation possible only through local RESET or via IO-Link.

With the closed-circuit principle selected

Overvoltage



Undervoltage



10

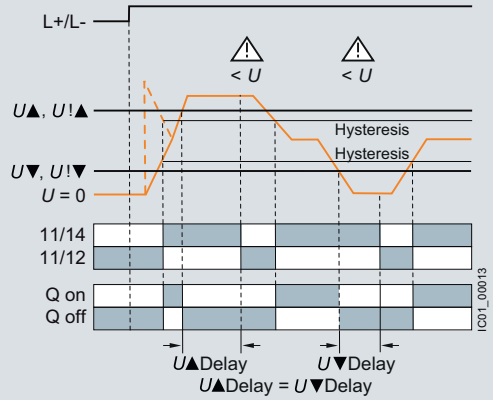
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SIRIUS 3UG48 Monitoring Relays for Stand-Alone Installation for IO-Link

Voltage monitoring

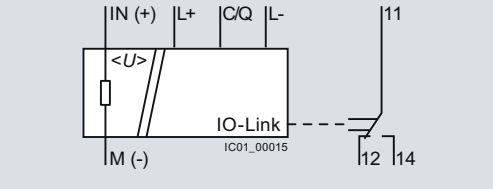
With the closed-circuit principle selected

Range monitoring



Type		3UG48 32
General technical specifications		
Rated insulation voltage U_i Pollution degree 2 Overvoltage category III acc. to VDE 0110	V	690
Rated impulse withstand voltage U_{imp}	kV	6
Measuring circuit		
Permissible measuring range single-phase AC/DC voltage	V	10 … 690
Setting range single-phase voltage	V	10 ... 600
Measuring frequency	Hz	40 ... 500
Control circuit		
Load capacity of the output relay • Conventional thermal current I_{th}	A	5
Rated operational current I_e at • AC-15/24 ... 400 V • DC-13 at - 24 V - 125 V - 250 V	A A A A	3 1 0.2 0.1
Minimum contact load at 17 V DC	mA	5

Circuit diagrams



3UG48 32

Note:

It is not necessary to protect the measuring circuit for device protection. The protective device for line protection depends on the cross-section used.

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Selection and ordering data

- Adjustable via IO-Link and locally, with illuminated LCD
- Power supply with 24 V DC via IO-Link or external auxiliary voltage
- Auto or manual RESET
- Open or closed-circuit principle
- 1 CO contact, 1 semiconductor output (in SIO mode)

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H



3UG48 32-1AA40



3UG48 32-2AA40

Measuring range	Adjustable hysteresis	ON-delay time adjustable onDel	Tripping delay time separately adjustable *U*▲Del/*U*▼Del	DT	**Screw terminals**	DT	**Spring-type terminals**
					Order No. / Price per PU		Order No. / Price per PU
V AC/DC	V	s	s				
Monitoring of voltage for overshoot and undershoot							
10 … 600	0.1 ... 300	0 … 999.9	0 … 999.9	A	**3UG48 32-1AA40**	B	**3UG48 32-2AA40**

Accessories see page 10/122.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Current monitoring

Overview



SIRIUS 3UG48 22 monitoring relay

The relays monitor single-phase AC (rms value) and DC currents against the set limit value for overshoot and undershoot.

Benefits

- Variably adjustable to overshoot, undershoot or range monitoring
- Freely configurable delay times and RESET response
- Width 22.5 mm
- Display and transmission of actual value and status messages to controller
- All versions with removable terminals
- All versions with screw or spring-type terminals

Application

- Overcurrent and undercurrent monitoring
- Monitoring the functionality of electrical loads
- Monitoring for broken conductors

Technical specifications

3UG48 22 monitoring relays

The 3UG48 22 current monitoring relays are supplied with power through IO-Link or with an external voltage of 24 V DC and perform overshoot, undershoot or range monitoring of the current depending on how they are parameterized. The devices are equipped with a display and are parameterized using three buttons.

The measuring range extends from 0.05 to 10 A. For larger AC currents the measuring range can be extender by using commercially available current transformers. Using the adjustable transformer factor, the display of the measured primary currents up to 750 A instead of the secondary currents (max. 1 A or 5 A) is possible.

The rms value of the current is measured. The limit values for overshoot or undershoot can be freely configured within this range. If one of these limit values is reached, the output relay responds according to the set principle of operation as soon as the tripping delay time *I*▲Del/*I*▼Del has elapsed. This time and the ON-delay time onDel are adjustable from 0 to 999.9 s.

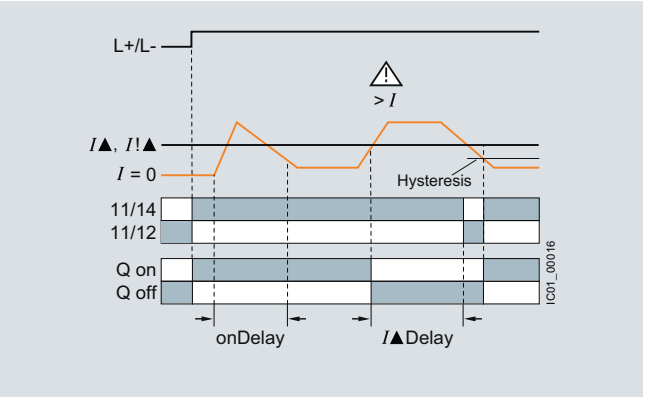
The hysteresis is adjustable from 0.01 to 5 A. The device can be operated with manual or auto RESET and on the basis of either the open-circuit or closed-circuit principle. Following options are available: Response of the output relay when the control supply voltage U_S = ON is applied or not until the lower measurement range limit of the measuring current (*I* > 50 mA) is reached. One output changeover contact is available as a signaling contact, and a semiconductor output is available in additional in SIO mode.

If manual RESET is selected in the menu (Memory = Yes), the switching relay remains in its current switching state and the current measured value and the symbol for undershooting and overshooting continues to flash, even when the measured variable reaches a permissible value again. This stored fault status can be reset by simultaneously pressing the UP▲ or DOWN▼ key for 2.5 seconds.

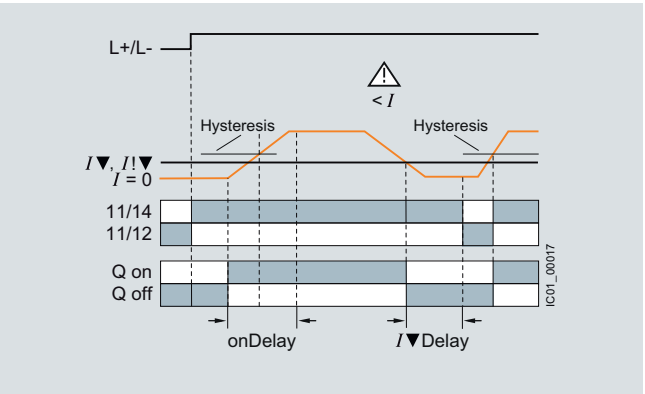
With manual RESET through IO-Link it is possible in addition to set whether error signals are to be deleted when the control supply voltage is switched off and on (as remote RESET) or whether the signals are to be permanently saved even in a voltage failure, with confirmation possible only through local RESET or via IO-Link.

With the closed-circuit principle selected upon application of the control supply voltage

Current overshoot



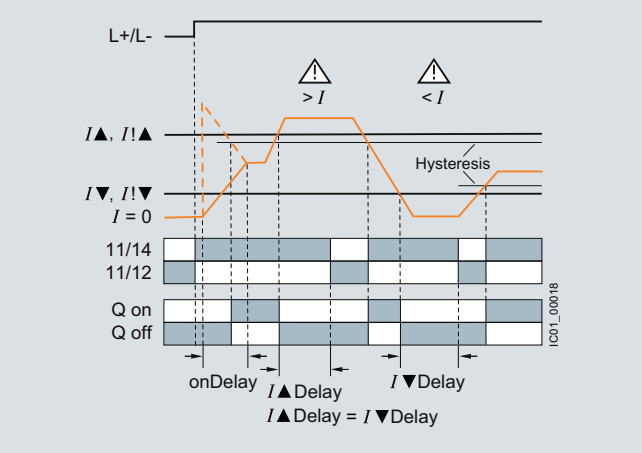
Current undershoot



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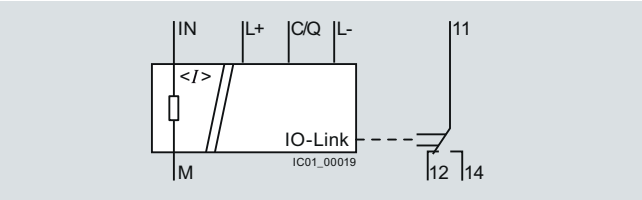
With the closed-circuit principle selected
upon application of the control supply voltage

Range monitoring



Type		3UG48 22
General technical specifications		
Rated insulation voltage U_i Pollution degree 2 Overvoltage category III acc. to VDE 0110	V	690
Rated impulse withstand voltage U_{imp}	kV	6
Measuring circuit		
Measuring range single-phase AC/DC current	A	0.05 … 15
Setting range for single-phase current	A	0.05 ... 10
Load supply voltage	V	max. 300 (with protective separation) max. 500 (with simple separation)
Control circuit		
Load capacity of the output relay • Conventional thermal current I_{th}	A	5
Rated operational current I_e at • AC-15/24 ... 400 V • DC-13 at - 24 V - 125 V - 250 V	 A A A A	 3 1 0.2 0.1
Minimum contact load at 17 V DC	mA	5

Circuit diagrams



3UG48 22

Note:
It is not necessary to protect the measuring circuit for device protection. The protective device for line protection depends on the cross-section used.

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Current monitoring

Selection and ordering data

- Adjustable via IO-Link and locally, with illuminated LCD
- Power supply with 24 V DC via IO-Link or external auxiliary voltage
- Adjustable converter factor to display the measured primary current when external current transformer used
- Auto or manual RESET
- Open or closed-circuit principle
- 1 CO contact, 1 semiconductor output (in SIO mode)

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H



3UG48 22-1AA40



3UG48 22-2AA40

Measuring range	Adjustable hysteresis	ON-delay time adjustable onDel	Tripping delay time separately adjustable I▲Del/I▼Del	DT	**Screw terminals**	DT	**Spring-type terminals**
					Order No. Price per PU		Order No. Price per PU
AC/DC A	A	s	s				
Monitoring of current for overshooting and undershooting							
0.05 … 10	0.01 ... 5	0.1 … 999.9	0.1 … 999.9	A	**3UG48 22-1AA40**	A	**3UG48 22-2AA40**

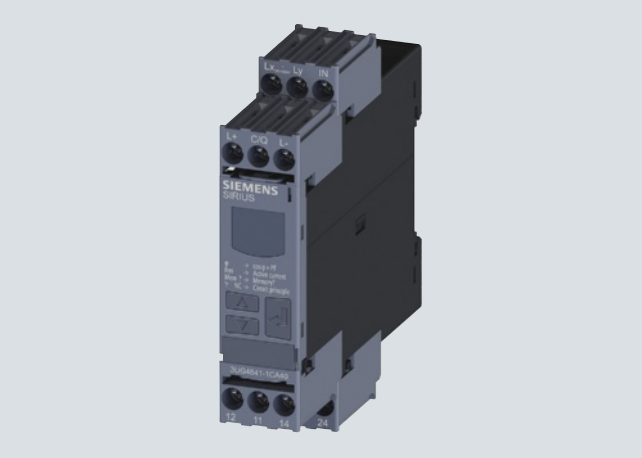
Accessories see page 10/122.

For AC currents I > 10 A it is possible to use commercially available current transformers, e.g. the Siemens 4NC current transformer, as accessories, see Catalog LV 10.1, Chapter 2.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



SIRIUS 3UG48 41 monitoring relay

The 3UG48 41 power factor and active current monitoring devices enable the load monitoring of motors.

Whereas power factor monitoring is used above all for monitoring no-load operation, the active current monitoring option can be used to observe and evaluate the load factor over the entire torque range.

Benefits

- Monitoring of even small single-phase motors with a no-load supply current below 0.5 A
- Simple determination of threshold values by the direct collection of measured variables on motor loading
- Range monitoring and active current measurement enable detection of cable breaks between control cabinets and motors, as well as phase failures
- Power factor and/or active current can be selected as the measurement principle
- Width 22.5 mm
- Display and transmission of actual value and status messages to controller
- All versions with removable terminals
- All versions with screw or spring-type terminals

Application

- No-load monitoring and load shedding, such as in the event of a V-belt tear
- Underload monitoring in the low performance range, e.g. in the event of pump no-load operation
- Monitoring of overload, e.g. due to a dirty filter system
- Power factor monitoring in networks for control of compensation equipment
- Broken cable between control cabinet and motor

Technical specifications

3UG48 41 monitoring relays

The 3UG48 41 monitoring relays are supplied with power through IO-Link or with an external auxiliary voltage of 24 V DC and are used for performing overshoot, undershoot or range monitoring of the power factor and/or the resulting active current, depending on how they are parameterized. The load to be monitored is connected upstream of the IN terminal. The load current flows through the terminals IN and Ly/N. The setting range for the power factor is 0 to 0.99 and for the active current I_{res} 0.2 to 10 A. If the control supply voltage is switched on and no load current flows, the display will show $I < 0.2$ and a symbol for overrange, underrange or range monitoring. If the motor is now switched on and the current exceeds 0.2 A, the set ON delay time onDel begins. During this time, if the set limit values are fallen below or exceeded, this does not lead to a relay reaction of the changeover contact. If the operational flowing active current and/or the power factor value falls below or exceeds the respective set threshold value, the tripping delay begins. When this time has expired, the relay changes its switch position. The relevant measured variables for overshooting and undershooting in the display flashes. If the monitoring of active current undershooting is deactivated (I_{res}▼= OFF) and the load current drops below the lower measurement range threshold (0.2 A), then the CO contacts remain unchanged. If a threshold value is set for the monitoring of active current undershooting, then undershooting of the measurement range threshold (0.2 A) will result in a response of the CO contacts.

The relay operates either according to the open-circuit or closed-circuit principle.

If the device is set to Auto-RESET (Memory = No), depending on the set principle of operation, the switching relay returns to its initial state and the flashing ends when the hysteresis threshold is reached.

If manual RESET is selected in the menu (Memory = Yes), the switching relay remains in its current switching state and the current measured value and the symbol for undershooting and overshooting continues to flash, even when the measured variable reaches a permissible value again. This stored fault status can be reset by simultaneously pressing the UP▲ or DOWN▼ key for 2.5 seconds.

With manual RESET through IO-Link it is possible in addition to set whether error signals are to be deleted when the control supply voltage is switched off and on (as remote RESET) or whether the signals are to be permanently saved even in a voltage failure, with confirmation possible only through local RESET or via IO-Link.

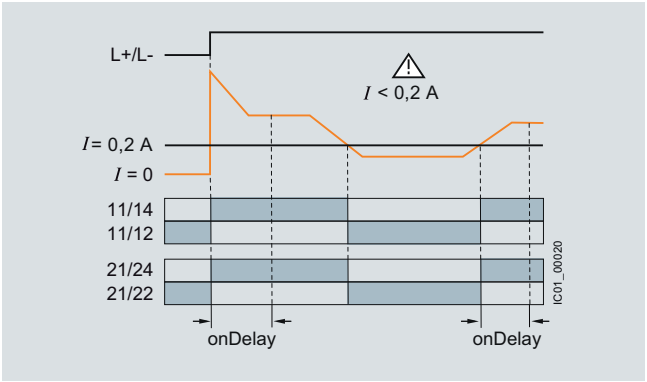
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Power factor and active current monitoring

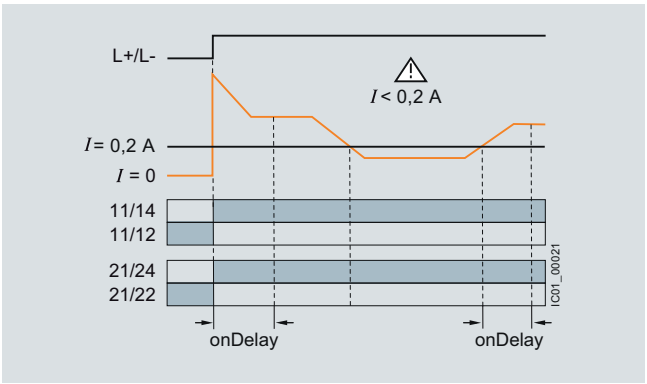
With the closed-circuit principle selected

Response in the event of undershooting the measurement range limit

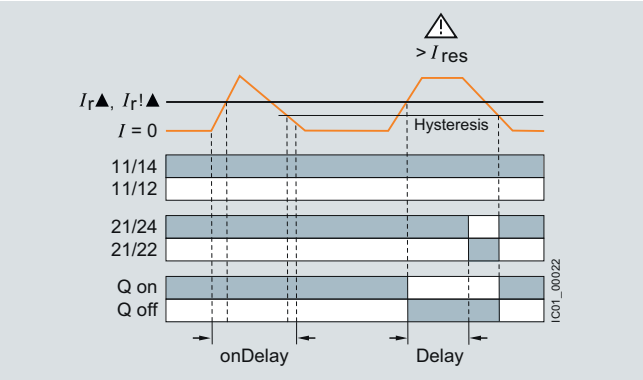
- With activated monitoring of I_{res}▼



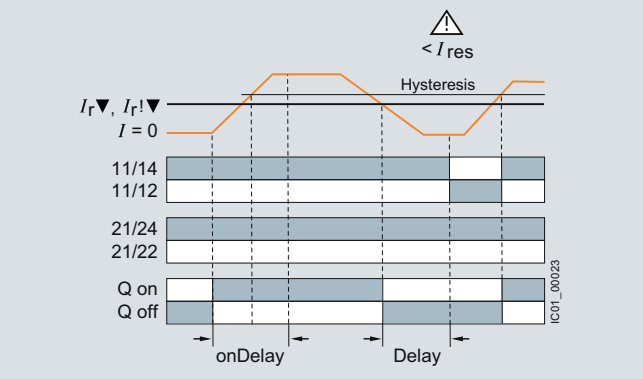
- With deactivated monitoring of active current undershooting



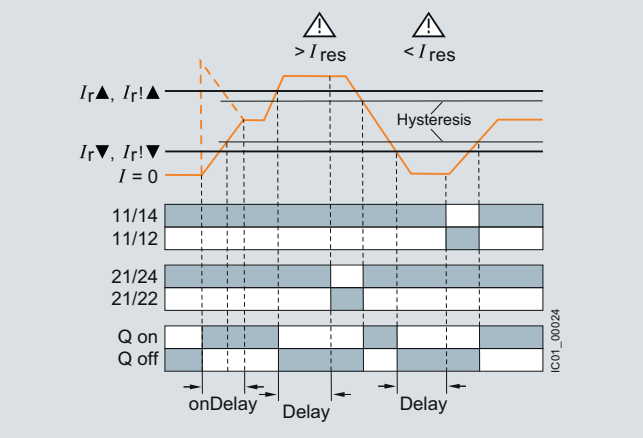
Overshooting of active current



Undershooting of active current



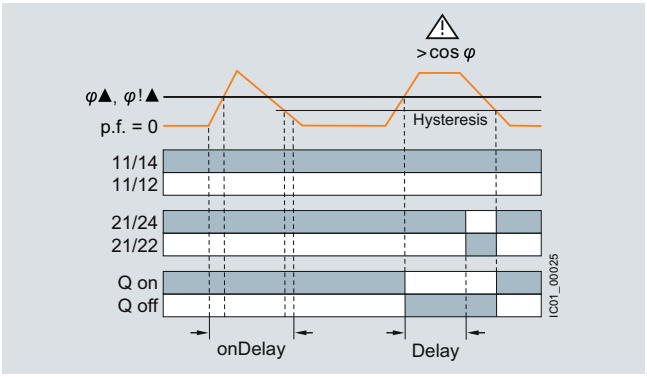
Range monitoring of active current



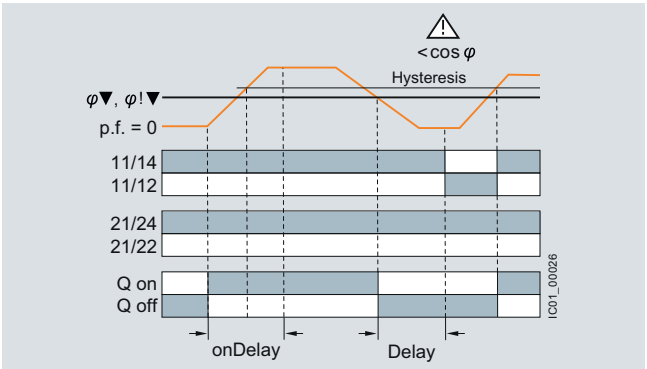
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With the closed-circuit principle selected

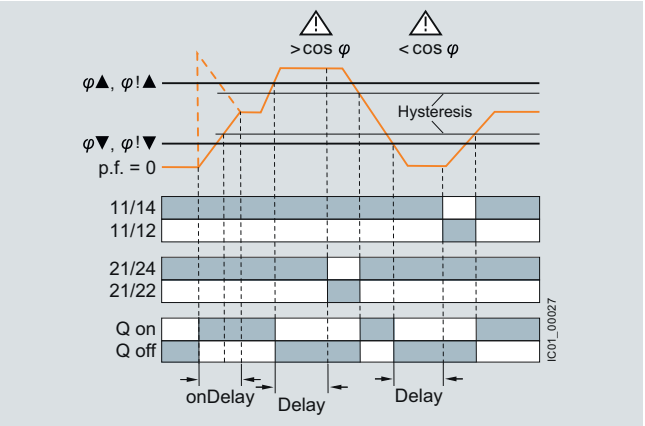
Overshooting of power factor



Undershooting of power factor



Range monitoring of power factor

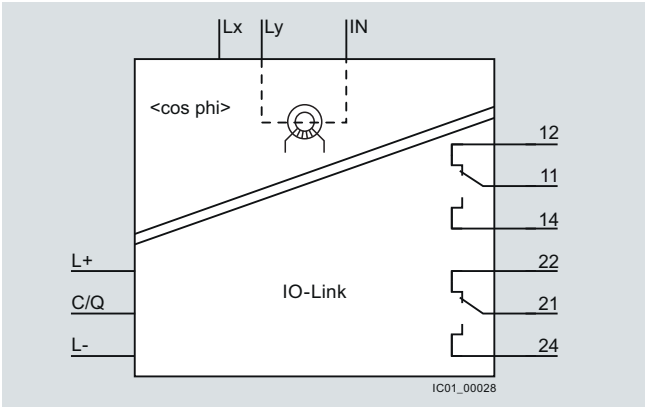


Legend

p.f.: power factor

Type		3UG48 41
General technical specifications		
Rated insulation voltage U_i Pollution degree 2 Overvoltage category III acc. to VDE 0110	V	690
Rated impulse withstand voltage U_{imp}	kV	6
Control circuit		
Number of CO contacts for auxiliary contacts		2
Load capacity of the output relay • Conventional thermal current I_{th}	A	5
Rated operational current I_e at • AC-15/24 ... 400 V • DC-13 at - 24 V - 125 V - 250 V	 A A A A	 3 1 0.2 0.1
Minimum contact load at 17 V DC	mA	5

Circuit diagrams



3UG48 41

Note:

It is not necessary to protect the measuring circuit for device protection. The protective device for line protection depends on the cross-section used.

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SIRIUS 3UG48 Monitoring Relays for Stand-Alone Installation for IO-Link

Power factor and active current monitoring

Selection and ordering data

- For monitoring the power factor and the active current I_{res} (p.f. x I)
- Suitable for single- and three-phase currents
- Adjustable via IO-Link and locally, with illuminated LCD
- Power supply with 24 V DC via IO-Link or external auxiliary voltage
- Overshoot, undershoot or range monitoring adjustable
- Upper and lower limit values can be adjusted separately
- Permanent display of actual value and tripping state
- 1 CO contact each for undershoot and overshoot, 1 semiconductor output (in SIO mode)

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H



3UG48 41-1CA40



3UG48 41-2CA40

Measuring range		Voltage range of the measuring voltage[1]	Hysteresis		ON-delay time adjustable onDel	Tripping delay time separately adjustable U▲Del/ U▼Del, φ▲Del/ φ▼Del	DT	Screw terminals	DT	Spring-type terminals
For power factor	For active current I_{res}	50/60 Hz AC	Adjustable for power factor	Adjustable for active current I_{res}				Order No. / Price per PU		Order No. / Price per PU
P.f.	A	V	P.f.	A	s	s				
Monitoring of power factor and active current for overshooting and undershooting										
0.1 ... 0.99	0.2 ... 10	90 ... 690	0.1 ... 0.2	0.1 ... 3	0 ... 999.9	0 ... 999.9	A	**3UG48 41-1CA40**	B	**3UG48 41-2CA40**

[1] Absolute limit values.

Accessories see page 10/122.

For AC active currents I_{res} >10 A it is possible to use commercially available current transformers, e.g. the Siemens 4NC current transformer, as accessories, see Catalog LV 10.1, Chapter 2.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



SIRIUS 3UG48 51 monitoring relay

3UG48 51 monitoring relays are used together with a sensor to monitor drives for overspeed and/or underspeed.

Furthermore, the relays are ideal for all functions where a continuous pulse signal needs to be monitored (e.g. belt travel monitoring, completeness monitoring, passing monitoring, clock-time monitoring).

Benefits

- Variably adjustable to overshoot, undershoot or range monitoring
- Freely configurable delay times and RESET response
- Display and transmission of actual value and fault type to controller
- Use of up to 10 sensors per revolution on motors rotating extremely slowly
- 2- or 3-wire sensors and sensors with a mechanical switching output or solid-state-output can be connected
- Auxiliary voltage for sensor integrated
- All versions with removable terminals
- All versions with screw or spring-type terminals

Application

- Slip or tear of a belt drive
- Overload monitoring
- Transport monitoring for completeness

Technical specifications

3UG48 51 monitoring relays

The speed monitoring relay operates according to the principle of period duration measurement.

In the monitoring relay, the time between two successive rising edges of the pulse encoder is measured and compared to the minimum and/or maximum permissible period duration calculated from the set limit values for the speed.

Thus, the period duration measurement recognizes any deviation in speed after just two pulses, even at very low speeds or in the case of extended pulse gaps.

By using up to ten pulse encoders evenly distributed around the circumference, it is possible to shorten the period duration, and in turn the response time. By taking into account the number of sensors in the monitoring relay, the speed continues to be indicated in rpm.

ON-delay time for motor start

To be able to start a motor drive, and depending on whether the open-circuit or closed-circuit principle is selected, the output relay switches to the GO state during the ON-delay time, even if the speed is still below the set value.

The ON-delay time is started by either switching on the auxiliary voltage or, if the auxiliary voltage is already applied, by actuating the respective NC contact (e.g. auxiliary contact).

Speed monitoring with Auto-RESET (Memory = no)

If the device is set to Auto-RESET, the output relay switches to the GO state, once the adjustable hysteresis threshold is reached in the range of 1 ... 99.9 rpm and the flashing stops. Any overshoots or undershoots are therefore not stored.

Speed monitoring with Manual RESET (Memory = yes)

If Manual RESET is selected in the menu, the output relay remains in its current switching state and the current measured value and the symbol for overshooting/undershooting continues to flash, even when the speed returns to a permissible value. This stored fault status can be reset by simultaneously pressing the UP▲ or DOWN▼ key for > 2.5 seconds or by connecting the RESET device terminal to 24 V DC.

With manual RESET through IO-Link it is possible in addition to set whether error signals are to be deleted when the control supply voltage is switched off and on (as remote RESET) or whether the signals are to be permanently saved even in a voltage failure, with confirmation possible only through local RESET or via IO-Link.

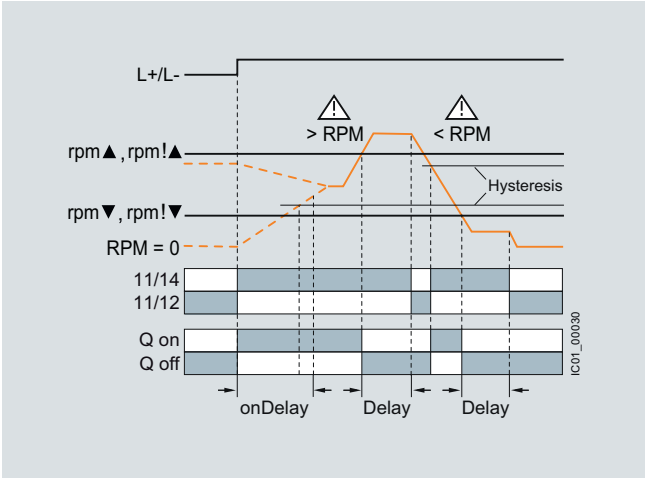
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SIRIUS 3UG48 Monitoring Relays for Stand-Alone Installation for IO-Link

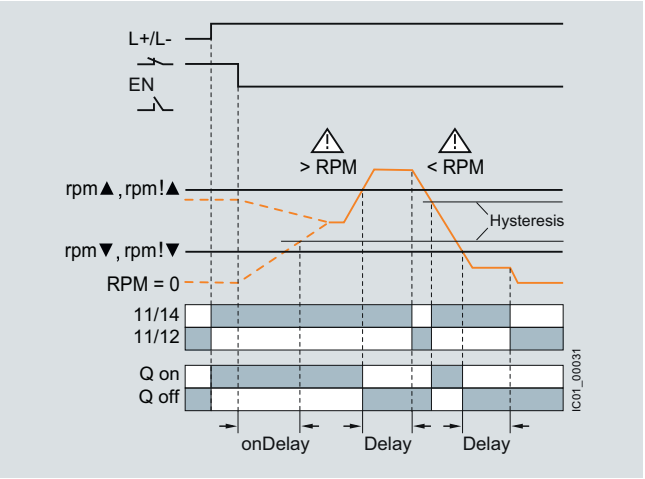
Speed monitoring

With the closed-circuit principle selected

Range monitoring without enable input

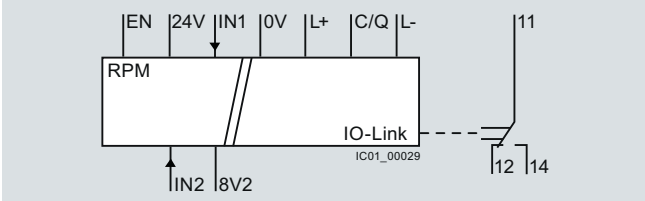


Range monitoring with enable input



Type		3UG48 51
General technical specifications		
Rated insulation voltage U_i Pollution degree 2 Overvoltage category III acc. to VDE 0110	V	300
Rated impulse withstand voltage U_{imp}	kV	4
Measuring circuit		
Sensor supply		
• For three-wire sensor (24 V/0 V)	mA	max. 50
• For 2-wire NAMUR sensor (8V2)	mA	max. 8.2
Signal input		
• IN1	kΩ	16, three-wire sensor, pnp operation
• IN2	kΩ	1, floating contact, 2-wire NAMUR sensor
Voltage level		
• For level 1 at IN1	V	4.5 ... 30
• For level 0 at IN1	V	0 ... 1
Current level		
• For level 1 at IN2	mA	> 2.1
• For level 0 at IN2	mA	< 1.2
Minimum pulse duration of signal	ms	5
Minimum interval between 2 pulses	ms	5
Control circuit		
Number of CO contacts for auxiliary contacts		1
Load capacity of the output relay Conventional thermal current I_{th}	A	5
Rated operational current I_e at		
• AC-15/24 ... 400 V	A	3
• DC-13 at		
- 24 V	A	1
- 125 V	A	0.2
- 250 V	A	0.1
Minimum contact load at 17 V DC	mA	5

Circuit diagrams



3UG48 51

Note:

It is not necessary to protect the measuring circuit for device protection. The protective device for line protection depends on the cross-section used.

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Selection and ordering data

- For speed monitoring in revolutions per minute (rpm)
- Two- or three-wire sensor with mechanical or electronic switching output can be connected
- Two-wire NAMUR sensor can be connected
- Sensor supply 24 V DC/50 mA integrated
- Input frequency 0.1 to 2 200 pulses per minute (0.0017 to 36.7 Hz)
- With or without enable signal for the drive to be monitored
- Adjustable via IO-Link and locally, with illuminated LCD
- Power supply with 24 V DC via IO-Link or external auxiliary voltage
- Overshoot, undershoot or range monitoring adjustable
- Number of pulses per revolution can be adjusted
- Upper and lower limit values can be adjusted separately
- Auto, manual or remote RESET options after tripping
- Permanent display of actual value and tripping state
- 1 CO contact, 1 semiconductor output (in SIO mode)

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H



3UG48 51-1AA40



3UG48 51-2AA40

Measuring range	Adjustable hysteresis	ON-delay time adjustable onDel	Tripping delay time separately adjustable rpm▲Del/ rpm▼Del	Pulses per revolution	DT	Screw terminals		DT	Spring-type terminals	
						Order No.	Price per PU		Order No.	Price per PU
rpm	rpm	s	s							
Speed monitoring for overshooting and undershooting										
0.1 ... 2 200	OFF 1 ... 99.9	0 ... 999.9	0 ... 999.9	1 ... 10	A	**3UG48 51-1AA40**		A	**3UG48 51-2AA40**	

Accessories see page 10/122.

Matching sensors see Catalog ID 10 "Sensors for Production Automation".

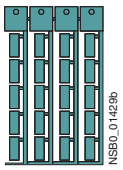
10

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Accessories

Selection and ordering data

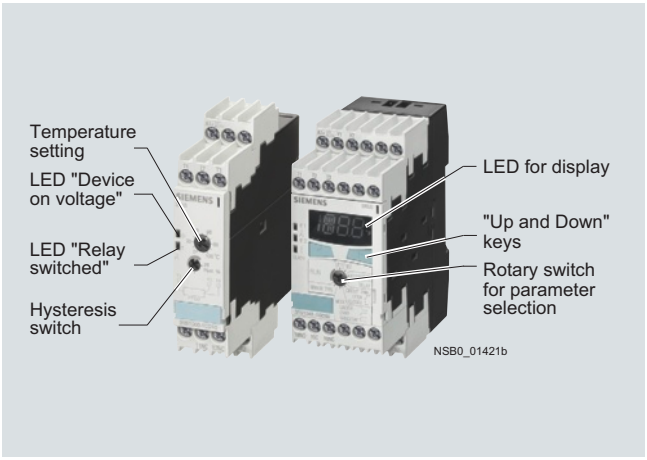
	Use	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Blank labels								
 3RT19 00-1SB20	For 3UG48	**Unit labeling plates** For SIRIUS devices						
		20 mm x 7 mm, pastel turquoise[1)]	D	**3RT19 00-1SB20**		100	340 units	41B
	For 3UG48	**Inscription labels for sticking** For SIRIUS devices						
		19 mm x 6 mm, pastel turquoise	C	**3RT19 00-1SB60**		100	3 060 units	41B
		19 mm x 6 mm zinc yellow	C	**3RT19 00-1SD60**		100	3 060 units	41B
Push-in lugs and covers								
 3RP19 03	For 3UG48	**Push-in lugs** For screw fixing, 2 units are required for each device	B	**3RP19 03**		1	10 units	41H
 3RP19 02	For 3UG48	**Sealable covers** For securing against unauthorized adjustment of setting knobs	B	**3RP19 02**		1	5 units	41H
Tools for opening spring-type terminals								
 3RA29 08-1A	For auxiliary circuit connections	**Screwdrivers** For all SIRIUS devices with spring-type terminals		**Spring-type terminals**				
		3.0 mm x 0.5 mm, length approx. 200 mm, titanium gray/black, partially insulated	A	**3RA29 08-1A**		1	1 unit	41B
Manuals								
	For 3UG48	**Manuals for 3UG48 monitoring relays for IO-Link**						
		German	C	**3ZX1 012-0UG48-0AB1**		1	1 unit	401
		English	C	**3ZX1 012-0UG48-0AC1**		1	1 unit	401

1) PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH
(see Chapter 16, "Appendix" → "External Partners") .

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



SIRIUS 3RS temperature monitoring relay

The 3RS10, 3RS11, 3RS20 and 3RS21 temperature monitoring relays can be used for measuring temperatures in solid, liquid and gas media. The temperatures are acquired by means of sensors in the medium, evaluated by the device and monitored for overshoot, undershoot or location within a specified range (window function).

The range comprises adjustable analog units with one or two threshold values, digital units for 1 sensor, which are also a good alternative to temperature controllers for the low-end range, and digital units for up to 3 sensors which have been optimized for monitoring large motors.

Order No. scheme

Digit of the Order No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th
	□□□	□	□	□	□	–	□	□	□	□	□
Temperature monitoring relays	**3 R S**										
Device type		□	□								
Version and type of sensor				□	□						
Connection methods							□				
Number and type of outputs								□			
Control supply voltage									□		
Measuring range										□	
Special versions											□
Example	**3 R S**	**1**	**0**	**0**	**0**	**–**	**1**	**C**	**D**	**0**	**0**

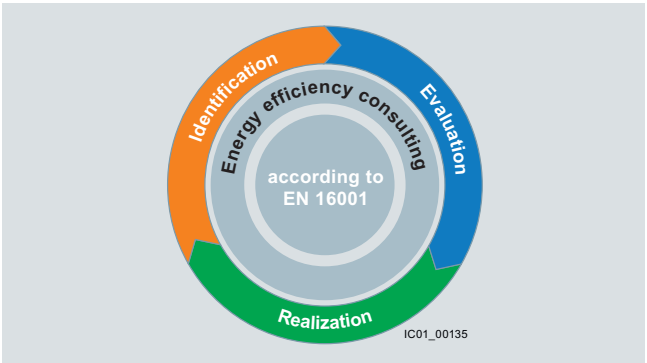
Note:

The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quoted in the catalog in the Selection and ordering data.

Benefits

Advantages through energy efficiency



Overview of the energy management process

We offer you a unique portfolio for industrial energy management, using an energy management system that helps to optimally define your energy needs. We split up our industrial energy management into three phases – Identification, Evaluation and Realization – and we support you with the appropriate hardware and software solutions in every process phase.

The innovative products of the SIRIUS industrial controls portfolio can also make a substantial contribution to a plant's energy efficiency (www.siemens.com/sirius/energysaving).

The 3RS10, 3RS11, 3RS20 and 3RS21 temperature monitoring relays make the following contribution to the energy efficiency of the plant as a whole:

- Demand-based control of heating and ventilation in the process and in the control cabinet

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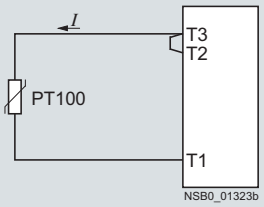
General data

Technical specifications

Connection of resistance-type thermometers

Two-wire measurement

When two-wire temperature sensors are used, the resistances of the sensor and wiring are added. The resulting systematic error must be taken into account when the signal evaluation unit is calibrated. A jumper must be clamped between terminals T2 and T3 for this purpose.



Wiring errors

The errors that are generated by the wiring comprise approximately 2.5 Kelvin/Ω. If the resistance of the cable is not known and cannot be measured, the wiring errors can also be estimated using the following table.

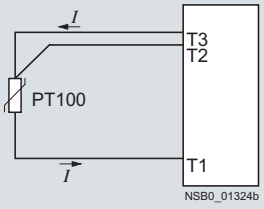
Temperature drift dependent on the length and cross-section of the cable with PT100 sensors and an ambient temperature of 20 °C, in K:

Cable length in m	Cross-section mm²			
	0.5	0.75	1	1.5
	Temperature drift in K:			
0	0	0	0	0
10	1.8	1.2	0.9	0.6
25	4.5	3.0	2.3	1.5
50	9.0	6.0	4.5	3.0
75	13.6	9.0	6.8	4.5
100	18.1	12.1	9.0	6.0
200	36.3	24.2	18.1	12.1
500	91.6	60.8	45.5	30.2

Example: On a PT100 sensor with a cable length of 10 m and a conductor cross-section of 1 mm^2 the temperature drift equals 0.9 K.

Three-wire measurement

To minimize the effects of the line resistances, a three-wire circuit is often used. Using the additional cable, two measuring circuits can be formed of which one is used as a reference. The signal evaluation unit can then automatically calculate the line resistance and take it into account.



Connection of thermoelements

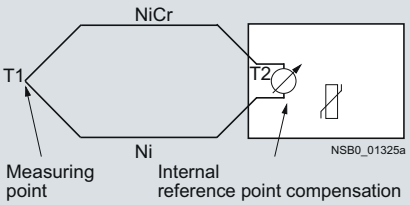
Based on the thermo-electrical effect, a differential temperature measurement will be performed between the measuring point and the signal evaluation unit.

This principle assumes that the signal evaluation unit knows the temperature at the clamping point (T2). For this reason, the 3RS11 temperature monitoring relay has an integral compensator that determines this comparison temperature and builds it into the result of the measurement. The thermal sensors and cables must be insulated therefore.

The absolute temperature is therefore calculated from the ambient temperature of the signal evaluation unit and the temperature difference measured by the thermoelement.

Temperature detection is therefore possible (T1) without needing to know the precise ambient temperature of the clamping point at the signal evaluation unit (T2).

The connecting cable is only permitted to be extended using connecting leads that are made from the same material as the thermoelement. If a different type of conductor is used, an error will result in the measurement.



More information is available on the Internet at:

www.feldgeraete.de/76/produkte/fuw.html

www.ephy-mess.de

or from

EPHY-MESS GmbH, see Chapter 16 "Appendix" ➞ "External Partners"

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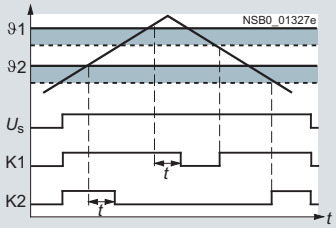
Principle of operation

Once the temperature has reached the set threshold value ϑ1, the output relay K1 changes its switching state as soon as the set time *t* has elapsed (K2 responds in the same manner to ϑ2). The delay time can only be adjusted with digital units (on analog units *t* = 0).

The relays return to their original state as soon as the temperature reaches the set hysteresis value.

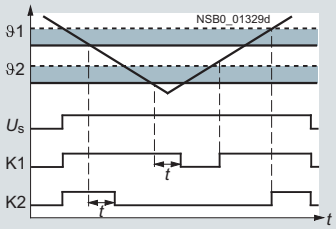
Temperature overshoot

Closed-circuit principle



Temperature undershoot

Closed-circuit principle

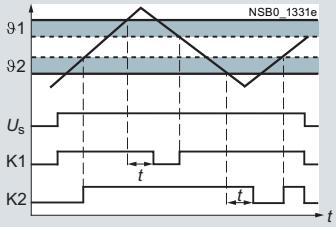


Range monitoring (digital units only)

Once the temperature has reached the upper threshold value ϑ1, the output relay K1 changes its switching state as soon as the set time *t* has elapsed. The relay returns to its original state as soon as the temperature reaches the set hysteresis value.

K2 responds in the same manner to the lower threshold value of ϑ2.

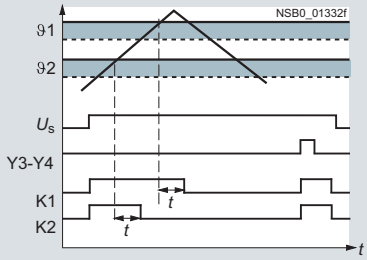
Closed-circuit principle



Principle of operation with memory function (3RS10 42, 3RS11 42) based on the example of temperature overshoot

Once the temperature has reached the set threshold value ϑ1, the output relay K1 changes its switching state as soon as the set time t has elapsed (K2 responds in the same manner to ϑ2). The relays only return to the original state when the temperature falls below the set hysteresis value and when terminals Y3 and Y4 have been briefly jumpered.

Closed-circuit principle

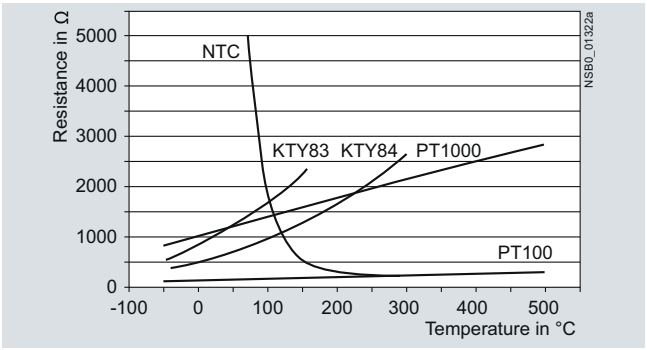


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General data

Characteristic curves

For resistance sensors



The short-circuit and open-circuit detection as well as the measuring range is limited, depending on the sensor type.

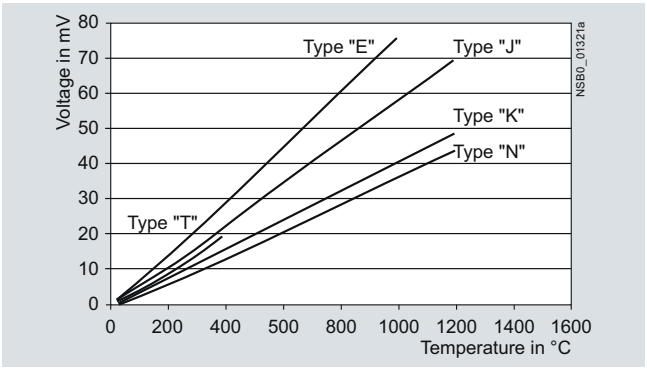
Measuring ranges in °C for resistance sensors

Sensor type	Short circuit	Open circuit	3RS10 40/ 3RS10 41 Measuring range in °C	3RS10 42 Measuring range in °C
PT100	✓	✓	–50 ... +500	–50 ... +750
PT1000	✓	✓	–50 ... +500	–50 ... +500
KTY83-110	✓	✓	–50 ... +175	–50 ... +175
KTY84	✓	✓	–40 ... +300	–40 ... +300
NTC[1)]	✓	--	80 ... 160	80 ... 160

✓ Detection possible
-- Detection not possible

[1)] NTC type: B57227-K333-A1 (100 °C: 1.8 kΩ; 25 °C: 32.762 kΩ).

For thermoelements

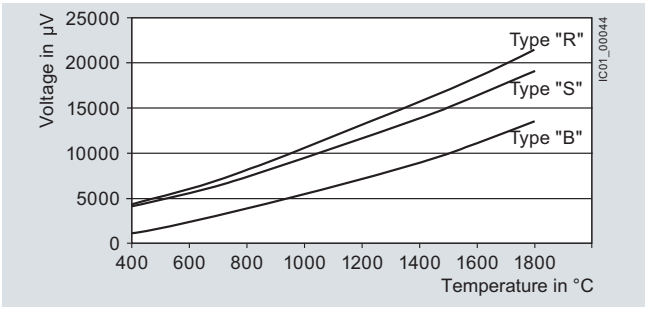


Characteristic curves for sensor types J, K, T, E, N

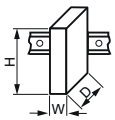
Measuring range in °C for thermoelements

Sensor type	Short circuit	Open circuit	3RS11 40 Measuring range in °C	3RS11 42 Measuring range in °C
J	--	✓	-99 ... +999	-99 ... +1200
K	--	✓	-99 ... +999	-99 ... +1350
T	--	✓	-99 ... +400	-99 ... +400
E	--	✓	-99 ... +999	-99 ... +999
N	--	✓	-99 ... +999	-99 ... +999
S	--	✓	--	0 ... 1 750
R	--	✓	--	0 ... 1 750
B	--	✓	--	400 ... 1 800

✓ Detection possible
-- Detection not possible



Characteristic curves for sensor types S, R and B

Type			3RS10, 3RS11 analog	3RS10, 3RS11, 3RS20, 3RS21 digital
Dimensions (W x H x D)				
• Screw terminals		mm	22.5 x 102 x 91	45 x 106 x 91
• Spring-type terminals		mm	22.5 x 103 x 91	45 x 108 x 91
Permissible ambient temperature				
• During operation		°C	-25 ... +60	
Connection type			**Screw terminals**	
• Terminal screw			M3 (for standard screwdriver, size 2 and Pozidriv 2)	
• Solid		mm^2	1 x (0.5 ... 4)/2 x (0.5 ... 2.5)	
• Finely stranded with end sleeve		mm^2	1 x (0.5 ... 2.5)/2 x (0.5 ... 1.5)	
• AWG cables, solid or stranded		AWG	2 x (20 ... 14)	
Connection type			**Spring-type terminals**	
• Solid		mm^2	2 x (0.25 ... 1.5)	
• Finely stranded, with end sleeves acc. to DIN 46228		mm^2	2 x (0.25 ... 1.5)	
• Finely stranded		mm^2	2 x (0.25 ... 1.5)	
• AWG cables, solid or stranded		AWG	2 x (24 ... 16)	

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Overview



SIRIUS 3RS analog temperature monitoring relays for 1 sensor

The 3RS10, 3RS11 analog temperature monitoring relays can be used for measuring temperatures in solid, liquid and gas media. The temperature is detected by the sensors in the medium, evaluated by the device and monitored for overshoot or undershoot. When the threshold values are reached, the output relay switches on or off depending on the parameterization.

Benefits

- All devices except for 24 V AC/DC feature electrical separation
- Extremely easy operation using a rotary potentiometer
- Adjustable hysteresis
- Adjustable working principle for devices with 2 threshold values
- All versions with removable terminals
- All versions with screw terminals, many versions alternatively with spring-type terminals

Application

The analogically adjustable SIRIUS 3RS10, 3RS11 temperature monitoring relays can be used in almost any application in which temperature overshoot or undershoot is not permitted, e.g. in the monitoring of set temperature limits and the output of alarm messages for:

- Motor and system protection
- Control cabinet temperature monitoring
- Freeze monitoring
- Temperature limits for process variables e.g. in the packaging industry or electroplating
- Controlling equipment and machines such as heating, climate and ventilation systems, solar collectors, heat pumps or warm water supplies
- Motor, bearing and gear oil monitoring
- Monitoring of coolants

Technical specifications

Type		3RS10 00, 3RS10 10	3RS11 00, 3RS11 01	3RS10 20, 3RS10 30	3RS11 20, 3RS11 21
Auxiliary circuit					
Rated operational currents I_e					
• AC-15/24 ... 250 V	A	3			
• DC-13 at					
- 24 V	A	1			
- 125 V	A	0.2			
- 240 V	A	0.1			
Measuring accuracy at 20 °C ambient temperature (T20)		Typically < ±5 % from upper limit of scale			
Reference point accuracy		--	<±5 K	--	<±5 K
Deviations due to ambient temperature In % of the measuring range		< 2	< 3	< 2	< 3
Hysteresis settings					
• for temperature 1		2 ... 20 % from upper limit of scale			
• for temperature 2		5 % from upper limit of scale			
Sensor circuit					
Typical sensor circuits					
• PT100	mA	Typically 1	--	Typically 1	--
Open-circuit detection		No			
Short-circuit detection		No			
Three-wire conductor connection[1)]		Yes	--	Yes	--
Enclosure					
Rated insulation voltage U_i (pollution degree 3)	V	300			

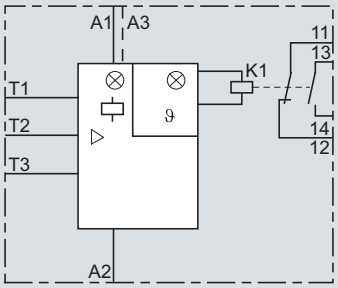
1) Two-wire connection of resistance sensors with wire jumper between T2 and T3.

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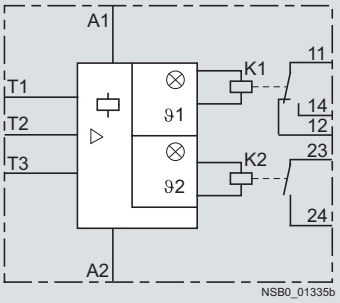
Relays, analogically adjustable for 1 sensor

Circuit examples

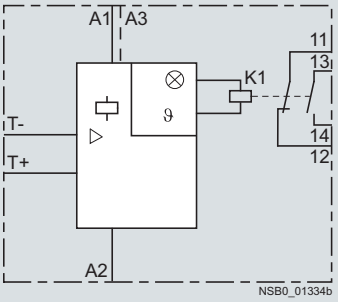
3RS10 00, 3RS10 10



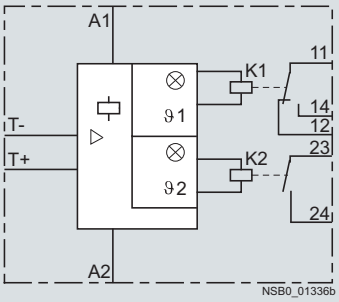
3RS10 20, 3RS10 30



3RS11 00, 3RS11 01



3RS11 20, 3RS11 21



Legend
A1 = 24 V AC/DC, 230 V AC, 24 to 240 V AC/DC
A3 = 110 V AC
A2= M
K1, K2 = Output relays
= LED: "Device connected to voltage"

ϑ1 = LED: "Relay 1 tripped"
ϑ2 = LED: "Relay 2 tripped"
T1 to T3 = Sensor connection for resistance sensor
T+/T- = Sensor connection for thermoelements

⚠ *Important!*

When resistance sensors with two-wire connection are used, T2 and T3 must be jumpered.

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Selection and ordering data

- For temperature monitoring with resistance sensors or thermoelements
- Temperature range -55 °C to +1 000 °C, depending on the sensor type
- Wide-range voltage versions are electrically separated.
- Analog adjustable, setting accuracy ±5 %
- Versions with 2 separately adjustable threshold values and adjustable open/closed-circuit principle
- Hysteresis for threshold value 1 is adjustable (2 to 20 %), hysteresis for threshold 2 is non-adjustable (5 %)
- 1 NC + 1 NO for versions with one threshold value
- 1 CO for threshold value 1 and 1 NO for threshold value 2

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H

	Sensors	Function	Measuring range °C	Rated control supply voltage U_s AC 50/60 Hz V	DT	Screw terminals Order No.	Price per PU	DT	Spring-type terminals Order No.	Price per PU
Analogically adjustable, 1 threshold value, width 22.5 mm; closed-circuit principle; without memory; 1 NO + 1 NC										
 3RS10 00-1CD10	PT100 (resistance sensor)	Overshoot	- 50 … + 50	24 AC/DC	C	**3RS10 00-1CD00**		C	**3RS10 00-2CD00**	
				110 / 230 AC	A	**3RS10 00-1CK00**		C	**3RS10 00-2CK00**	
			0 … + 100	24 AC/DC	C	**3RS10 00-1CD10**		C	**3RS10 00-2CD10**	
				110 / 230 AC	A	**3RS10 00-1CK10**		C	**3RS10 00-2CK10**	
			0 … + 200	24 AC/DC	C	**3RS10 00-1CD20**		C	**3RS10 00-2CD20**	
				110 / 230 AC	A	**3RS10 00-1CK20**		C	**3RS10 00-2CK20**	
		Under-shoot	- 50 … + 50	24 AC/DC	C	**3RS10 10-1CD00**			--	
				110 / 230 AC	A	**3RS10 10-1CK00**			--	
			0 … + 100	24 AC/DC	C	**3RS10 10-1CD10**			--	
				110 / 230 AC	C	**3RS10 10-1CK10**			--	
			0 … + 200	24 AC/DC	C	**3RS10 10-1CD20**			--	
				110 / 230 AC	C	**3RS10 10-1CK20**			--	
 3RS10 00-2CD10	Type J (thermo-element)	Overshoot	0 … + 200	24 AC/DC	A	**3RS11 00-1CD20**		C	**3RS11 00-2CD20**	
				110 / 230 AC	C	**3RS11 00-1CK20**			--	
			0 … + 600	24 AC/DC	C	**3RS11 00-1CD30**			--	
				110 / 230 AC	C	**3RS11 00-1CK30**			--	
	Type K (thermo-element)	Overshoot	0 … + 200	24 AC/DC	C	**3RS11 01-1CD20**			--	
				110 / 230 AC	C	**3RS11 01-1CK20**			--	
			0 … + 600	24 AC/DC	C	**3RS11 01-1CD30**			--	
				110 / 230 AC	C	**3RS11 01-1CK30**			--	
			+ 500 … + 1 000	24 AC/DC	C	**3RS11 01-1CD40**			--	
				110 / 230 AC	C	**3RS11 01-1CK40**			--	
Analogically adjustable for warning and disconnection (2 threshold values), 22.5 mm width, open/closed-circuit principle switchable; without memory; 1 NO + 1 CO										
 3RS10 20-1DD00	PT100 (resistance sensor)	Overshoot	- 50 … + 50	24 AC/DC	C	**3RS10 20-1DD00**			--	
				24 … 240 AC/DC	C	**3RS10 20-1DW00**			--	
			0 … + 100	24 AC/DC	C	**3RS10 20-1DD10**			--	
				24 … 240 AC/DC	C	**3RS10 20-1DW10**			--	
			0 … + 200	24 AC/DC	C	**3RS10 20-1DD20**			--	
				24 … 240 AC/DC	A	**3RS10 20-1DW20**		C	**3RS10 20-2DW20**	
		Under-shoot	-50 … + 50	24 AC/DC	C	**3RS10 30-1DD00**			--	
				24 … 240 AC/DC	C	**3RS10 30-1DW00**			--	
			0 … + 100	24 AC/DC	C	**3RS10 30-1DD10**			--	
				24 … 240 AC/DC	C	**3RS10 30-1DW10**			--	
			0 … + 200	24 AC/DC	C	**3RS10 30-1DD20**		C	**3RS10 30-2DD20**	
				24 … 240 AC/DC	C	**3RS10 30-1DW20**			--	
 3RS11 20-2DD20	Type J (thermo-element)	Overshoot	0 … + 200	24 AC/DC	C	**3RS11 20-1DD20**		C	**3RS11 20-2DD20**	
				24 … 240 AC/DC	C	**3RS11 20-1DW20**			--	
			0 … + 600	24 AC/DC	C	**3RS11 20-1DD30**			--	
				24 … 240 AC/DC	C	**3RS11 20-1DW30**			--	
	Type K (thermo-element)	Overshoot	0 … + 200	24 … 240 AC/DC	C	**3RS11 21-1DW20**			--	
			0 … + 600	24 … 240 AC/DC	C	**3RS11 21-1DW30**			--	
			+ 500 … + 1 000	24 AC/DC	C	**3RS11 21-1DD40**			--	

Accessories see page 10/135.

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SIRIUS 3RS10, 3RS11, 3RS20, 3RS21 Temperature Monitoring Relays

Relays, digitally adjustable for 1 sensor

Overview



SIRIUS 3RS digital temperature monitoring relays for 1 sensor

The 3RS10, 3RS11, 3RS20 and 3RS21 temperature monitoring relays can be used for measuring temperatures in solid, liquid and gas media. The temperatures are acquired by means of sensors in the medium, evaluated by the device and monitored for overshoot, undershoot or location within a specified range (window function). The 3RS10 and 3RS11 unit indicate the measured temperature in degrees Celsius, the 3RS20 and 3RS21 unit in degrees Fahrenheit.

The units are also an excellent alternative to temperature controllers in the low-end performance range (two-or three-point control).

Benefits

- Very simple operation without complicated menu selections
- Two- or three-point control can be parameterized quickly
- All versions with removable terminals
- All versions with screw terminals or spring-type terminals

Application

The temperature monitoring relays can be used in almost any application in which temperature overshoot or undershoot is not permitted, e.g. in the monitoring of set temperature limits and the output of alarm messages for:

- Plant and environment protection
- Temperature limits for process variables e.g. in the packaging industry or electroplating
- Temperature limits for district heating plants
- Exhaust temperature monitoring
- Controlling equipment and machines such as heating, climate and ventilation systems, solar collectors, heat pumps or warm water supplies
- Motor, bearing and gear oil monitoring
- Monitoring of coolants

Technical specifications

Type		3RS10 40, 3RS10 42, 3RS20 40	3RS11 40, 3RS21 40	3RS11 42
Auxiliary circuit				
Rated operational currents I_e				
• AC-15/24 ... 250 V	A	3		
• DC-13 at:				
- 24 V	A	1		
- 125 V	A	0.2		
- 240 V	A	0.1		
Releases				
Measuring accuracy at 20 °C ambient temperature (T20)		< ± 2 K, ± 1 digit	< ± 5 K, ± 1 digit	< ± 7 K, ± 1 digit
Reference point accuracy		--	< ± 5 K	
Deviations due to ambient temperature In % of measuring range	%	0.05 °C per K deviation from T20		
Measuring cycle	ms	500		
Hysteresis settings for temperature		1 ... 99 K, for both values		
Adjustable delay time	s	0 ... 999		
Sensor circuit				
Typical sensor circuits				
• PT100	mA	Typically 1	--	--
• PT1000/KTY83/KTY84/NTC	mA	Typically 0.2	--	--
Open-circuit detection		Yes[1]	Yes	Yes
Short-circuit detection		Yes	No	No
Three-wire conductor connection		Yes[2]	--	--
Enclosure				
Rated insulation voltage U_i (pollution degree 3)	V AC	300		

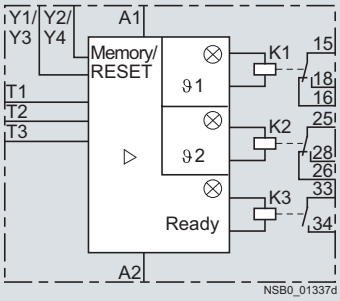
[1] Not for NTC type B57227-K333-A1 (100 °C: 1.8 kΩ; 25 °C: 32.762 kΩ).

[2] Two-wire connection of resistance sensors with wire jumper between T2 and T3.

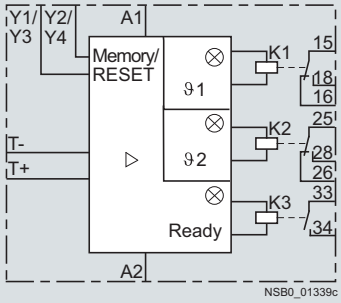
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Circuit examples

3RS10 40, 3RS10 42, 3RS20 40



3RS11 40, 3RS11 42, 3RS21 40



Legend

A1, A2, A3 = Terminals for rated control supply voltage

K1, K2, K3 = Output relays

ϑ1 = LED: "Relay 1 tripped"

ϑ2 = LED: "Relay 2 tripped"

Ready = LED: "Device is ready for operation"

T1 to T3 = Sensor connection for resistance sensor

T+/T- = Sensor connection for thermoelements

Y1/Y2 = Connection for memory jumper for 3RS10 40, 3RS11 40, 3RS20 40, 3RS21 40

Y3/Y4 = RESET input for 3RS10 42, 3RS11 42

⚠ *Important!*

When resistance sensors with two-wire connection are used, T2 and T3 must be jumpered.

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Relays, digitally adjustable for 1 sensor

Selection and ordering data

- For temperature monitoring with resistance sensors or thermoelements
- Temperature range dependent on sensor type
  - for 3RS10, 3RS11: -99 to +1 800 °C
  - for 3RS20, 3RS21: -99 to +1 830 °F
- Wide-range voltage versions are electrically separated.
- Non-volatile
- Short-circuit and open-circuit detection in sensor circuit
- Digital adjustable, with illuminated LC display
- Overshoot, undershoot or range monitoring adjustable
- Exact sensor type can be set
- 2 separately adjustable threshold values
- 1 hysteresis applies to both thresholds (0 to 99 K)
- 1 delay time applies to both thresholds (0 to 999 s)
- Adjustable open/closed-circuit principle
- Adjustable manual/remote RESET
- Permanent display of actual value in °C or °F and tripping state
- 1 CO contact each per threshold value
- 1 NO for sensor monitoring

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H

	Sensors	Measuring range (measuring range limit depends on the sensor)	Rated control supply voltage U_s AC 50/60 Hz	DT	Screw terminals	DT	Spring-type terminals
			V		Order No. / Price per PU		Order No. / Price per PU
Temperature monitoring relay, digitally adjustable, 2 threshold values, width 45 mm, 1 CO + 1 CO + 1 NO, memory function possible with external jumper, device parameters are non-volatile							
	PT100/1000; KTY83/84; NTC (resistance sensors)[1]	- 50 … + 500 °C	24 AC/DC	A	**3RS10 40-1GD50**	A	**3RS10 40-2GD50**
			24 … 240 AC/DC	A	**3RS10 40-1GW50**	A	**3RS10 40-2GW50**
		- 58 … + 932 °F	24 AC/DC	C	**3RS20 40-1GD50**	C	**3RS20 40-2GD50**
			24 … 240 AC/DC	C	**3RS20 40-1GW50**	C	**3RS20 40-2GW50**
3RS10 40-1GD50	TYPE J, K, T, E, N (thermoelement)	- 99 … + 999 °C	24 AC/DC	A	**3RS11 40-1GD60**	C	**3RS11 40-2GD60**
			24 … 240 AC/DC	A	**3RS11 40-1GW60**	C	**3RS11 40-2GW60**
		- 99 … + 1 830 °F	24 AC/DC	C	**3RS21 40-1GD60**	C	**3RS21 40-2GD60**
			24 … 240 AC/DC	C	**3RS21 40-1GW60**	C	**3RS21 40-2GW60**
3RS10 40-2GW50							
Temperature monitoring relay, digitally adjustable, 2 threshold values, width 45 mm; 1 CO + 1 CO + 1 NO, tripping state and device parameters are non-volatile							
	PT100/1000; KTY83/84; NTC (resistance sensors)[1]	- 50 … + 750 °C	24 AC/DC	A	**3RS10 42-1GD70**	C	**3RS10 42-2GD70**
			24 … 240 AC/DC	A	**3RS10 42-1GW70**	C	**3RS10 42-2GW70**
	TYPE J, K, T, E, N, R, S, B (thermoelement)	- 99 … +1 800 °C	24 AC/DC	C	**3RS11 42-1GD80**	C	**3RS11 42-2GD80**
			24 … 240 AC/DC	A	**3RS11 42-1GW80**	C	**3RS11 42-2GW80**

[1] NTC type: B57227-K333-A1 (100 °C: 1.8 kΩ; 25 °C: 32.762 kΩ).

Accessories see page 10/135.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RS10, 3RS11, 3RS20, 3RS21 Temperature Monitoring Relays

Relays, digitally adjustable for up to 3 sensors

Overview



SIRIUS 3RS digital temperature monitoring relays for up to 3 sensors

The 3RS10, 3RS20 temperature monitoring relays can be used for measuring temperatures in solid, liquid and gas media. The temperature is detected by the sensor in the medium, evaluated by the device and monitored for overshoot or undershoot or for staying within an operating range (window function). The 3RS10 units indicate the measured temperature in degrees Celsius, the 3RS20 units in degrees Fahrenheit. The evaluation unit can evaluate up to 3 resistance sensors at the same time and is specially designed for monitoring motor windings and bearings.

Benefits

- Very simple operation without complicated menu selections
- Space-saving with 45 mm width
- Two- or three-point control can be parameterized quickly
- All versions with removable terminals
- All versions with screw terminals or spring-type terminals

Application

The 3RS10, 3RS20 temperature monitoring relays can be used in almost any application in which several temperatures have to be monitored simultaneously for overshoot or undershoot or within a range.

Monitoring of set temperature limits and output of alarm messages for:

- Plant and environment protection
- Temperature limits for process variables e.g. in the packaging industry or electroplating
- Controlling equipment and machines such as heating, climate and ventilation systems, solar collectors, heat pumps or warm water supplies
- Motor, bearing and gear oil monitoring
- Monitoring of coolants

Technical specifications

Type		3RS10, 3RS20
Auxiliary circuit		
Rated operational currents I_e		
• AC-15/24 ... 250 V	A	3
• DC-13 at		
- 24 V	A	1
- 125 V	A	0.2
- 240 V	A	0.1
DIAZED fuse protection		
• gG operational class	A	4
Releases		
Measuring accuracy at 20 °C ambient temperature (T20)		< ±2 K, ±1 digit
Deviations due to ambient temperature In % of measuring range	%	0.05 per K deviation from T20
Measuring cycle	ms	500
Hysteresis settings for temperature 1		1 ... 99 K, for both values
Adjustable delay time	s	0 ... 999
Sensor circuit		
Typical sensor circuits		
• PT100	mA	Typically 1
• PT1000/KTY83/KTY84/NTC	mA	Typically 0.2
Open-circuit detection		Yes[1]
Short-circuit detection		Yes
Three-wire conductor connection		Yes[2]
Enclosure		
Rated insulation voltage U_i (pollution degree 3)	V AC	300

[1] Not for NTC type B57227-K333-A1 (100 °C: 1.8 kΩ; 25 °C: 32.762 kΩ).

[2] Two-wire connection of resistance sensors with wire jumper between T2 and T3.

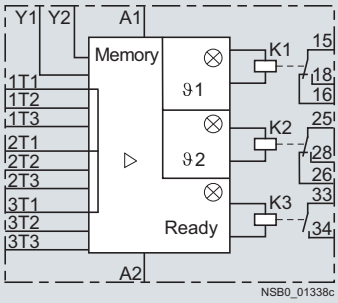
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Relays, digitally adjustable for up to 3 sensors

Circuit example

3RS10 41, 3RS20 41



Legend
A1, A2, A3 = Terminals for rated control supply voltage
K1, K2, K3 = Output relays
ϑ1 = LED: "Relay 1 tripped"
ϑ2 = LED: "Relay 2 tripped"
Ready = LED: "Device is ready for operation"
1T1 to 1T3 = Sensor connection for resistance sensor 1
2T1 to 2T3 = Sensor connection for resistance sensor 2
3T1 to 3T3 = Sensor connection for resistance sensor 3
Y1/Y2 = Connection for memory jumper

⚠ *Important!*

When resistance sensors with two-wire connection are used, T2 and T3 must be jumpered.

Selection and ordering data

- For monitoring the temperatures of solids, liquids, and gases
- For two- and three-conductor resistance sensors or thermoelements
- Temperature range independent of sensor type
  - for 3RS10: -50 to +500 °C
  - for 3RS20: -58 to +932 °F
- Wide-range voltage versions are electrically separated.
- Non-volatile
- Short-circuit and open-circuit detection in sensor circuit
- Digital adjustable, with illuminated LC display
- Overshoot, undershoot or range monitoring adjustable
- Exact sensor type and number of sensors can be set
- 2 separately adjustable threshold values
- 1 hysteresis; applies to both thresholds (0 to 99 K)
- 1 delay time; applies to both thresholds (0 to 999 s)
- Adjustable open/closed-circuit principle
- With connectable and disconnectable error memory
- Permanent display of actual value in °C or °F and tripping state
- 1 CO contact each per threshold value
- 1 NO for sensor monitoring

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H

Sensors	Number of sensors	Measuring range (limit of measuring range dependent on sensor)	Rated control supply voltage U_s	DT	Screw terminals	DT	Spring-type terminals
			V		Order No. / Price per PU		Order No. / Price per PU
Motor monitoring relays, digitally adjustable for up to 3 sensors, width 45 mm; 1 CO + 1 CO + 1 NO							
PT100/1000; KTY83/84; NTC (resistance sensors)[1]	1 ... 3 sensors	-50 ... +500 °C	24 ...240 AC/DC	A	**3RS10 41-1GW50**	A	**3RS10 41-2GW50**
		-58 ... +932 °F	24 ...240 AC/DC	C	**3RS20 41-1GW50**	C	**3RS20 41-2GW50**



3RS10 41-1GW50

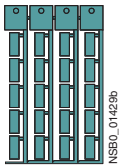
[1] NTC type: B57227-K333-A1 (100 °C: 1.8 kΩ; 25 °C: 32.762 kΩ).

Accessories see page 10/135.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

	Use	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Blank labels								
 3RT19 00-1SB20	For 3RS1	**Unit labeling plates** For SIRIUS devices						
		20 mm x 7 mm, pastel turquoise[1]	D	**3RT19 00-1SB20**		100	340 units	41B
	For 3RS1	**Inscription labels for sticking** For SIRIUS devices						
		19 mm x 6 mm, pastel turquoise	C	**3RT19 00-1SB60**		100	3 060 units	41B
		19 mm x 6 mm zinc yellow	C	**3RT19 00-1SD60**		100	3 060 units	41B
Push-in lugs and covers								
 3RP19 03	For 3RS1	**Push-in lugs** For screw fixing, 2 units are required for each device	B	**3RP19 03**		1	10 units	41H
 3RP19 02	For 3RS1	**Sealable covers** for securing against unauthorized adjustment of setting knobs	B	**3RP19 02**		1	5 units	41H
	For 3RS1	**Sealing foil** For securing against unauthorized adjustment of setting knobs	►	**3TK28 20-0AA00**		1	1 unit	41L
Tools for opening spring-type terminals								
 3RA29 08-1A	For auxiliary circuit connections	**Screwdrivers** For all SIRIUS devices with spring-type terminals 3.0 mm x 0.5 mm, length approx. 200 mm, titanium gray/black, partially insulated	A	**Spring-type terminals**  **3RA29 08-1A**		1	1 unit	41B
Manuals								
	For 3RS1	**Manuals for 3RS10, 3RS11, 3RS20, 3RS21 temperature monitoring relays**						
		German	C	**3ZX1 012-0RS10-1AB1**		1	1 unit	401
		English	C	**3ZX1 012-0RS10-1AC1**		1	1 unit	401

[1] PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH (see Chapter 16, "Appendix" → "External Partners") .

Matching sensors see at www.siemens.com/temperature

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SIRIUS 3RS14, 3RS15 Temperature Monitoring Relays for IO-Link

General data

Overview



SIRIUS 3RS14, 3RS15 temperature monitoring relays

The temperature monitoring relays for IO-Link are used to measure temperatures in solid, liquid and gas media.

The temperature is calculated using a sensor in the medium, evaluated by the device and monitored up to two limit values for overshooting or undershooting a working range (window function).

In addition to warnings and disconnection in case of temperature deviations, the devices can also be used as a temperature controller (one-point, two-point or three-point control).

The devices differ from one another in terms of the type and number of connectable temperature sensors.

- 3RS14: Connection for resistance sensor
- 3RS15: Connection for thermoelements

Function	Temperature monitoring relays		
	3RS14 40	3RS14 41	3RS15 40
Connectable sensor type			
Number of sensors monitored	1	3	1
Resistance sensor	✓	✓	--
Thermoelements	--	--	✓
Temperature monitoring			
Temperature monitoring - exceeded	✓	✓	✓
Temperature monitoring - undershoot	✓	✓	✓
Number of adjustable limit values	2	2	2

✓ Function supported

-- Function not supported

Order No. scheme

Digit of the Order No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th
	□□□	□	□	□	□	–	□	□	□	□	□
Temperature monitoring relays	**3 R S**										
Device type		□	□								
Version and type of sensor				□	□						
Connection methods							□				
Number and type of outputs								□			
Control supply voltage									□		
Measuring range										□	
Special versions											□
Example	**3 R S**	**1**	**4**	**4**	**0**	**–**	**1**	**H**	**B**	**5**	**0**

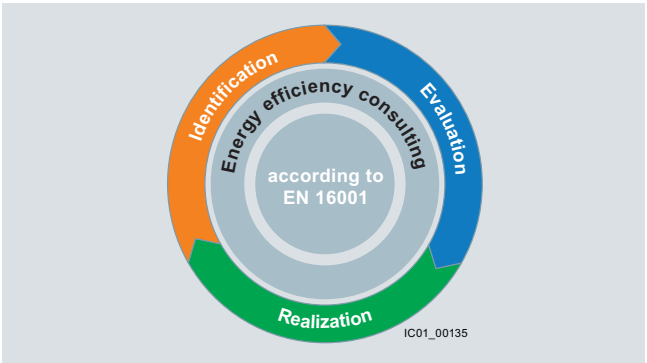
Note:

The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quoted in the catalog in the Selection and ordering data.

Benefits

Advantages through energy efficiency



Overview of the energy management process

We offer you a unique portfolio for industrial energy management, using an energy management system that helps to optimally define your energy needs. We split up our industrial energy management into three phases – Identification, Evaluation and Realization – and we support you with the appropriate hardware and software solutions in every process phase.

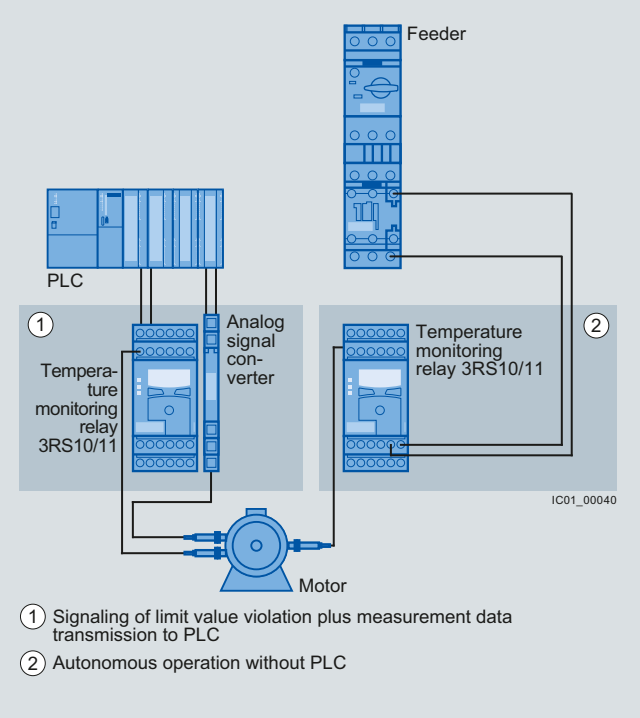
The innovative products of the SIRIUS industrial controls portfolio can also make a substantial contribution to a plant's energy efficiency (www.siemens.com/sirius/energysaving).

The 3RS14 and 3RS15 monitoring relays for IO-Link make the following contribution to the energy efficiency of the plant as a whole:

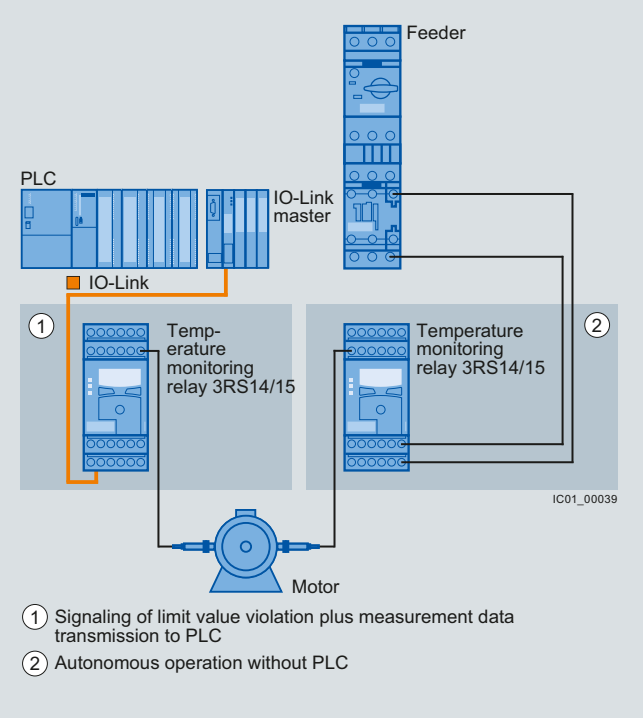
- Demand-based control of heating and ventilation in the process and in the control cabinet

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Design



Conventional temperature monitoring relays



Temperature monitoring relays for IO-Link

Notes:

Devices required for the communication via IO-Link:

- Any controller that supports the IO-Link (e.g. ET200S with CPU or S7-300 plus ET200S distributed peripherals, see Catalog ST 70)
- IO-Link master (IO-Link master 4SI IO-Link or 4SI SIRIUS interface module, which can connect all SIRIUS IO-Link devices to a controller, see Chapter 2)

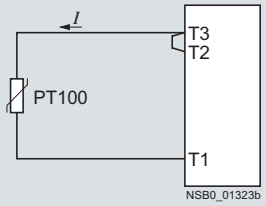
Each monitoring relay requires an IO-Link channel.

Technical specifications

Connection for resistance sensors

Two-wire measurement

When two-wire temperature sensors are used, the resistances of the sensor and wiring are added. The resulting systematic error must be taken into account when the signal evaluation unit is calibrated. A jumper must be clamped between terminals T2 and T3 for this purpose.



Wiring errors

The errors that are generated by the wiring comprise approximately 2.5 Kelvin/Ω. If the resistance of the cable is not known and cannot be measured, the wiring errors can also be estimated using the following table.

Temperature drift dependent on the length and cross-section of the cable with PT100 sensors and an ambient temperature of 20 °C, in K:

Cable length in m	Cross-section mm²			
	0.5	0.75	1	1.5
	Temperature drift in K:			
0	0	0	0	0
10	1.8	1.2	0.9	0.6
25	4.5	3.0	2.3	1.5
50	9.0	6.0	4.5	3.0
75	13.6	9.0	6.8	4.5
100	18.1	12.1	9.0	6.0
200	36.3	24.2	18.1	12.1
500	91.6	60.8	45.5	30.2

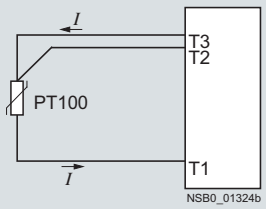
Example: On a PT100 sensor with a cable length of 10 m and a conductor cross-section of 1 mm^2 the temperature drift equals 0.9 K.

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General data

Three-wire measurement

To minimize the effects of the line resistances, a three-wire circuit is often used. Using the additional cable, two measuring circuits can be formed of which one is used as a reference. The signal evaluation unit can then automatically calculate the line resistance and take it into account.



Connection of thermoelements

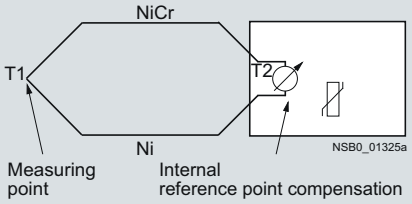
Based on the thermo-electrical effect, a differential temperature measurement will be performed between the measuring point and the signal evaluation unit.

This principle assumes that the signal evaluation unit knows the temperature at the clamping point (T2). For this reason, the 3RS15 temperature monitoring relay has an integral compensator that determines this comparison temperature and builds it into the result of the measurement. The thermal sensors and cables must be insulated therefore.

The absolute temperature is therefore calculated from the ambient temperature of the signal evaluation unit and the temperature difference measured by the thermoelement.

Temperature detection is therefore possible (T1) without needing to know the precise ambient temperature of the clamping point at the signal evaluation unit (T2).

The connecting cable is only permitted to be extended using connecting leads that are made from the same material as the thermoelement. If a different type of conductor is used, an error will result in the measurement.



More information is available on the Internet at:

www.feldgeraete.de/76/produkte/fuw.html

www.ephy-mess.de

or from

EPHY-MESS GmbH, see Chapter 16 "Appendix" → "External Partners"

Principle of operation

When the temperature has reached the set upper limit value ϑ, the K1 output relay changes its switching state after the configured time *t* has expired. The delay time can be adjusted. K2 responds in the same manner to the lower limit value of $\vartheta 2$.

The output relays return immediately to their original state (the RESET response is configured at auto RESET) once the temperature reaches the respective hysteresis value.

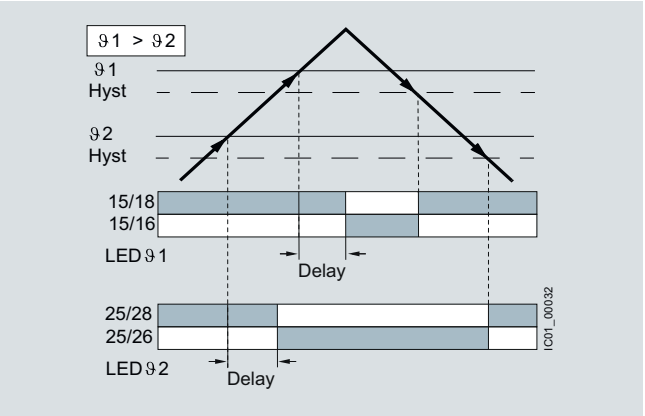
Both limit values $\vartheta 1$ and $\vartheta 2$ can be parameterized for overshooting or undershooting. This makes it possible to use a limit value for issuing an alarm signal to announce that a value a limit value is about to be overshot or undershot. The other limit value can be used for disconnection or to implement two-point or three-point control.

Note:

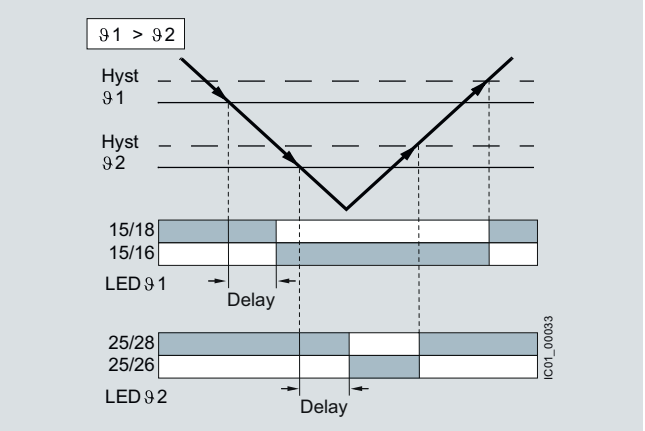
The "Temperature monitoring mode" parameter can be used to set the desired type of monitoring (monitoring for overshooting or undershooting or range monitoring).

With the closed-circuit principle selected

Temperature overshoot



Temperature undershoot

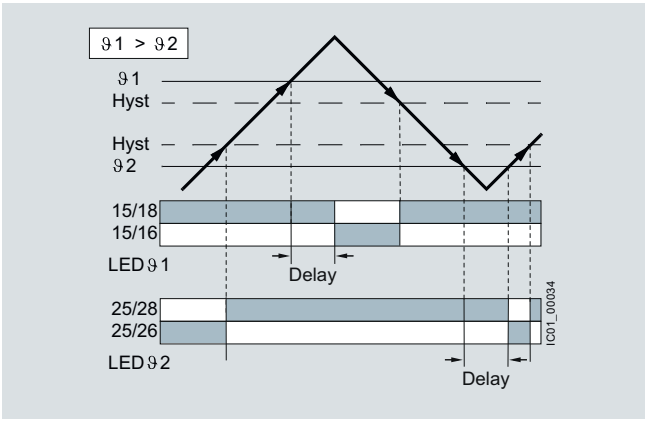


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With the closed-circuit principle selected

Range monitoring



Storage function

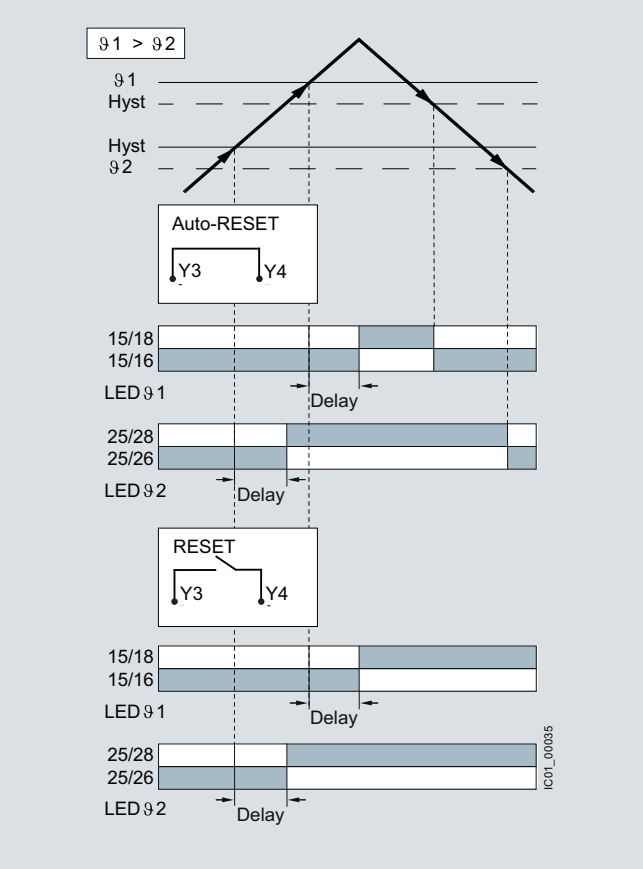
The digitally adjustable temperature monitoring relays for IO-Link have a memory function. The memory function is illustrated below by the example of a temperature overshoot.

When the temperature has reached the ϑ1 limit value, the K1 output relay changes its switching state after the configured time *t* has expired (output relay K2 reacts similarly at ϑ2).

The temperature monitoring relays for IO-Link respond as described below:

- With temperature monitoring relays for IO-Link the memory function is activated as standard (RESET). The output relays only return to the original state when the temperature falls below the set hysteresis value and when one of the following steps is performed.
  - Brief jumpering of the Y3/Y4 terminals
  - Set the rotary knob to "RUN" position and press the right-hand arrow key
  - Perform a RESET through IO-Link
- If the Y3/Y4 terminals are permanently jumpered, the memory function is deactivated (auto RESET). The output relays return immediately to their original state once a previously occurred fault has been rectified and the temperature falls below the respective hysteresis value.

With the closed-circuit principle selected



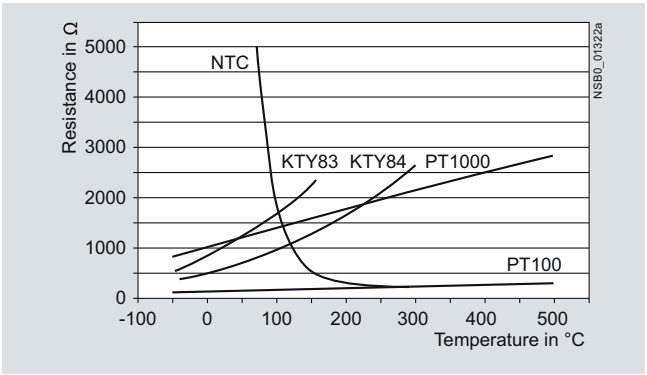
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General data

Characteristic curves

For resistance sensors



The short-circuit and open-circuit detection as well as the measuring range is limited, depending on the sensor type.

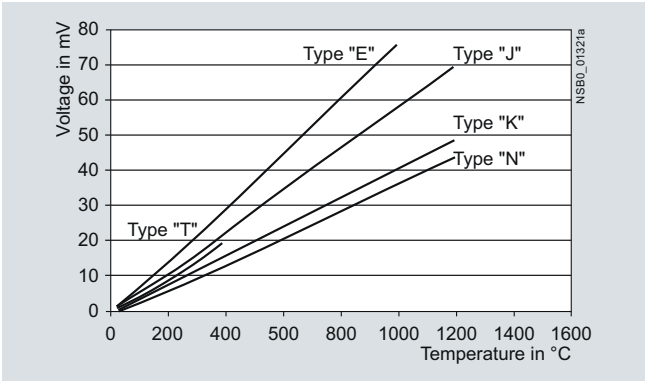
Measuring ranges for resistance sensors

Sensor type	Short circuit	Open circuit	3RS14 40, 3RS14 41	
			Measuring range in °C	Measuring range in °F
PT100	✓	✓	–50 ... +750	–58 ... +1 382
PT1000	✓	✓	–50 ... +500	–58 ... +932
KTY83-110	✓	✓	–50 ... +175	–58 ... +347
KTY84	✓	✓	–40 ... +300	–40 ... +572
NTC[1)]	✓	--	+80 ... +160	+176 ... +320

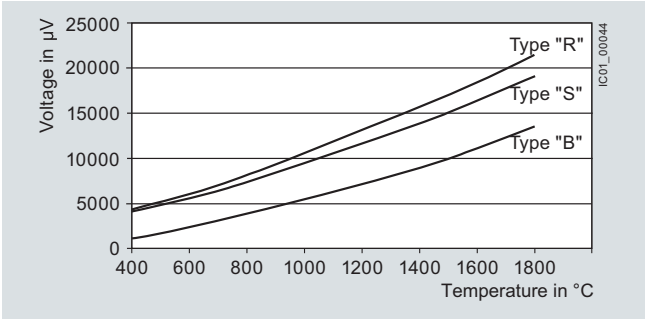
✓ Detection possible
-- Detection not possible

[1)] NTC type: B57227-K333-A1 (100 °C: 1.8 kΩ; 25 °C: 32.762 kΩ).

For thermoelements



Characteristic curves for sensor types K, N, J, E and T



Characteristic curves for sensor types S, R and B

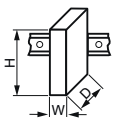
Measuring ranges for thermoelements

Sensor type	Short circuit	Open circuit	3RS15 40	
			Measuring range in °C	Measuring range in °F
K	--	✓	-99 ... +1 350	-146.2 ... +2 462
N	--	✓	-99 ... +1 300	-146.2 ... +2 372
J	--	✓	-99 ... +1 200	-146.2 ... +2 192
E	--	✓	-99 ... +999	-146.2 ... +1 830.2
T	--	✓	-99 ... +400	-146.2 ... +752
S	--	✓	0 ... 1 750	32 ... 3 182
R	--	✓	0 ... 1 750	32 ... 3 182
B	--	✓	400 ... 1 800	752 ... 3 272

✓ Detection possible
-- Detection not possible

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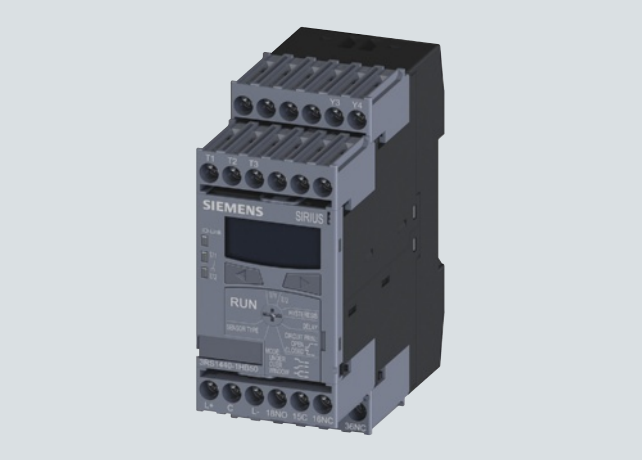
General technical specifications

Type			3RS14, 3RS15
Dimensions (W x H x D)			
• Screw terminals		mm	45 x 106 x 91
• Spring-type terminals		mm	45 x 108 x 91
Permissible ambient temperature			
• During operation		°C	-25 ... +60
Connection type			**Screw terminals**
• Terminal screw			M3 (for standard screwdriver, size 2 and Pozidriv 2)
• Solid		mm^2	1 x (0.5 ... 4), 2 x (0.5 ... 2.5)
• Finely stranded with end sleeve		mm^2	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5)
• AWG cables, solid or stranded		AWG	2 x (20 ... 14)
• Tightening torques		Nm	0.8 … 1.2
Connection type			**Spring-type terminals**
• Solid		mm^2	2 x (0.25 ... 1.5)
• Finely stranded with end sleeves acc. to DIN 46228		mm^2	2 x (0.25 ... 1.5)
• Finely stranded		mm^2	2 x (0.25 ... 1.5)
• AWG cables, solid or stranded		AWG	2 x (24 ... 16)

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Relays, digitally adjustable for 1 sensor

Overview



Digital monitoring relay SIRIUS 3RS14 40 for 1 sensor

The 3RS14 and 3RS15 temperature monitoring relays for IO-Link are used to measure temperatures in solid, liquid and gas media. The temperature is calculated using a sensor in the medium, evaluated by the device and monitored for overshooting or undershooting a working range (range monitoring). The digital temperature monitoring relays have two separately adjustable limit values, are non-volatile and can be operated as desired using the open- or closed-circuit principle.

The devices differ in terms of the number of temperature sensors which can be evaluated. The 3RS14 40 and 3RS15 40 for IO-Link temperature monitoring relays can be digitally adjusted for one sensor and represent an alternative to temperature controllers in the low-end section (two-point or three-point control).

The devices with two-point control can, for example, be used as a thermostat. The devices with three-point control can, for example, independently switch between heating and cooling.

The 3RS14 41 temperature monitoring relays for IO-Link can be digitally configured to evaluate up to three resistance sensors at one time. The devices were designed specifically for monitoring motor windings and positions.

The temperature monitoring relays are powered through the control supply voltages IO-Link (L+) and earth (L-) or via an external 24 V DC power supply.

Monitoring

When the temperature has reached the $\vartheta 1$ limit value, the K1 output relay changes its switching state after the configured time *t* has expired (output relay K2 reacts accordingly at $\vartheta 2$). The delay time can be adjusted.

The output relays return immediately to their original state once the temperature reaches the respective hysteresis value.

When the temperature has reached the top $\vartheta 1$ limit value, the K1 output relay changes its switching state after the configured time *t* has expired. The output relay returns immediately to its original state once the temperature reaches the respective hysteresis value.

The K2 output relay reacts in the same way at the $\vartheta 2$ lower threshold. Both limit values $\vartheta 1$ and $\vartheta 2$ can be parameterized for overshooting or undershooting the thresholds. This makes it possible to use a limit value for issuing an alarm signal to announce that a value a limit value is about to be overshot or undershot.

Note:

The "Temperature monitoring mode" parameter can be used to set the desired type of monitoring (monitoring for overshooting or undershooting or range monitoring).

Benefits

- Very simple operation without complicated menu selections
- Two- or three-point control can be parameterized quickly
- All versions with removable terminals
- All versions with screw or spring-type terminals

Application

The temperature monitoring relays can be used in almost any application in which temperature overshoot or undershoot is not permitted, e.g. in the monitoring of set temperature limits and the output of alarm messages for:

- Plant and environment protection
- Temperature limits for process variables e.g. in the packaging industry or electroplating
- Temperature limits for district heating plants
- Exhaust temperature monitoring
- Controlling equipment and machines such as heating, climate and ventilation systems, solar collectors, heat pumps or warm water supplies
- Motor, bearing and gear oil monitoring
- Monitoring of coolants

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Technical specifications

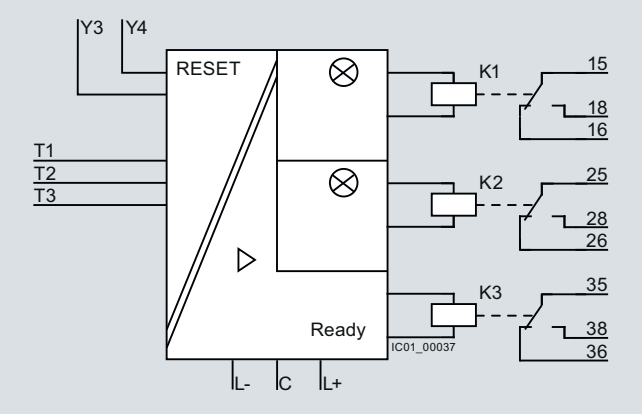
Type		3RS14 40	3RS15 40
Auxiliary circuit			
Rated operational currents I_e			
• AC-15/24 ... 250 V	A	3	
• DC-13 at			
- 24 V	A	1	
- 125 V	A	0.2	
- 240 V	A	0.1	
Releases			
Measuring accuracy at 20 °C ambient temperature (T20)		< ± 2 K, ± 1 digit	< ± 5 K, ± 1 digit
Reference point accuracy		--	<± 5 K
Deviations due to ambient temperature In % of measuring range	%	0.05 °C per K deviation from T20	
Measuring cycle	ms	500	
Hysteresis settings for temperature	K	1 ... 99, for both values	
Adjustable delay time	s	0 ... 999.9	
Sensor circuit			
Typical sensor circuits			
• PT100	mA	Typically 1	--
• PT1000/KTY83/KTY84/NTC	mA	Typically 0.2	--
Open-circuit detection		Yes[1)]	Yes
Short-circuit detection		Yes	No
Three-wire conductor connection		Yes[2)]	--
Enclosure			
Rated insulation voltage U_i pollution degree 2	V AC	300	

1) Not for NTC type B57227-K333-A1 (100 °C: 1.8 kΩ; 25 °C: 32.762 kΩ).

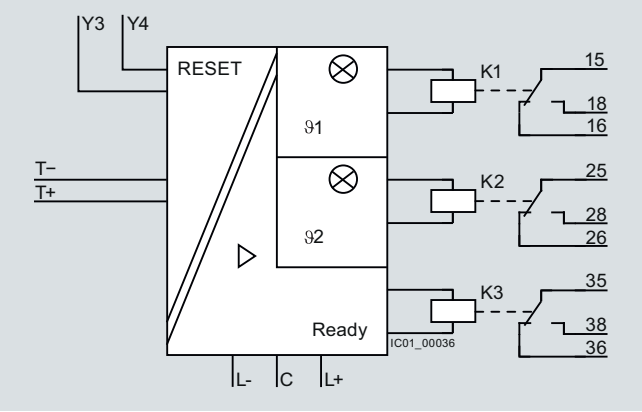
2) Two-wire connection of resistance sensors with wire jumper between T2 and T3.

Circuit examples

3RS14 40



3RS15 40



Legend

L+ = IO-Link control supply voltage
C = Communication signal
L- = IO-Link earth
K1 = Output relay for temperature limit value ϑ1
K2 = Output relay for temperature limit value ϑ2
K3 = Output relay for "device is ready for operation"
ϑ1 = LED: "Relay K1 tripped"
ϑ2 = LED: "Relay K2 tripped"
T1 to T3 = Sensor connection for 3RS14 resistance sensor
T+/T- = Sensor connection for 3RS15 thermoelements
Y3/Y4 = RESET input

⚠ *Important!*

When resistance sensors with two-wire connection are used, T2 and T3 must be jumpered.

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SIRIUS 3RS14, 3RS15 Temperature Monitoring Relays for IO-Link

Relays, digitally adjustable for 1 sensor

Selection and ordering data

- To monitor temperatures with a resistance sensor or thermoelement
- Temperature range dependent on sensor type
  - 99 to + 1 800 °C or - 146.2 to + 3 272 °F
- Short-circuit and open-circuit detection in sensor circuit
- Adjustable via IO-Link and locally, with illuminated LCD
- Power supply with 24 V DC via IO-Link or external auxiliary voltage
- Overshoot, undershoot or range monitoring adjustable
- Exact sensor type can be set
- 2 limit values, can be adjusted separately
- Adjustable open/closed-circuit principle
- Can be adjusted by hand or remote RESET (via an external contact)
- Actual value, tripping state for control displayed and conveyed, adjustable in °C or °F
- 1 CO contact per limit value
- 1 CO contact for monitoring sensors and devices

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H



3RS14 40-1HB50



3RS15 40-1HB80



3RS14 40-2HB50



3RS15 40-2HB80

Sensors	Measuring range (limit of measuring range dependent on sensor)	Hysteresis can be adjusted for $\vartheta 1$ and $\vartheta 2$	Tripping delay time can be adjusted for $\vartheta 1$ and $\vartheta 2$ DELAY	Supply voltage U_s	DT	**Screw terminals**	DT	**Spring-type terminals**
		K	s	V DC		Order No. / Price per PU		Order No. / Price per PU
Temperature monitoring relays, digitally adjustable for a sensor, non-volatile fault storage can be selected								
PT100/PT1000, KTY83/KTY84, NTC (resistance sensor)[1]	- 50 … + 750 °C or - 58 … +1 382 °F	0 ... 99	0 ... + 999.9	24	A	**3RS14 40-1HB50**	A	**3RS14 40-2HB50**
Type B, E, J, K, N, R, S, T (thermoelements)	- 99 … + 1 800 °C or - 146.2 … + 3 272 °F	0 ... 99	0 ... + 999.9	24	A	**3RS15 40-1HB80**	C	**3RS15 40-2HB80**

[1] NTC-type B57227-K333-A1 (100 °C: 1.8 kΩ; 25 °C: 32.762 kΩ).

Accessories see page 10/147.

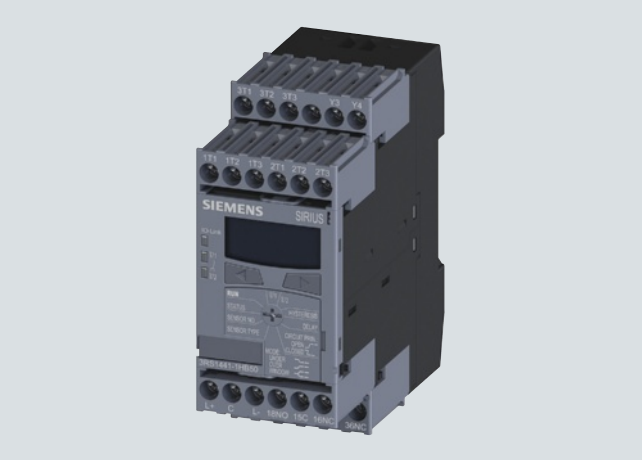
* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3RS14, 3RS15 Temperature Monitoring Relays for IO-Link

Relays, digitally adjustable for up to 3 sensors

Overview



Digital monitoring relay SIRIUS 3RS14 41 for up to 3 sensors

The 3RS14 temperature monitoring relays can be used to measure temperatures in solid, liquid and gas media. The temperature is calculated using a sensor in the medium, evaluated by the device and monitored for overshooting or undershooting a working range (range monitoring). The devices show the measured temperature in °C or °F. The 3RS14 41 evaluation unit can evaluate up to 3 resistance sensors at one time.

Benefits

- Very simple operation without complicated menu selections
- Space-saving with 45 mm width
- Two- or three-point control can be parameterized quickly
- All versions with removable terminals
- All versions with screw or spring-type terminals

Application

The 3RS14 41 temperature monitoring relays can be used almost anywhere where several temperatures must be monitored at one time for overshooting, undershooting or staying within a certain range.

Monitoring of set temperature limits and output of alarm messages for:

- Plant and environment protection
- Temperature limits for process variables e.g. in the packaging industry or electroplating
- Controlling equipment and machines such as heating, climate and ventilation systems, solar collectors, heat pumps or warm water supplies
- Motor, bearing and gear oil monitoring
- Monitoring of coolants

Technical specifications

Type		3RS14 41
Auxiliary circuit		
Rated operational currents I_e		
• AC-15/24 ... 250 V	A	3
• DC-13 at		
- 24 V	A	1
- 125 V	A	0.2
- 240 V	A	0.1
DIAZED fuse protection		
• gG operational class	A	4
Releases		
Measuring accuracy at 20 °C ambient temperature (T20)		< ±2 K, ±1 digit
Deviations due to ambient temperature In % of measuring range	%	0.05 per K deviation from T20
Measuring cycle	ms	500
Hysteresis settings for temperature 1	K	1 ... 99, for both values
Adjustable delay time	s	0 ... 999.9
Sensor circuit		
Typical sensor circuits		
• PT100	mA	Typically 1
• PT1000/KTY83/KTY84/NTC	mA	Typically 0.2
Open-circuit detection		Yes[1]
Short-circuit detection		Yes
Three-wire conductor connection		Yes[2]
Enclosure		
Rated insulation voltage U_i pollution degree 2	V AC	300

[1] Not for NTC type B57227-K333-A1 (100 °C: 1.8 kΩ; 25 °C: 32.762 kΩ).

[2] Two-wire connection of resistance sensors with wire jumper between T2 and T3.

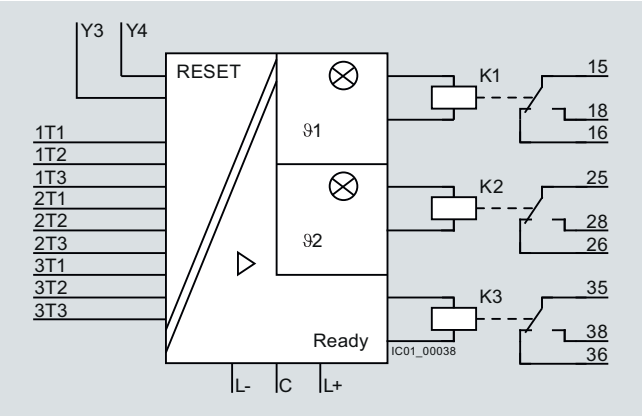
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SIRIUS 3RS14, 3RS15 Temperature Monitoring Relays for IO-Link

Relays, digitally adjustable for up to 3 sensors

Circuit example

3RS14 41



Legend
L+ = IO-Link control supply voltage
C = Communication signal
L- = IO-Link earth
K1 = Output relay for temperature limit value ϑ1
K2 = Output relay for temperature limit value ϑ2
K3 = Output relay for "device is ready for operation"
ϑ1 = LED: "Relay K1 tripped"
ϑ2 = LED: "Relay K2 tripped"
Y3/Y4 = RESET input for 3RS14, 3RS15
1T1 to 1T3 = Sensor connection for resistance sensor 1
2T1 to 2T3 = Sensor connection for resistance sensor 2
3T1 to 3T3 = Sensor connection for resistance sensor 3
Y3/Y4 = RESET input for 3RS14

⚠ *Important!*

When resistance sensors with two-wire connection are used, T2 and T3 must be jumpered.

Selection and ordering data

- For temperature monitoring with up to 3 resistance sensors
- Temperature range dependent on sensor type
  - 50 to + 750 °C or - 58 to + 1 382 °F
- Short-circuit and open-circuit detection in sensor circuit
- Adjustable via IO-Link and locally, with illuminated LCD
- Power supply with 24 V DC via IO-Link or external auxiliary voltage
- Overshoot, undershoot or range monitoring adjustable
- Exact sensor type and number of sensors can be set
- 2 limit values, can be adjusted separately
- Adjustable open/closed-circuit principle
- Can be adjusted by hand or remote RESET (via an external contact)
- Actual value, tripping state for control displayed and conveyed, adjustable in °C or °F
- 1 CO contact per limit value
- 1 CO contact for monitoring sensors and devices

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H



3RS14 41-1HB50



3RS14 41-2HB50

Sensors	Number of sensors that can be set	Measuring range (limit of measuring range dependent on sensor)	Hysteresis can be adjusted for ϑ1 and ϑ2	Tripping delay time can be adjusted for ϑ1 and ϑ2 DELAY	Supply voltage U_s	DT	Screw terminals		DT	Spring-type terminals	
							Order No.	Price per PU		Order No.	Price per PU
			K	s	V DC						
Temperature monitoring relays, digitally adjustable for up to 3 sensors, non-volatile fault storage can be selected											
PT100/PT1000, KTY83/KTY84, NTC (resistance sensor)[1]	1 ... 3 sensors	- 50 ... + 750 °C or - 58 ... + 1 382 °F	0 ... 99	0 ... + 999.9	24	A	**3RS14 41-1HB50**		A	**3RS14 41-2HB50**	

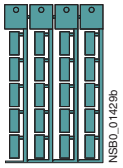
[1] NTC type: B57227-K333-A1 (100 °C: 1.8 kΩ; 25 °C: 32.762 kΩ).

Accessories see page 10/147.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

	Use	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Blank labels								
 3RT19 00-1SB20	For 3RS14, 3RS15	**Unit labeling plates** For SIRIUS devices						
		20 mm x 7 mm, pastel turquoise[1]	D	**3RT19 00-1SB20**		100	340 units	41B
	For 3RS14, 3RS15	**Inscription labels for sticking** For SIRIUS devices						
		19 mm x 6 mm, pastel turquoise	C	**3RT19 00-1SB60**		100	3 060 units	41B
		19 mm x 6 mm zinc yellow	C	**3RT19 00-1SD60**		100	3 060 units	41B
Push-in lugs and covers								
 3RP19 03	For 3RS14, 3RS15	**Push-in lugs** For screw fixing, 2 units are required for each device	B	**3RP19 03**		1	10 units	41H
	For 3RS14, 3RS15	**Sealing foil** For securing against unauthorized adjustment of setting knobs	►	**3TK28 20-0AA00**		1	1 unit	41L
Tools for opening spring-type terminals								
 3RA29 08-1A	For auxiliary circuit connections	**Screwdrivers** For all SIRIUS devices with spring-type terminals		**Spring-type terminals**				
		3.0 mm x 0.5 mm, length approx. 200 mm, titanium gray/black, partially insulated	A	**3RA29 08-1A**		1	1 unit	41B
Manuals								
	For 3RS14, 3RS15	**Manuals for 3RS14/3RS15 temperature monitoring relays for IO-Link**						
		German	C	**3ZX1 012-0RS14-0AB0**		1	1 unit	401
		English	C	**3ZX1 012-0RS14-0AC0**		1	1 unit	401

[1] PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH (see Chapter 16, "Appendix" → "External Partners") .

Matching sensors see at www.siemens.com/temperature.

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For PTC sensors

Overview



SIRIUS 3RN1 thermistor motor protection

Thermistor motor protection devices are used for direct monitoring of the motor winding temperature. For this purpose, the motors are equipped with temperature-dependent resistors (PTC) that are directly installed in the motor winding and abruptly change their resistance at their limit temperature.

Order No. scheme

Digit of the Order No.	1st - 5th	6th	7th		8th	9th	10th	11th	12th
	□□□□□	□	□	–	□	□	□	□	□
Thermistor motor protection	**3 R N 1 0**								
Number and version of the sensor circuits		□							
RESET response			□						
Connection type					□				
Type and number of outputs						□			
Control supply voltage							□		
Protective separation								□	
Behavior in the event of voltage failure									□
Example	**3 R N 1 0**	**0**	**0**	**–**	**1**	**A**	**B**	**0**	**0**

Note:

The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quoted in the catalog in the Selection and ordering data.

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Benefits

- Thanks to direct motor protection, overdimensioning of the motors is not necessary
- No settings on the device are necessary
- Solid-state compatible output thanks to versions with hard gold-plated contacts
- Rapid error diagnosis thanks to versions that indicate open and short circuits in the sensor circuit
- All versions with removable terminals
- All versions with screw terminals or spring-type terminals

Application

Direct motor protection through temperature monitoring of the motor winding offers 100 % motor protection even under the most difficult ambient conditions, without the need to make adjustments on the device. Versions with hard gold-plated contacts ensure, in addition, a high switching reliability that is even higher than an electronic control.

Direct motor protection

- At increased ambient temperatures
- When switching frequency is too high
- When start-up and braking procedures are too long
- Used together with frequency converters (low speeds)

ATEX approval for operation in areas subject to explosion hazard

The SIRIUS 3RN1 thermistor motor protection relay for PTC sensors is certified according to ATEX Ex II (2) G and D for environments with explosive gas or dust loads see www.siemens.com/sirius/atex.

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For PTC sensors

Motor protection using current- and temperature-dependent protective devices

IEC 60204 stipulates that motors must be protected from overheating at a rating of 0.5 kW and higher. The protection can take the form of overload protection, overtemperature protection or current limiting.

For motors with frequent starting and braking and in environments where cooling may be impaired (e.g. by dust), it is recommended to use the overtemperature protection option in the form of a protective device coordinated with this mode of operation. A good choice in this case is the use of 3RN1 thermistor motor protection devices.

On rotor-critical motors, overtemperature detection in the stator windings can lead to delayed and hence inadequate protection. In this case the standards stipulate additional protection, e.g. by means of an overload relay.

This combination of thermistor motor protection and an overload relay is recommended for full motor protection in case of frequent starting and braking of motors, irregular intermittent duty or excessive switching frequency. To prevent premature tripping of the overload relay in such operating conditions, a higher setting than that normally required for the operational current is chosen. The overload relay then performs the stall protection, and the 3RN1 thermistor motor protection device monitors the temperature of the motor windings.

Application	Motor protection		
	Only current-dependent, e.g. with overload relay	Only temperature-dependent, e.g. with thermistor motor protection relay	Current- and temperature-dependent
Motor protection in case of			
Overloading in uninterrupted duty	✓	✓	✓
Long start-up and braking operations	❍	✓	✓
Irregular intermittent duty	❍	✓	✓
Excessively high switching frequency	❍	✓	✓
Single-phase operation and current unbalance	✓	✓	✓
Voltage and frequency fluctuations	✓	✓	✓
Stalling of the rotor	✓	✓	✓
Switching on a stalled rotor of a stator-critical motor	✓	✓	✓
Switching on a stalled rotor of a rotor-critical motor	✓	❍	✓
Elevated ambient temperature	--	✓	✓
Impeded cooling	--	✓	✓

✓ Full protection
❍ Conditional protection
-- No protection

Technical specifications

The 3RN1 releases are suitable for use in any climate and finger-safe according to EN 50274.

They comply with:

- IEC 60947-8. Low-voltage switchgear and controlgear - Part 8: "Control units for built-in thermal protection (PTC) for rotating electrical machines"
- EN 61000-6-2 and EN 61000-6-4 "Electromagnetic compatibility of I&C equipment in industrial process engineering"

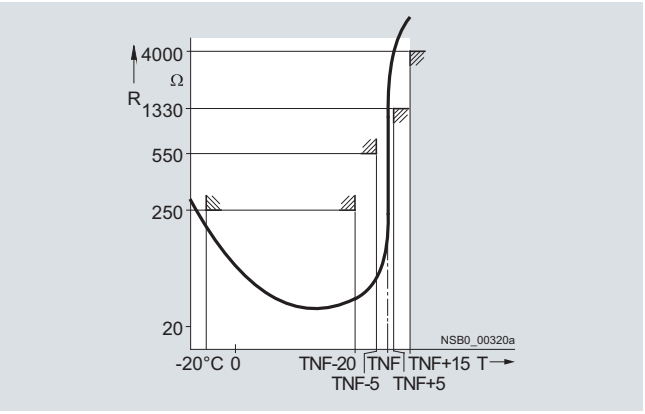
The terminals of the auxiliary contacts are designated in accordance with EN 50005.

The 3RN1 releases are suitable for snap-on mounting onto TH 35 standard mounting rails according to EN 60715 or for screw mounting using an adapter (Accessories).

Any mounting position is possible.

For devices with the "Manual RESET" function, the test function can be activated and a trip simulated by pressing the blue Test/RESET button for > 2 seconds.

If a Type A temperature sensor is connected to a Type A release, compliance with the operating temperatures is assured (on pick-up and reset) according to IEC 60947-8.



Characteristic curve of the 3RN1 release

The characteristic curves of the Type A temperature sensors are described in IEC 60947-8, DIN 44081 and DIN 44082.

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For PTC sensors

Use in areas subject to explosion hazard for gases

All devices are approved for Equipment Group II, Category (2) in Area "G" (areas that contain explosive gases, vapor, spray and air mixtures).

With PTB 01 ATEX 3218 ex II (2) G, compliance with directive 94/9 EC Appendix II is confirmed. The safety devices must be selected with suitable settings for the safe operation of motors of the "Increased safety" (EEx e) and "Flameproof enclosure" (EEx d) types of protection and are used outside the area subject to explosion hazard.

PTB 01 ATEX 3218 ex II (2) G

The increased danger in areas subject to explosion hazard demands careful analysis of the operating manual, the safety and commissioning instructions and the standard (EN 60079-14 / VDE 0165) for electronic equipment in areas subject to gas explosion hazards.

A risk analysis must be performed for the complete plant or machine. If this risk analysis results in a minimal potential for danger (Safety Category 1), all 3RN1 TMS releases can be implemented taking into account the safety notes. In the case of plants or machines with a high potential risk, versions with integrated short-circuit detection in the sensor circuit are necessary.

Use in areas subject to explosion hazard for dust

PTB 01 ATEX 3218 ex II (2) GD

3RN10 11-.B/-.G, 3RN10 12-.B/-.G and 3RN10 13-...0 releases can be used as protective devices for motors in areas subject to gas explosion hazard for protection against impermissible overheating due to overload. If the ATEX marking has the extension "D:=Dust", these units can also be used as protective devices for motors in areas subject to dust explosion hazard (IEC 61241-14).

Additional information is provided in the EC type test certificate which can be obtained from the Internet. The units comply with the requirements of the following classes:

Device	Class
3RN10 00, 3RN10 10, 3RN10 11-.C, 3RN10 12-.C, 3RN10 22, 3RN10 62	EN 954-1: Category 1
3RN10 11-.B, 3RN10 11-.G, 3RN10 12-.B, 3RN10 12-.G, 3RN10 13	EN 954-1: Category 2

The measuring circuit leads must be routed as separate control cables. It is not permitted to use cores from the supply line of the motor or any other main supply cables. If extreme inductive or capacitive interference is expected as a result of power lines routed in parallel, shielded control cables must be used.

Cable routing

Maximum cable length for sensor circuit cables

Conductor cross-section	Cable length for releases	
	Without short-circuit detection 3RN10 00, 3RN10 10 3RN10 11-.C, 3RN10 12-.C, 3RN10 22, 3RN10 62	With short-circuit detection[1] 3RN10 11-.B/-.G 3RN10 12-.B/-.G, 3RN10 13
mm^2	m	m
2.5	2 x 2800	2 x 250
1.5	2 x 1500	2 x 150
0.5	2 x 500	2 x 50

[1] A short circuit in the sensor circuit will be detected up to this maximum cable length.

Note:

Tripping of the thermistor motor protection relay even in combination with a converter must directly result in disconnection. This must be implemented with circuitry.

Mounting and installation must only be performed by qualified personnel who observe the applicable regulations! For mounting, use the mounting instructions
Order No.: 3ZX1012-0RN10-1AA1.

The 3RN10 is not intended for installation in hazardous areas. For installation in areas subject to explosion hazards, the 3RN10 must be enclosed in a flameproof casing.

For releases with a 24 V AC/DC control voltage, electrical separation must be secured with a battery network or a safety transformer.

When releases with Auto-RESET function are used, a reset is performed automatically after the cooling time has expired. It must be ensured by means of an external interlock (latching with a separate ON and OFF button) that the machine to be monitored does not start up again spontaneously.

Units with the "Auto-RESET" function must not be used in applications in which the unexpected restart can lead to personal injury or property damage.

In the case of releases without short-circuit detection, during commissioning or after modifications or maintenance work (assembly, disassembly) on the equipment, the sensor resistance must be measured using a suitable measuring device. For resistances of < 50 W the sensor circuit must be checked for a short circuit.

If 3RN10 00 units are used to protect EEx e motors, separate monitoring of the control voltage is recommended because there is no Ready LED to indicate connection to the supply voltage.

If 3RN10 13-.BW01 unit are used to protect EEx e motors, separate monitoring of the control voltage is recommended because the switching state of the auxiliary contacts does not change if the control voltage fails (use of a bistable relay is recommended).

Before commissioning, the effectiveness of the protection function must be checked.

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Principle of operation

The 3RN1 releases operate in accordance with the closed-circuit principle and therefore monitor themselves for open circuit (except: warning output in the case of 3RN10 22). A momentary voltage failure of less than 50 ms does not change the status of the auxiliary contacts. The 3RN10 11, 3RN10 12 and 3RN10 13 units with 2 changeover contacts are also equipped with short-circuit detection in the sensor circuit. The unit will trip in the event of a short circuit in the sensor circuit (resistance in sensor circuit < 20 Ω).

All releases (except for 24 V AC/DC) feature electrical separation between the control circuit and the sensor circuit.

3RN10 00 compact releases

The compact release is equipped with a red LED (TRIPPED) for the tripped indicator and a changeover contact.

After the unit has tripped, it is automatically reset once the thermistors have cooled down. The root of the changeover contact is connected to the control voltage (95 is connected to terminal A1).

This unit is particularly suitable in circuits in which the control circuit and signaling circuit have the same potential, e.g. in local control cabinets.

3RN10 10, 3RN10 11, 3RN10 12, 3RN10 13 standard releases

The standard devices are equipped with two LEDs (READY and TRIPPED) for an operating and tripped display and are available with either 1 NO + 1 NC or with 2 CO contacts. They are available depending on the version with Auto-RESET (3RN10 10), Manual/Remote-RESET (3RN10 11) or Manual/Auto and Remote-RESET (3RN10 12 and 3RN10 13). Remote-RESET can be achieved by connecting an external pushbutton with a normally-open function to terminals Y1 and Y2. If terminals Y1 and Y2 are bridged, tripping will be followed by an Auto-RESET.

The 3RN10 11, 3RN10 12 and 3RN10 13 units with 2 CO also have short-circuit monitoring in the sensor circuit.

The 3RN10 12 and the 3RN10 13 are non-volatile. This means that even if the control supply voltage fails, a trip preceding it will be latched.

In the case of the 3RN10 13 release, tripping due to a short circuit in the sensor circuit will be indicated by a flashing red LED. The monostable version also indicates open circuit in the sensor circuit by flashing of the red LED.

3RN10 22 "Warning and disconnection" releases

Two sensor circuits can be connected to one 3RN10 22 release that acts on one output relay with 1 NO contact for warning and 1 CO for disconnection. Temperature sensors with different rated response temperatures TNF are used to implement the "Warning" and "Disconnection" functions. When the "Warning" sensor circuit responds, a yellow LED is lit and when the "Disconnection" circuit responds, a red LED is lit.

The sensor circuits have a different reset response and operating behavior:

- "Warning" (terminals 2T1, T2) only features auto RESET and uses the open-circuit principle.
- "Disconnection" (terminals 1T1, T2) can be changed from Manual RESET to Auto-RESET by linking terminals Y1 and Y2. Remote-RESET is implemented by connecting an external pushbutton with a normally-open function.

3RN10 62 releases for multiple motor protection

Up to 6 sensor circuits can be connected to the 3RN10 62 release, all of which act on one output relay. The simultaneous protection of several motors (up to 6) is an advantage for multi-motor drives (e.g. if one motor is overloaded, all the other motors of the drive will be shut down). Apart from the red LED "TRIPPED", which signals the switching state of the release, a LED is assigned to each sensor circuit which indicates the sensor circuit that has responded. Unused sensor circuits must be short-circuited.

The reset response of the 3RN10 62 releases can be changed from Manual RESET to Auto-RESET by linking terminals Y1 and Y2. Remote-RESET is implemented by connecting an external pushbutton with a normally-open function.

Response of the releases in the event of control voltage failure

Behavior	Monostable 3RN10 00, 3RN10 10, 3RN10 11	Non-volatile, monostable 3RN10 12, 3RN10 13-....0, 3RN10 22, 3RN10 62	Bistable 3RN10 13-...01
In case of failure of the control voltage	Device trips	Device trips	No change in switching state of the auxiliary contacts
In case of return of the control voltage without a preceding tripping operation	Device resets	Device resets	No change in switching state of the auxiliary contacts
In case of return of the control voltage after a preceding tripping operation	Device resets	The device remains tripped	No change in switching state of the auxiliary contacts

Protective separation

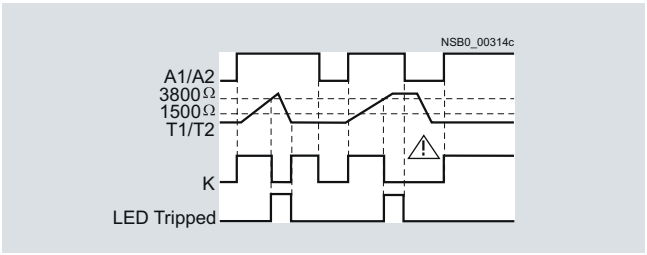
All circuits (outputs, control circuits, sensor and RESET circuits) of the multifunction releases 3RN10 13-1BW10 and 3RN10 13-1GW10 (wide voltage range, monostable output relay and screw connection) are safely isolated from each other up to a rated voltage of 300 V according to IEC 60947-1.

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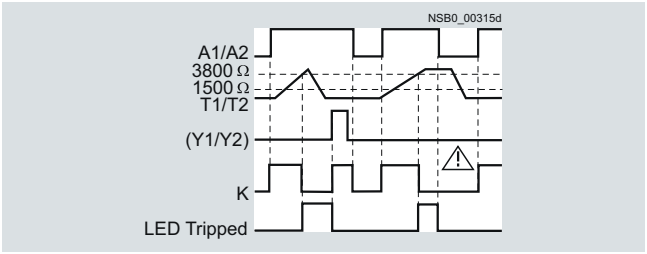
For PTC sensors

Function diagrams

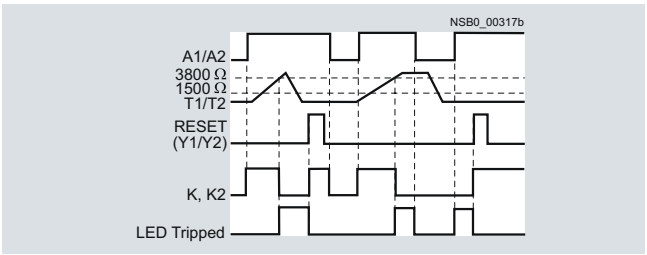
3RN10 00, 3RN10 10 (Auto-RESET)



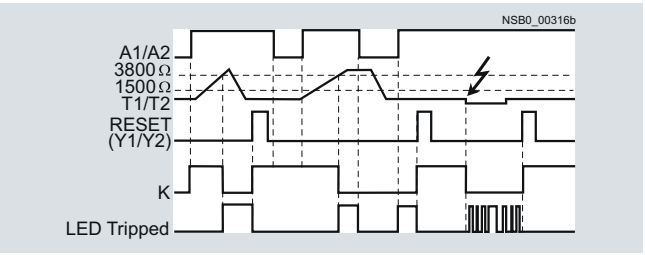
3RN10 11[1)]



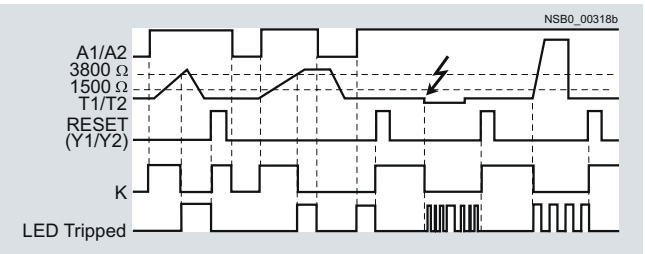
3RN10 12/3RN10 22/3RN10 62[1)]



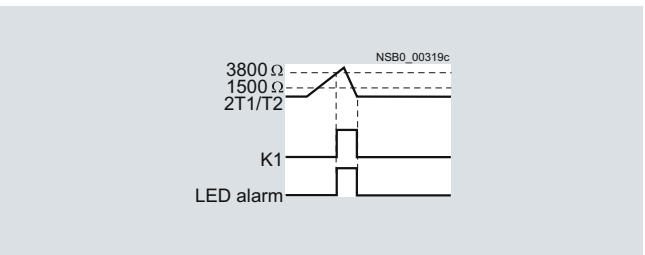
3RN10 13-.BW01



3RN10 13-...00

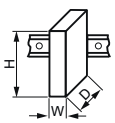


3RN10 22 only



[1)] For versions with 2 CO and short-circuit detection in the sensor circuit see function diagram 3RN10 13.

10

Type			Compact units	Standard devices			Multi-function units	Warning + tripping	Multiple motor protection
			3RN10 00	3RN10 10	3RN10 11	3RN10 12	3RN10 13	3RN10 22	3RN10 62
Dimensions (W x H x D)									
• For 2 terminal blocks									
- Screw terminals		mm	22.5 x 83 x 91						45 x 83 x 91
- Spring-type terminals		mm	22.5 x 84 x 91						45 x 84 x 91
• For 3 terminal blocks									
- Screw terminals		mm	22.5 x 92 x 91						--
- Spring-type terminals		mm	22.5 x 94 x 91						--
• For 4 terminal blocks									
- Screw terminals		mm	22.5 x 102 x 91						45 x 106 x 91
- Spring-type terminals		mm	22.5 x 103 x 91						45 x 108 x 91
General data									
Number of connectable sensor circuits			1					2	6
Response in the event of control voltage failure			See page 10/151						
Manual RESET			--		✓				
Auto-RESET			✓		--	✓			
Remote-RESET			--		✓[1)]	✓			
TEST pushbutton			--		✓				
Short-circuit detection for sensor circuit			--		✓ (for 2-CO units)		✓	--	
Short-circuit and open-circuit display			--				✓[2)]	--	
Warning and disconnection in one unit			--					✓	--
Permissible ambient temperature									
• During operation		°C	-25 ... +60						

✓ Function is available-
-- Function not available

[1)] Remote-RESET possible by disconnecting control voltage.

[2)] Open circuits are only indicated by monostable versions (3RN10 13-....0).

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Type		Compact units	Standard devices			Multi-function units	Warning + tripping	Multiple motor protection
		3RN10 00	3RN10 10	3RN10 11	3RN10 12	3RN10 13	3RN10 22	3RN10 62
Releases								
Rated insulation voltage U_i (pollution degree 3)	V	300						
Connection type		**Screw terminals**						
• Terminal screw		M3 (for standard screwdriver, size 2 and Pozidriv 2)						
• Solid	mm^2	1 x (0.5 ... 4)/2 x (0.5 ... 2.5)						
• Finely stranded with end sleeve	mm^2	1 x (0.5 ... 2.5)/2 x (0.5 ... 1.5)						
• AWG cables, solid or stranded	AWG	2 x (20 ... 14)						
Connection type		**Spring-type terminals**						
• Solid	mm^2	2 x (0.25 ... 1.5)						
• Finely stranded, with end sleeves acc. to DIN 46228	mm^2	2 x (0.25 ... 1.5)						
• Finely stranded	mm^2	2 x (0.25 ... 1.5)						
• AWG cables, solid or stranded	AWG	2 x (24 ... 16)						
Sensor circuit								
Measuring circuit load at $R_F \leq 1.5$ mΩ	mW	≤ 5						
Voltage in sensor circuit at $R_F \leq 1.5$ mΩ	V	≤ 2						
Response temperature (depends on sensor)	°C	60 ... 180						
Coupling time (depends on sensor)	s	About 5						
Summation PTC resistance R_F (per sensor loop)	kΩ	≤ 1.5; response value 3.4 ... 3.8; return value 1.5 ... 1.65						
Response tolerance	°C	±6						
Control circuit								
Rated control supply voltage U_s		See page 10/155						
Operating range								
• 110/230 V AC		0.85 ... 1.1 x U_s						
• 24 ... 240 V AC/DC		0.85 ... 1.1 x U_s						
• 24 V AC/DC		0.85 ... 1.2 x U_s for DC operation, 0.85 ... 1.1 x U_s for AC operation						
Rated power AC/DC	W	< 2						
Auxiliary circuit								
Conventional thermal current I_{th}	A	5						
Rated operational current I_e								
• AC-15/24 ... 250 V	A	3						
• DC-13 at								
- 24 V	A	1						
- 125 V	A	0.2						
- 240 V	A	0.1						
DIAZED fuse protection	A	6[1)]						
CSA and UL rated data, control circuit								
Rated control voltage 50/60 Hz								
• AC	V	300						
• DC	V	300						
Switching capacity		R 300/B 300						
Protective separation up to 300 V according to EN 60947-1		--				3RN10 13-1BW10, 3RN10 13-1GW10	--	

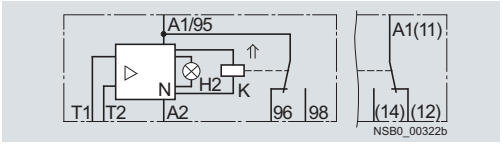
[1)] I_n > 1 kA weld-free according to IEC 60947-5-1.

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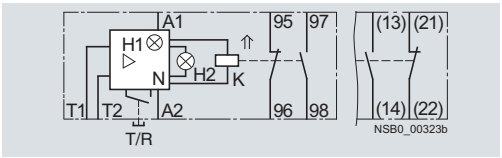
For PTC sensors

Circuit diagrams

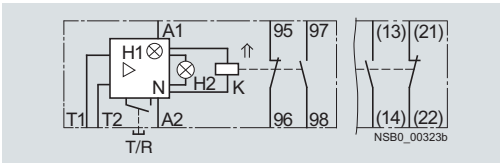
Illustrated with control voltage applied



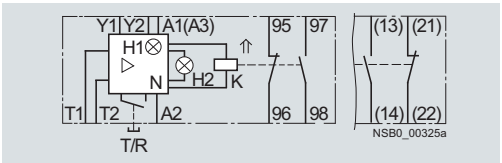
3RN10 00, 1 CO



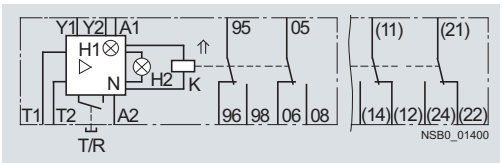
3RN10 10, 1 NO + 1 NC



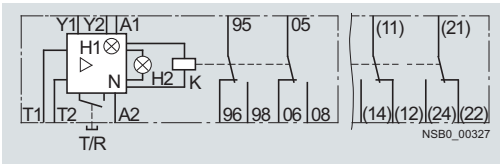
3RN10 11[1], 1 NO + 1 NC



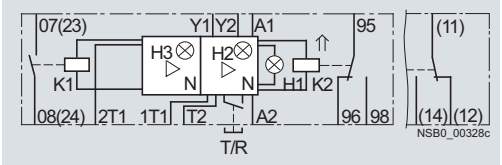
3RN10 12[1], 1 NO + 1 NC



3RN10 13-...0 (monostable)

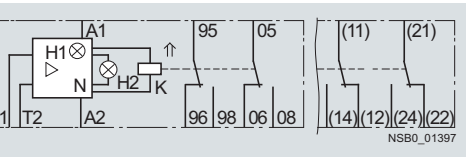


3RN10 13-...1 (bistable)

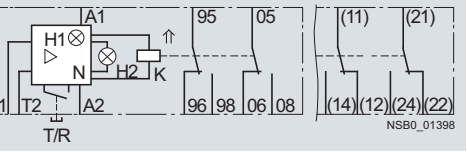


3RN10 22

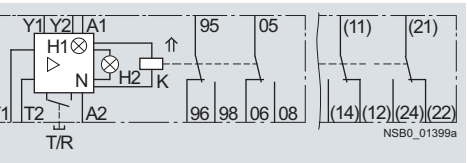
Illustrated with control voltage applied



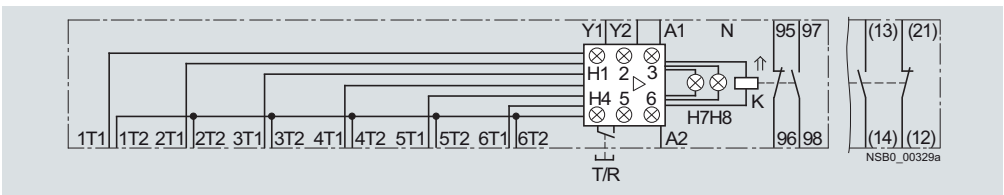
3RN10 10, 2 CO



3RN10 11, 2 CO



3RN10 12, 2 CO



3RN10 62

Illustrated with control voltage not applied

Illustrated with control voltage not applied

General legend

A1, A2 , A3	Terminals of the control voltage
N	Amplifier
T/R	TEST/RESET button
Y1, Y2	Terminals for Remote-RESET (jumpered = Auto-RESET)
⇑	The double arrow indicates an operating state of the contact according to DIN 40900, Part 7 which deviates from the norm (here: Position of the contacts when control voltage is applied to terminals A1 and A2)

Legend for 3RN10

H1	LED "READY"
H2	LED "TRIPPED"
K	Output relay
T1, T2	Terminals of the sensor loop

Legend for 3RN10 22

H1	LED "READY"
H2	LED "TRIPPED"
H3	LED "ALARM"
K1	Output relay for warning threshold (LED "ALARM")
K2	Output relay for disconnect (LED "TRIPPED")
1T1 and T2	Terminals of the
2T1 and T2	sensor loop

⚠ *Important!*

Close unconnected sensor circuits.

Legend for 3RN10 62

H1 to H6	LED of the tripped sensor loop
H7	LED "READY"
H8	LED "TRIPPED"
K	Output relay
1T1, 1T2 to 6T1, 6T2	Terminals of the 1st sensor loop / Terminals of the 6th sensor loop

⚠ *Important!*

Close unconnected sensor circuits.

[1] For units with combination voltages 230/110 V AC (3RN10 11-.CK00 and 3RN10 12-.CK00) A1 and A2 apply: 230 V AC, A3 and A2: 110 V AC.

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Selection and ordering data

- For monitoring the motor winding temperature using temperature-dependent resistors (PTCs, type A) that are directly installed in the motor winding by the manufacturer
- Monostable versions with closed-circuit principle, i.e. relays respond in the event of control supply voltage failure
- 3RN10 13-.BW01: Bistable version, does not trigger in the event of control supply voltage failure
- All devices have PTB01 ATEX approval for dust or gas see www.siemens.com/sirius/atex
- All devices except for 24 V AC/DC feature electrical separation
- Versions with safe isolation up to 300 V according to IEC 60947-1
- Non-volatile versions
- Versions with short-circuit and open-circuit detection in sensor circuit
- Versions with solid-state compatible contacts with hard gold-plating
- Versions for up to 6 sensor circuits
- Versions with Manual-RESET, Remote-RESET, Auto-RESET and test button
- Terminal labeling according to DIN 50005
- All terminals are removable
- Width 22.5 mm (45 mm on version for several sensor circuits)

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H

RESET	Contacts	Rated control supply voltage U_s 50/60 Hz	DT	Screw terminals Order No.	Price per PU	DT	Spring-type terminals Order No.	Price per PU
		V						
Compact signal evaluation units, width 22.5 mm, 1 LED								
Terminal A1 is jumpered with the root of the changeover contact								
Auto	1 CO	24 AC/DC	▶	**3RN10 00-1AB00**		A	**3RN10 00-2AB00**	
		110 AC	A	**3RN10 00-1AG00**		B	**3RN10 00-2AG00**	
		230 AC	▶	**3RN10 00-1AM00**		B	**3RN10 00-2AM00**	
Standard evaluation units, width 22.5 mm, 2 LEDs								
Auto	1 NO + 1 NC	24 AC/DC	▶	**3RN10 10-1CB00**		▶	**3RN10 10-2CB00**	
		110 AC	▶	**3RN10 10-1CG00**		A	**3RN10 10-2CG00**	
		230 AC	▶	**3RN10 10-1CM00**		A	**3RN10 10-2CM00**	
		24 … 240 AC/DC	▶	**3RN10 10-1CW00**		A	**3RN10 10-2CW00**	
	2 CO	24 AC/DC	A	**3RN10 10-1BB00**		A	**3RN10 10-2BB00**	
		110 AC	A	**3RN10 10-1BG00**		C	**3RN10 10-2BG00**	
		230 AC	A	**3RN10 10-1BM00**		A	**3RN10 10-2BM00**	
	2 CO, hard gold-plated	24 AC/DC	A	**3RN10 10-1GB00**		C	**3RN10 10-2GB00**	
Manual/ Remote[1]	1 NO + 1 NC	24 AC/DC	▶	**3RN10 11-1CB00**		A	**3RN10 11-2CB00**	
		110 / 230 AC	▶	**3RN10 11-1CK00**		A	**3RN10 11-2CK00**	
Short-circuit detection for sensor circuit								
Manual/ Remote[1]	2 CO	24 AC/DC	A	**3RN10 11-1BB00**		A	**3RN10 11-2BB00**	
		110 AC	A	**3RN10 11-1BG00**		C	**3RN10 11-2BG00**	
		230 AC	A	**3RN10 11-1BM00**		A	**3RN10 11-2BM00**	
	2 CO, hard gold-plated	24 AC/DC	A	**3RN10 11-1GB00**		A	**3RN10 11-2GB00**	
Non-volatile[2]								
Manual/ Auto/ Remote	1 NO + 1 NC	24 AC/DC	▶	**3RN10 12-1CB00**		A	**3RN10 12-2CB00**	
		110 / 230 AC	▶	**3RN10 12-1CK00**		A	**3RN10 12-2CK00**	
Non-volatile[2], short-circuit detection in sensor circuit								
Manual/ Auto/ Remote	2 CO	24 AC/DC	A	**3RN10 12-1BB00**		C	**3RN10 12-2BB00**	
		110 AC	A	**3RN10 12-1BG00**		C	**3RN10 12-2BG00**	
		230 AC	A	**3RN10 12-1BM00**		C	**3RN10 12-2BM00**	
	2 CO, hard gold-plated	24 AC/DC	A	**3RN10 12-1GB00**		C	**3RN10 12-2GB00**	
Non-volatile[2], short-circuit and open-circuit detection and display in sensor circuit; wide-range voltage with screw terminal with safe isolation								
Manual/ Auto/ Remote	2 CO	24 AC/DC	▶	**3RN10 13-1BB00**		A	**3RN10 13-2BB00**	
		24 … 240 AC/DC	▶	**3RN10 13-1BW10**		A	**3RN10 13-2BW00**	
	2 CO, hard gold-plated	24 … 240 AC/DC	A	**3RN10 13-1GW10**		C	**3RN10 13-2GW00**	
Bistable evaluation units, width 22.5 mm								
Test / RESET button, non-volatile[2], short-circuit and open-circuit detection and display in sensor circuit								
Manual/ Auto/ Remote	2 CO	24 … 240 AC/DC	▶	**3RN10 13-1BW01**		A	**3RN10 13-2BW01**	


3RN10 11-1BB00


3RN10 13-1BB00


3RN10 12-2CK00

1) The unit can be reset with the RESET button or by disconnecting the control supply voltage.

2) Protection against voltage failure or non-volatile fault storage means that previous tripping due to a fault remains stored even if the control supply voltage fails. The monitoring device is not reset if the voltage fails. With an active fault, meaning a fault which has not been manually confirmed, an automatic restart of the plant upon recovery of the power is prevented therefore and plant safety increased as the result.

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For PTC sensors

RESET	Contacts	Rated control supply voltage U_s 50/60 Hz	DT	Screw terminals	DT	Spring-type terminals
		V		Order No. Price per PU		Order No. Price per PU
Evaluation units for 2 sensor circuits, warning and disconnection, width 22.5 mm, 3 LEDs						
Test/RESET button, non-volatile[1] Manual/Auto/Remote	1 NO + 1 CO	24 … 240 AC/DC ►		**3RN10 22-1DW00**	A	**3RN10 22-2DW00**
Evaluation units for 6 sensor circuits, multiple motor protection, width 45 mm, 8 LEDs						
Test/RESET button, non-volatile[1] Manual/Auto/Remote	1 NO + 1 NC	24 … 240 AC/DC ►		**3RN10 62-1CW00**	A	**3RN10 62-2CW00**

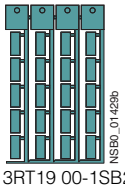


3RN10 62-1CW00

[1] Protection against voltage failure or non-volatile fault storage means that previous tripping due to a fault remains stored even if the control supply voltage fails. The monitoring device is not reset if the voltage fails. With an active fault, meaning a fault which has not been manually confirmed, an automatic restart of the plant upon recovery of the power is prevented therefore and plant safety increased as the result.

Accessories

Use	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Blank labels							
For 3RN1	**Unit labeling plates** For SIRIUS devices						
	20 mm x 7 mm, pastel turquoise[1]	D	**3RT19 00-1SB20**		100	340 units	41B
For 3RN1	**Inscription labels for sticking** For SIRIUS devices						
	19 mm x 6 mm, pastel turquoise	C	**3RT19 00-1SB60**		100	3 060 units	41B
	19 mm x 6 mm zinc yellow	C	**3RT19 00-1SD60**		100	3 060 units	41B
Push-in lugs							
For 3RN1	**Push-in lugs** For screw fixing, 2 units are required for each device	B	**3RP19 03**		1	10 units	41H
Tools for opening spring-type terminals							
For auxiliary circuit connections	**Screwdrivers** For all SIRIUS devices with spring-type terminals 3.0 mm x 0.5 mm, length approx. 200 mm, titanium gray/black, partially insulated	A	**Spring-type terminals** **3RA29 08-1A**		1	1 unit	41B



3RT19 00-1SB20



3RP19 03



3RA29 08-1A

[1] PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH
(see Chapter 16, "Appendix" ➞ "External Partners") .

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



SIRIUS 3RS17 interface converters

Interface converters perform the coupling function for analog signals on both the input side and the output side. They are indispensable when processing analog values with electronic controls. Under harsh industrial conditions in particular, it is often necessary to transmit analog signals over long distances. This means that electrical separation is essential due to the different supply systems. The resistance of the wiring causes potential differences and losses which must be prevented.

Electromagnetic faults and overvoltages can affect the signals on the input side in particular or even destroy the analog modules. All terminals of the 3RS17 interface converters are safe up to a voltage of 30 V DC and protected against switching poles. Short-circuit protection is an especially important function for the outputs.

The devices are EMC-tested according to
- EN 61000-6-4 (basic specification emitted interference)
- EN 61000-6-2 (basic specification for interference immunity)

The analog signals comply with
- IEC 60381-1/2

Order No. scheme

Digit of the Order No.	1st - 5th	6th	7th		8th	9th	10th	11th	12th
	□□□□□	□	□	–	□	□	□	□	0
Interface converters	**3 R S 1 7**								
Type of input signal		□	□						
Connection methods					□				
Type of output signal						□			
Voltage version and type of separation							□		
Measuring range								□	
Example	**3 R S 1 7**	**0**	**0**	**–**	**1**	**A**	**E**	**0**	**0**

Note:

The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quoted in the catalog in the Selection and ordering data.

Application

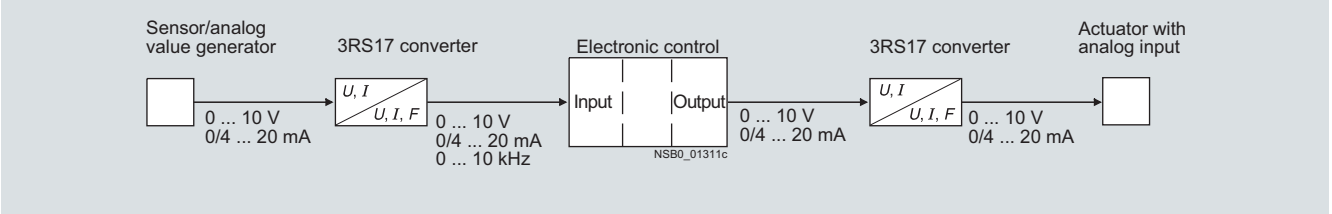
Converters are used in analog signal processing for
- Electrical separation
- Conversion of normalized and non-normalized signals
- Amplification and impedance adaptation
- Conversion to a frequency for processing by a digital input
- Overvoltage and EMC protection
- Short-circuit protection of the outputs
- Potential duplication

3RS17 25 manual/automatic converter

For special applications in which analog signals have to be simulated, or during plant commissioning when the actual process value is not yet available, the 3RS17 25 devices feature an adjustable potentiometer for manual setpoint selection and a manual/automatic switch.

The adjustable potentiometer for the 3RS17 25 devices is used to simulate analog output signals when the changeover switch is set to "Manual" and the control supply voltage is applied, without the need for an analog input signal; and the scale ranges from 0 to 100 %.

Example: When it is set for an output of 4 to 20 mA, the 0 % scale value on the potentiometer represents an output current of 4 mA and the 100 % scale value represents an output current of 20 mA. In the "Auto" switch position, the output signal follows the input signal proportionally regardless of the potentiometer setting.



Application example: Interface converter in analog signal evaluation

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Technical specifications

Active interface converters

Active interface converters provide maximum flexibility for the application by the use of an external control supply voltage. Configuration with active interface converters is extremely easy because input and output resistances and voltage drops are compensated by the auxiliary supply. They support electrical separation as well as conversion from one signal type to another or reinforcement. The load of the measured value transmitter is negligible.

Passive interface converters

Passive interface converters do not require an external control supply voltage. This advantage can only be used by current signals that are converted 1:1. Reinforcement or conversion is not possible. The converters are used for complete electrical separation of current signals and to protect the inputs and outputs. Passive separators do not operate reaction-free, i.e. any load on the output produces an equal load on the input signal. When the passive converter is to be used, the output power of the sensor and the input resistance of the analog input must be analyzed. This technique is being increasingly implemented in the case of pure current signals.

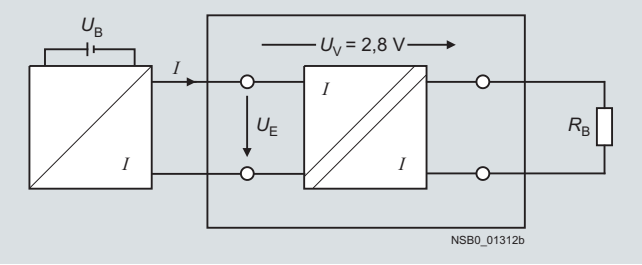
Calculation guide for passive converters

Important: Please note the following when using passive separators:

The current-driving voltage of the measuring transducer U_E must be sufficient to drive the maximum current of 20 mA over the passive separators with a voltage loss of U_V = 2.8 V and the load R_B.

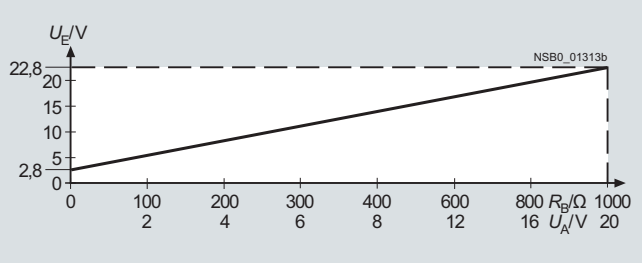
This means that:

$U_B \geq U_E = 2.8\ V + 20\ mA \times R_B$



Distribution of the voltages in the case of passive separators

The following graphic shows the input voltage U_E as a function of the load R_B taking into account the voltage loss U_V. If the load is known, the y-axis shows the minimum voltage that has to be supplied by the current source in order to drive the maximum current of 20 mA over the passive separator and load.



Input voltage depending on the load at I_a = 20 mA

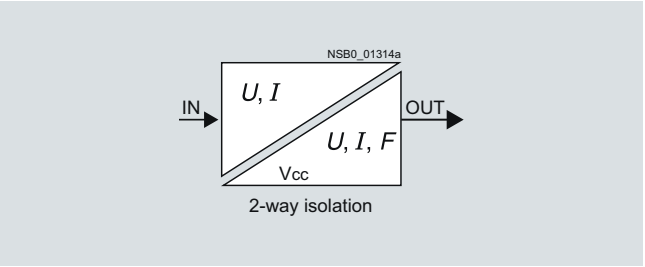
Load rating of the outputs

A maximum output load is specified for current signals. This resistance value specifies how large the input resistance of the next device connected in series can be as a result of the power of the converter.

For voltage signals, the maximum current that can be drawn from the output is the decisive factor.

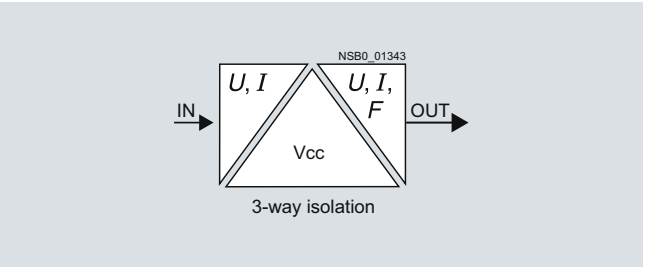
2-way separation

In the case of 2-way separation, the input is electrically separated from the output. The "zero potential" of the control supply voltage is the same as the reference potential for the analog output signal.

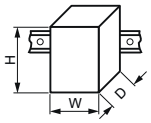


3-way separation

For the 3-way separation, each circuit is electrically separated from the other circuits, i.e. input, output, and control supply voltage do not have equipotential bonding.



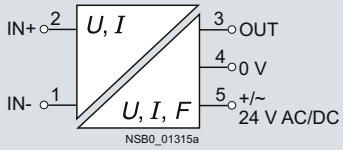
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Type 3RS17			24 V AC/DC	24 ... 240 V AC/DC
General data				
Dimensions (W x H x D) 				
• 3RS17 00, 3RS17 02, 3RS17 03, 3RS17 05-.FD, 3RS17 05-.FE, 3RS17 05-.KD, 3RS17 20		mm	6.2 x 80 x 84	
• 3RS17 0.-..E00		mm	6.2 x 90 x 92.5	
• 3RS17 05-.FW, 3RS17 05-.KW, 3RS17 06, 3RS17 25		mm	17.5 x 80 x 84	
• 3RS17 21, 3RS17 22		mm	12.5 x 80 x 84	
Electrical separation of input/output			Active disconnector: 1500 V, 50 Hz, 1 min; Passive disconnector: 500 V, 50 Hz, 1 min	4000 V, 50 Hz, 1 min
Rated insulation voltage U_i Pollution degree 2 Overvoltage category III acc. to DIN VDE 0100		V	50	300
Permissible ambient temperature				
• During operation		°C	-25 ... +60	
Connection type			**Screw terminals**	
• Terminal screw			M3	
• Solid		mm^2	0.5 ... 2.5 (AWG 20 ... 14)	
• Finely stranded with end sleeve		mm^2	0.5 ... 2.5 (AWG 20 ... 14); at 3RS17 0.-1.E00: 0.5 ... 1.5 (AWG 20 ... 16)	
Connection type			**Spring-type terminals**	
• Solid	Enclosures IEC 529	mm^2	0.5 ... 2.5 (AWG 20 ... 14)	
• Finely stranded, with end sleeves acc. to DIN 46228	Terminals IEC 529	mm^2	0.5 ... 2.5 (AWG 20 ... 14)	
• Finely stranded		mm^2	0.5 ... 1.5 (AWG 20 ... 16)	
Inputs				
Impedance	Voltage inputs	kΩ	330	
	Current inputs, active	Ω	100	
Input voltage max.	Voltage inputs	V	30 AC/DC	
	Current inputs, active	V	30 AC/DC	
Operating currents	Current inputs, passive	µA	100/250 (6.2 mm width)	
Voltage drop	Current inputs, passive	V	2.7 at 20 mA	
Output				
Internal resistance	Voltage output, 0 ... 10 V	Ω	55	
Output load	Current 0/4 ... 20 mA active, max.	Ω	400	
	Current 0 ... 20 mA passive, max.	Ω	1000 at 20 mA	
	Frequency, min.	Ω	2400	
Output voltage	Frequency	V	20.9	
Output current	Voltage output, 0 ... 10 V, max.	mA	21; note the terminating resistor (> 500 Ω)!	
	Frequency, max.	mA	10	
Short-circuit current	Voltage output, 0 ... 10 V	mA	40	
	Current output, 0 ... 20 mA, passive	mA	Corresponds to the input current	
	Frequency	mA	15	
Protection of the outputs			Short-circuit proof	
Max. overvoltage at output		V	30	

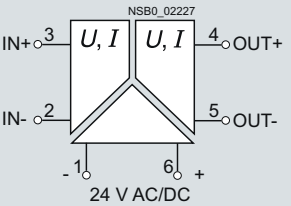
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SIRIUS 3RS17 interface converters

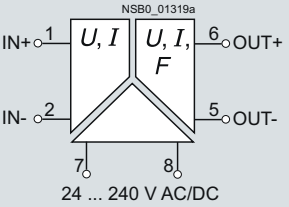
Circuit diagrams



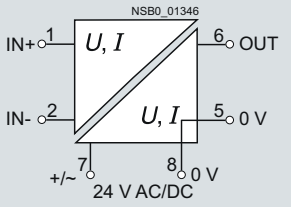
3RS17 00-..D.. , 3RS17 02-..D.. ,
3RS17 03-..D.. , 3RS17 05-..D..



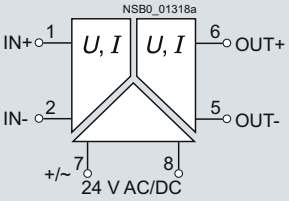
3RS17 00-..E00, 3RS17 02-..E00,
3RS17 03-..E00, 3RS17 05-..E00



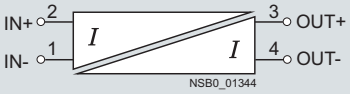
3RS17 0.-..W00



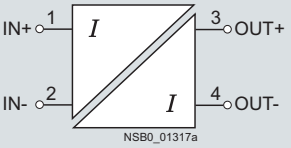
3RS17 06- . FD00



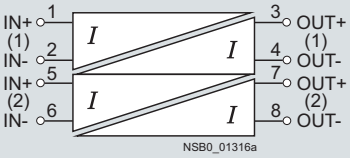
3RS17 06-.FE00



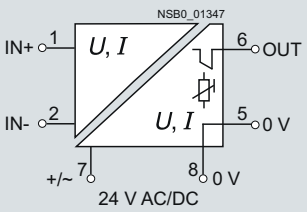
3RS17 20-.ET00



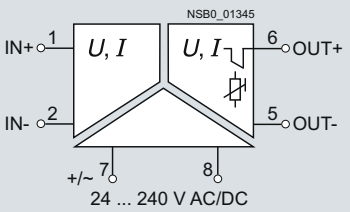
3RS17 21-.ET00



3RS17 22-.ET00



3RS17 25-.FD00



3RS17 25-.FW00

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Selection and ordering data

All transformers except the passive single interface converters have a yellow LED for displaying "Power on".

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41H


3RS17 06-1FD00


3RS17 20-1ET00


3RS17 05-2FD00


3RS17 05-2FE00


3RS17 25-2FD00

Inputs	Output	Width	Rated control supply voltage U_s	Electrical separation	DT	Screw terminals	DT	Spring-type terminals
						Order No. Price per PU		Order No. Price per PU
		mm	V					
Single interface converters, active								
0 ... 10 V	0 ... 10 V	6.2	24 AC/DC	2 paths	A	**3RS17 00-1AD00**	A	**3RS17 00-2AD00**
				3 paths	A	**3RS17 00-1AE00**	A	**3RS17 00-2AE00**
	0 ... 20 mA	6.2	24 AC/DC	2 paths	A	**3RS17 00-1CD00**	A	**3RS17 00-2CD00**
				3 paths	A	**3RS17 00-1CE00**	A	**3RS17 00-2CE00**
	4 ... 20 mA	6.2	24 AC/DC	2 paths	A	**3RS17 00-1DD00**	A	**3RS17 00-2DD00**
				3 paths	A	**3RS17 00-1DE00**	A	**3RS17 00-2DE00**
0 ... 20 mA	0 ... 10 V	6.2	24 AC/DC	2 paths	A	**3RS17 02-1AD00**	C	**3RS17 02-2AD00**
				3 paths	A	**3RS17 02-1AE00**	C	**3RS17 02-2AE00**
	0 ... 20 mA	6.2	24 AC/DC	2 paths	A	**3RS17 02-1CD00**	A	**3RS17 02-2CD00**
				3 paths	A	**3RS17 02-1CE00**	A	**3RS17 02-2CE00**
	4 ... 20 mA	6.2	24 AC/DC	2 paths	A	**3RS17 02-1DD00**	A	**3RS17 02-2DD00**
				3 paths	A	**3RS17 02-1DE00**	A	**3RS17 02-2DE00**
4 ... 20 mA	0 ... 10 V	6.2	24 AC/DC	2 paths	A	**3RS17 03-1AD00**	A	**3RS17 03-2AD00**
				3 paths	A	**3RS17 03-1AE00**	A	**3RS17 03-2AE00**
	0 ... 20 mA	6.2	24 AC/DC	2 paths	A	**3RS17 03-1CD00**	C	**3RS17 03-2CD00**
				3 paths	A	**3RS17 03-1CE00**	C	**3RS17 03-2CE00**
	4 ... 20 mA	6.2	24 AC/DC	2 paths	A	**3RS17 03-1DD00**	A	**3RS17 03-2DD00**
				3 paths	A	**3RS17 03-1DE00**	A	**3RS17 03-2DE00**
Switchable multi-range converters, active								
0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA, selectable	0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA, selectable	6.2	24 AC/DC	2 paths	A	**3RS17 05-1FD00**	A	**3RS17 05-2FD00**
				3 paths	A	**3RS17 05-1FE00**	A	**3RS17 05-2FE00**
		17.5	24 ... 240 AC/DC	3 paths	A	**3RS17 05-1FW00**	A	**3RS17 05-2FW00**
0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA, selectable	0 ... 50 Hz, 0 ... 100 Hz, 0 ... 1 kHz, 0 ... 10 kHz, selectable	6.2	24 AC/DC	2 paths	A	**3RS17 05-1KD00**	C	**3RS17 05-2KD00**
		17.5	24 ... 240 AC/DC	3 paths	A	**3RS17 05-1KW00**	A	**3RS17 05-2KW00**
Switchable universal converters, active, with 16 input ranges and 3 output ranges								
0 ... 60 mV, 0 ... 100 mV, 0 ... 300 mV, 0 ... 500 mV, 0 ... 1 V, 0 ... 2 V, 0 ... 5 V, 0 ... 10 V, 0 ... 20 V, 2 ... 10 V, 0 ... 5 mA, 0 ... 10 mA, 0 ... 20 mA, 4 ... 20 mA, +/-5 mA, +/-20 mA, selectable	0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA, selectable	17.5	24 AC/DC	2 paths	A	**3RS17 06-1FD00**	A	**3RS17 06-2FD00**
				3 paths	A	**3RS17 06-1FE00**	A	**3RS17 06-2FE00**
			24 ... 240 AC/DC	3 paths	A	**3RS17 06-1FW00**	A	**3RS17 06-2FW00**
Switchable multi-range converters, active, with manual/automatic switch and single potentiometer as manual analog signal transmitter								
0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA, selectable	0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA, selectable	17.5	24 AC/DC	2 paths	A	**3RS17 25-1FD00**	A	**3RS17 25-2FD00**
			24 ... 240 AC/DC	3 paths	A	**3RS17 25-1FW00**	A	**3RS17 25-2FW00**

10

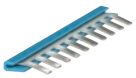
*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 3RS17 interface converters

Inputs	Output	Width	Number of channels	Electrical separation	DT	Screw terminals Order No.	Price per PU	DT	Spring-type terminals Order No.	Price per PU
		mm								
Single interface converters, passive										
0/4 ... 20 mA	0/4 ... 20 mA	6.2	1	2 paths	A	**3RS17 20-1ET00**		A	**3RS17 20-2ET00**	
		12.5	1	2 paths	A	**3RS17 21-1ET00**		A	**3RS17 21-2ET00**	
			2	2 paths	A	**3RS17 22-1ET00**		A	**3RS17 22-2ET00**	

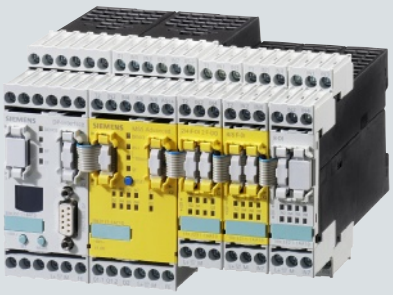
Accessories

	Use	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Tools for opening spring-type terminals								
 3RA29 08-1A	For auxiliary circuit connections	**Screwdrivers** For all SIRIUS devices with spring-type terminals 3.0 mm x 0.5 mm, length approx. 200 mm, titanium gray/black, partially insulated	A	**Spring-type terminals** **3RA29 08-1A**		1	1 unit	41B
Connecting combs, blue								
 3TX7 014-7AA00	For 3RS17..-..E00	For linking the same potentials, 16 terminals, current carrying capacity for infeed max. 6 A	A	**3TX7 014-7AA00**		1	5 units	41H
Galvanic isolation plates								
 3TX7 014-7CE00	For 3RS17..-..E00	--	A	**3TX7 014-7CE00**		1	10 units	41H

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Safety Technology



Price groups
PG 41B, 41H, 41L, 42B, 42C, 42J

11/2 **Introduction**

SIRIUS 3TK28 safety relays
11/9 General data
11/10 With relay enabling circuits
11/15 With electronic enabling circuits
11/18 With contactor relay enabling circuits
11/21 With special functions new
11/23 Accessories

SIRIUS 3RK3 modular safety system
11/24 General data
11/29 3RK31 central modules new
11/29 3RK32, 3RK33 expansion modules
11/29 3RK35 interface modules
11/29 3RK36 operating and monitoring modules
11/30 Accessories

More information can be found on the Internet: see opening information, page 13

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Introduction

Overview

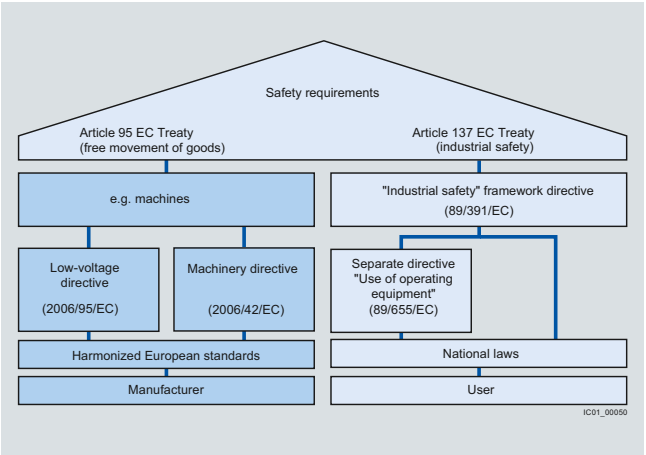
Functional safety of machines and plants – Basic safety requirements in the manufacturing industry

In many different applications (mechanical engineering, materials handling, the process industry, building management systems, etc.), automation systems and components are expected to perform safety-relevant tasks. This means that the life and health of people and the physical integrity of capital goods and the environment depend on the proper operation of these systems and components. Today, the term "functional safety" is used internationally to describe the proper operation of systems and components.

With the introduction of the uniform European Single Market, national standards and regulations affecting the technical realization of machines were consistently harmonized. This involved defining basic safety requirements which address, on the one hand, machine manufacturers in terms of the free movement of goods (Article 95) and, on the other hand, machine operators in terms of industrial safety (Article 137).

The EU directives:

- define requirements which must be met by plants and their operating companies in order to protect the health of people and the quality of the environment;
- include standards for health & safety at work (minimum requirements);
- define requirements which must be met by products (e.g. machines) in order to protect the health & safety of consumers;
- differentiate between the requirements which must be met by the implementation of products in order to ensure the free movement of goods and the requirements which must be met by the use of products.



Safety requirements imposed on machines and plants

Objective of the standards

It is the objective of safety technology to minimize as far as possible the hazards from technical facilities for people and the environment while restricting no more than absolutely necessary the scope of industrial production, the use of machines or the production of chemical products.

Production automation is governed in particular by the following standards:

- IEC 61508 or IEC 62061 and
- ISO 13849-1.

Standard EN 62061

Standard EN 62061 "Safety of machines - Functional safety of electrical, electronic and programmable electronic control systems" defines comprehensive requirements. It includes recommendations for the development, integration and validation of safety-related electrical, electronic and programmable electronic control systems (SRECS) for machines. With the implementation of EN 62061, for the first time, one standard covers the entire safety chain, from the sensor to the actuator. The Safety Integrity Level, or SIL for short, is defined as the application parameter for this standard.

Requirements placed on the capacity of non-electrical – e. g. hydraulic, pneumatic or electromechanical – safety-related control elements for machines are not specified by the standard.



Safety of machines

Standard EN ISO 13849-1

EN ISO 13849-1 "Safety of machines - Safety-related components of controls - Part 1: General principles" superseded EN 954-1 at the end of 2009. It considers the complete range of safety functions with all the devices which are involved in their performance. EN ISO 13849-1 also makes a quantitative analysis of the safety functions. The standard describes how to determine the performance level (PL) for safety-relevant parts of control systems on the basis of architectures specified for the intended service life.

When several safety-relevant parts are combined to form a single complete system, the standard explains how to determine the resulting PL. It can be applied to safety-related parts of control systems (SRP/CS) and all types of machines, regardless of the technology and energy used, e.g. electrical, hydraulic, pneumatic or mechanical.

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Our offering

As a partner for all safety requirements, we not only support you with the respective safety-related products and systems, but also consistently provide you with the most current know-how on international standards and regulations. Machine manufacturers and plant managers are offered a comprehensive training portfolio as well as services for the entire lifecycle of safety-related systems and machines.

- A uniform, certified product range
- Courses on standards and directives:
  www.siemens.com/sitrain-safetyintegrated
- Worldwide service and support
  http://support.automation.siemens.com
- For more information see:
  www.siemens.com/safety-integrated

Safety Evaluation Tool



Safety Evaluation Tool

The Safety Evaluation Tool for the standards IEC 62061 and ISO 13849-1 guides you step-by-step from definition of the safety system structure through selection of the components, all the way to determination of the achieved safety integrity level (SIL/PL). You receive the results as a standards-compliant report that can be integrated in the documentation as proof of safety.

Benefits of the Safety Evaluation Tool to you:

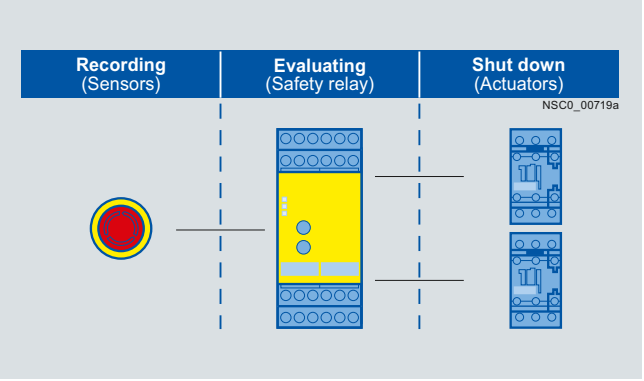
- Less time needed to evaluate the safety functions
- Calculation in accordance with current standards
- User-friendly archiving: Projects can be saved and called up again as required
- Fast and easy handling: comprehensive, predefined libraries of examples
- Fast access to product data
- The online tool can be used free of charge – you pay only the usual costs for accessing the Internet

For more information see:
www.siemens.com/safety-evaluation-tool

Design of a safety function

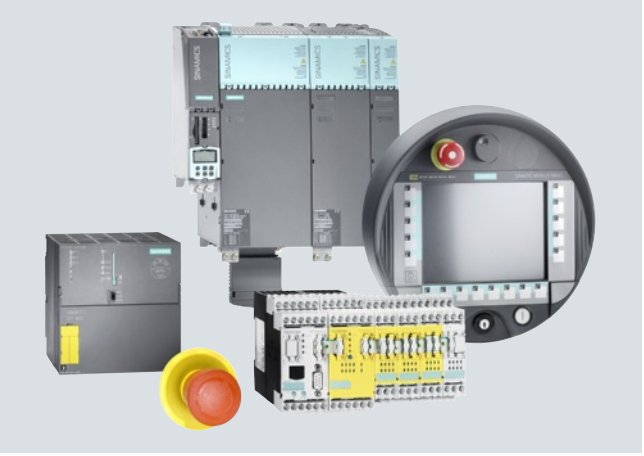
A safety chain normally comprises the following functions: sensing, evaluating and shutdown. In detail this means:

- Sensing = the detection of a safety requirement, e.g. when an EMERGENCY-STOP is actuated or someone enters a hazardous area which is protected by sensors such as light arrays or laser scanners.
- Evaluating = the detection of a safety requirement and the reliable initiation of a reaction, e.g. shutting down the enabling circuits.
- Shutdown = the shutting down of hazards, e.g. a power supply, using the downstream contactors.



Design of a safety function

Safety Integrated – integrated safety technology from one source



Safety Integrated

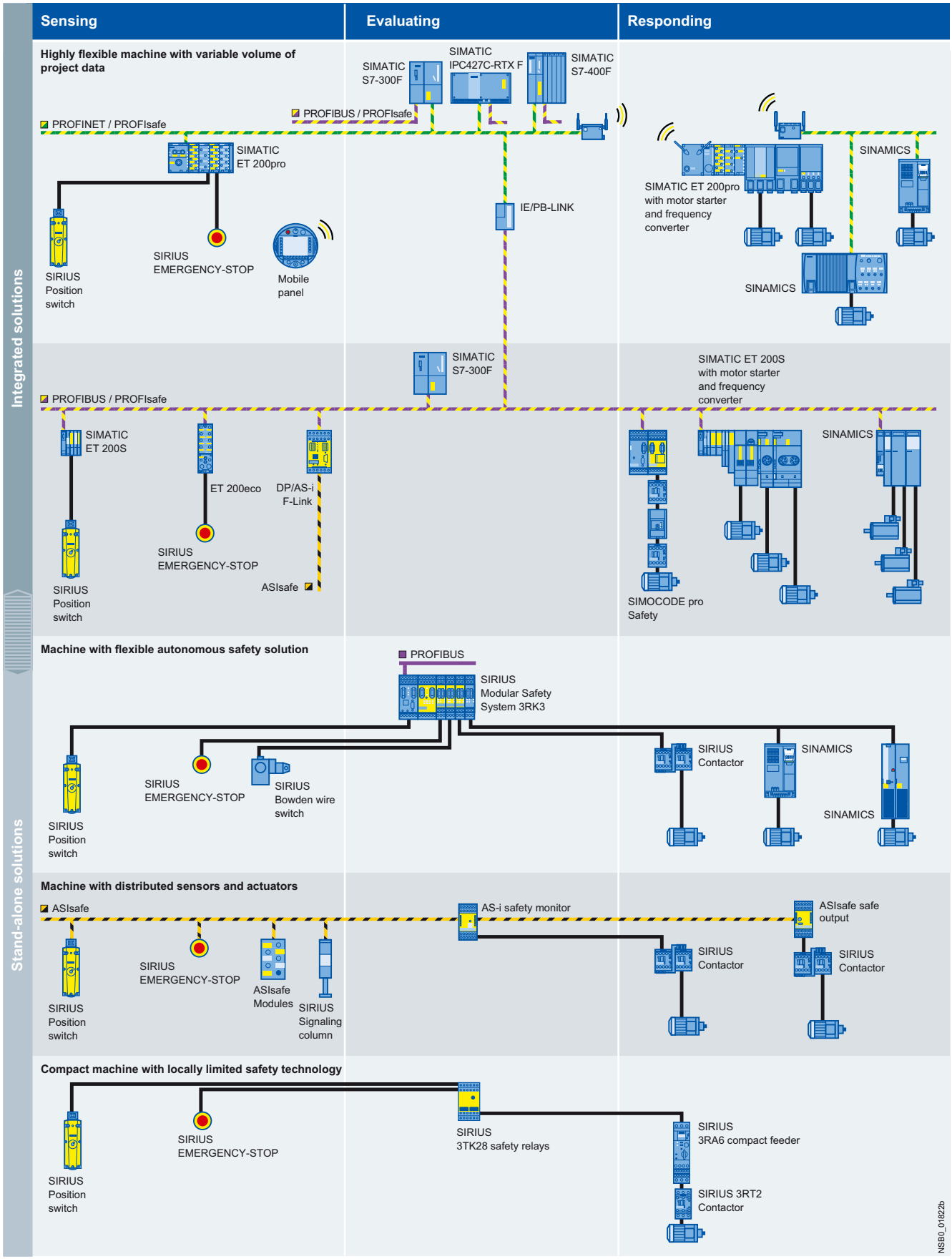
The following applies equally for machine manufacturers and the companies which operate their machines: Seamless safety must exist for personnel and machines. The solution: our Safety Integrated concept based on Totally Integrated Automation. Whether for simple safety functions or highly complex tasks – our product range offers you maximum safety.

Safety Integrated is a unique, complete and consistent range of safety products covering all safety-related tasks – from sensing and evaluating to responding, from switches and control systems to operating mechanisms (see graphic on page 11/4). Our products meet the safety requirements in force in industry, including IEC, ISO, NFPA and UL, and are certified in accordance with the latest safety standards.

All Safety Integrated products or systems can be seamlessly integrated in the standard automation and drive environment. They are therefore particularly flexible and economical, reduce engineering time, increase plant availability and enable practice-related machine operation.

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Introduction

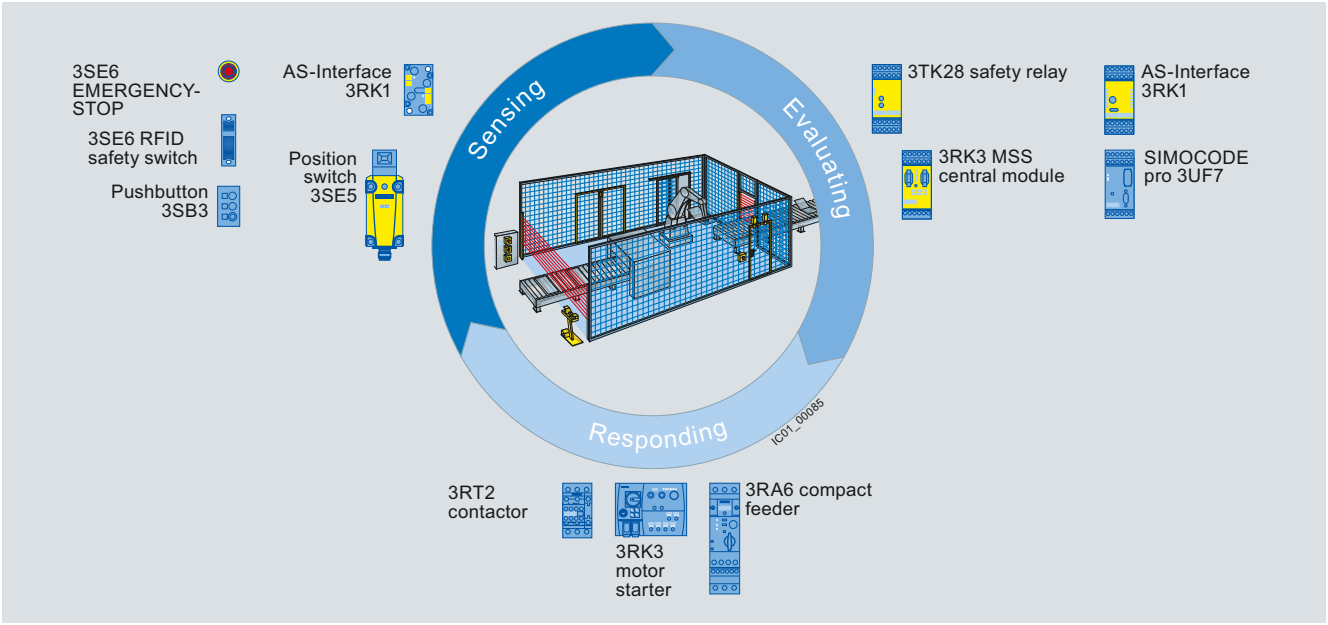


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SIRIUS Safety Integrated

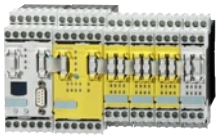
Our SIRIUS Safety Integrated controls are a central element of the Siemens Safety Integrated concept. Whether for failsafe sensing, instructing and reporting, monitoring and evaluating or starting and reliable shutting down - our SIRIUS Safety Integrated controls are expert at performing safety tasks in your plant.

SIRIUS Safety Integrated uses failsafe communication using standard fieldbus systems, e.g. ASIsafe via AS-Interface and PROFIsafe via PROFIBUS and PROFINET, to solve even networked safety tasks of greater complexity. This opens the door for flexible safety solutions for compact machines or large-scale plants.

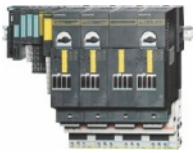
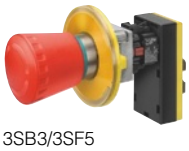


SIRIUS Safety Integrated

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		Order No.	Page
SIRIUS Safety Integrated			
 3TK28 26-2BB40	**SIRIUS safety relays** • Key modules of a consistent and cost-effective safety chain • Can be used for all safety applications thanks to compliance with the highest safety requirements (PL e according to ISO 13849-1 or SIL 3 according to IEC 61508) • Suitable for use all over the world through compliance with all globally established certifications		
	Safety relays with relay enabling circuits • Different voltages can be switched through the floating contacts • Inductive currents up to 5 A can be switched with relay contacts	**3TK28 2, 3TK28 3**	11/10
 3TK28 41-1BB40	Safety relays with electronic enabling circuits • Wear-free • Suitable for operation in fast switching applications • Insensitive to vibrations and dirt • Good electrical endurance	**3TK28 4**	11/15
	Safety relays with contactor relay enabling circuits • Different voltages can be switched through the floating contacts • Inductive currents up to 10 A can be switched with contactor relay enabling circuits • Long mechanical and electrical endurance	**3TK28 5**	11/18
 3TK28 10-1BA41	Safety relays with special functions Safe standstill monitoring with 3TK28 10-0 • Monitoring without external sensors • Universal use in applications possible Safe speed monitoring with 3TK28 10-1 • Monitoring of speed with encoders and proximity switches possible • Easy diagnostics options via display • Integrated monitoring of a spring-type interlocking protective door	**3TK28 10**	11/21
 3UF7	**SIMOCODE pro motor management and control devices** • Flexible, modular motor management system for motors with constant speeds in the low-voltage range • Provides an intelligent interface between the higher-level automation system and the motor feeder • Multifunctional, solid-state full motor protection which is independent of the automation system • Integrated control functions for the motor control system • Detailed operating, service and diagnostics data • Open communication through PROFIBUS DP • Safety relay function for the failsafe disconnection of motors up to SIL 3 (IEC 61508/62061) or PL e with Category 4 (ISO 13849-1) Failsafe digital modules • DM-F Local for direct assignment between a failsafe hardware shutdown signal and a motor feeder • DM-F PROFIsafe for when a failsafe controller (F-CPU) creates the failsafe signal for the disconnection	**3UF7**	Ch.10
 3RK3	**3RK3 Modular Safety System (MSS)** • Freely configurable, modular safety relays • Safety-orientated applications up to PL e according to ISO 13849-1 and SIL3 according to IEC 62061 can be realized • High flexibility and planning reliability thanks to a modular design • More space in the control cabinet and lower costs thanks to finely modular project data • More functionality and reduced time as the result of the software-configurable system • Comprehensive diagnostics on-site with the MSS ES software • Better plant diagnostics and higher plant availability through data exchange using PROFIBUS • Automatic creation of plant documentation with regard to MSS and software parameterization • Safety-orientated and standard communication between several MSS devices and/or safety monitors • Distributed detection of sensors and disconnection of actuators through AS-Interface • Significant spatial expansion without wiring outlay using AS-Interface	**3RK3**	11/24

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		Order No.	Page
SIRIUS Safety Integrated (continued)			
 Safety monitors	**AS-Interface safety monitors** • For monitoring safe stations and for linking AS-Interface inputs and outputs • Ensures safe disconnection • Available with one or two release circuits with 2-channel configuration • Configuration software ASIMON V3 with graphic function diagram presentation Your advantage: Easy to configure safety functions up to Category 4, PL e, SIL 3	**3RK1**	Ch.2
 ASi F-Link	**AS-i F-Link** • Monitoring the inputs of safety-oriented digital AS-i slaves (ASIsafe slaves) and forwarding of data through PROFIsafe • Supports all AS-Interface master functions according to the AS-Interface Specification V 3.0 • Local diagnostics using LEDs and display with control keys • Programming with Distributed Safety Version V5.4 SP1 or higher for SIMATIC S7-300F/416F • Programming with SAFETY INTEGRATED "SI-Basic" or "SI-COMFORT NCU" for SINUMERIK 840D pl/sl	**3RK3**	Ch. 2
 K45F	**AS-Interface safety modules** • Complete portfolio of ASIsafe modules • Up to four safe inputs per module • Up to one safe output per module Your advantage: Easy integration of safe signals, be it in the control cabinet or in the field, up to Category 4, PL e, SIL 3	**3RK1**	Ch. 2
 ET 200S Safety	**Motor starters**	**3RK3**	Ch. 9
	ET 200S Safety Motor Starter Solutions The ET 200S Safety Motor Starter Solutions comprise: • Safety modules • Standard motor starters • High-Feature motor starters • Failsafe motor starters ET 200S Safety Motor Starter Solutions Local Safety Motor Starter Solutions Local are preferred from the safety technology point of view for locally restricted safety applications. These motor starters are not dependent on a safe control system. ET 200S Safety Motor Starter Solutions PROFIsafe Safety Motor Starter Solutions PROFIsafe are often found by contrast in safety applications of the more complex type that are interlinked. In this case a safe control system is used with the PROFINET or PROFIBUS bus systems with the PROFIsafe profile.		
 ET 200pro Safety	**ET 200pro Safety Motor Starter Solutions** The ET 200pro Safety Motor Starter Solutions comprise: • PROFIsafe modules • Safety repair switch modules • Disconnecting modules • Standard motor starters • High-Feature motor starters ET 200pro Safety Motor Starter Solutions Local Safety Motor Starter Solutions Local are preferred from the safety technology point of view for locally restricted safety applications. These motor starters are not dependent on a safe control system. ET 200pro Safety Motor Starter Solutions PROFIsafe Safety Motor Starter Solutions PROFIsafe are often found by contrast in safety applications of the more complex type that are interlinked. In this case a safe control system is used with the PROFINET or PROFIBUS bus systems with the PROFIsafe profile.		
 3SB3/3SF5	**Command devices** • Using a special F adapter, EMERGENCY-STOP mushroom pushbuttons according to ISO 13850 can be directly connected through the standard AS-Interface with safety-oriented communication. This F adapter is snapped from the rear onto the EMERGENCY-STOP device, enabling maximum performance level "e" according to EN ISO 13849-1 or SIL 3 according to IEC 62061 to be achieved.	**3SF5**	Ch. 13
 3SB3	• EMERGENCY-STOP devices for disconnecting plants in an emergency situation • With positive latching according to EN ISO 13850 and performance level "e" according to EN ISO 13849-1 or SIL 3 according to IEC 62061 • Various mushroom diameters, with lock, in plastic/metal, as individual or complete units and in combination with 3SB3 enclosure or two-hand operation console	**3SB3**	Ch. 13

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		Order No.	Page
SIRIUS Safety Integrated (continued)			
 3SE6 3	**Non-contact RFID safety switches** • Long service life thanks to locking-free switching • Only one switch needed for top safety level PL e or SIL 3 according to EN 13849-1 and IEC 61508. • Safety circuits connected in series, with up to 31 devices • Tamper protection better than with mechanical safety switches thanks to switches and actuators with individual coding • Version with optional 18 N magnetic catch • LED status indication including threshold indication for door displacement • Degree of protection up to IP69 K and resistance to cleaning products • Larger switching displacement than mechanical switches; offers better mounting tolerance and sagging tolerance of the protective door • No time-consuming mechanical installation needed, resulting in shorter installation and adjustment times and less maintenance	**3SE6 3**	Ch. 12
 3SE5 1	**Mechanical position switches** • Easy mounting thanks to modular design • Solid, robust construction • Special versions are easily generated and quickly available, also in combination with standard modules • With a 3SE51/3SE52 position switch it is possible to achieve Category 2 according to ISO 13849-1 (EN 954-1) or SIL 1 according to IEC 61508. • Categories 3 and 4 can be achieved through use of a second 3SE51/3SE53 position switch.	**3SE5 1, 3SE5 2**	Ch. 12
 3SE5 3	**Mechanical safety switches** • With separate actuator, hinge switch or separate actuator and tumbler • With a position switch it is possible to achieve Category 3 according to ISO 13849-1 (EN 954-1) or SIL 2 according to IEC 61508. • Category 4 according to ISO 13849-1 (EN 954-1) or SIL 3 according to IEC 61508 can be achieved by using a second 3SE5 1 or 3SE5 2 position switch. • Version in various sizes made of metal or plastic • Integrated ASIsafe electronics for all enclosure designs	**3SE5 1, 3SE5 2, 3SE5 3**	Ch.12
 3SE7	**Cable-operated switches** • Control functions and EMERGENCY-STOP always within reach • More safety over long distances of up to 2 x 75 m • Easy release • Failsafe applications with SIRIUS Safety Integrated • Status display directly on the switch • Signal display for long distances in innovative LED technology with visibility over 50 m • Pull switches with latching according to ISO 13850 (EN 418) and full EMERGENCY-STOP function with positive opening contacts • Quick and safe mounting with uniform mounting accessories • Versions with 1 NO/2 NC with yellow lid	**3SE7**	Ch. 13

11

Options

Connection methods

The safety relays and the Modular Safety System are available with screw or spring-type terminals.

	Screw terminals
	Spring-type terminals
	The terminals are indicated in the corresponding tables by the symbols shown on orange backgrounds.

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Overview



SIRIUS 3TK28 safety relay

SIRIUS safety relays are the key modules of a consistent and cost-effective safety chain. Be it EMERGENCY-STOP disconnection, protective door monitoring or the protection of presses or punches – with SIRIUS safety relays every safety application can be implemented to optimum effect in terms of engineering and price.

SIRIUS safety relays provide numerous safety-related functions:
- Monitoring the safety functions of sensors
- Monitoring the sensor leads
- Monitoring the correct operation of the safety relay
- Monitoring actuators for standstill
- Safety-oriented disconnection when dangers arise

Depending on the version of the device, SIRIUS safety relays satisfy the most stringent requirements (PL e) according to ISO 13849-1 and achieve the highest Safety Integrity Level (SIL 3) acc. to IEC 61508.

3TK28 Safety Relays

With relay enabling circuits				With electronic enabling circuits			With contactor relay enabling circuits			With special functions	
Basic units	Basic units t_v	Expansion units	Two-hand control units	Basic units	Basic units t_v	Multifunction units	Basic units	Expansion units	Expansion units t_v	Standstill monitors	Overspeed monitors
3TK28 20	3TK28 26	3TK28 30	3TK28 34	3TK28 40	3TK28 42	3TK28 45	3TK28 50	3TK28 56	3TK28 57	3TK28 10-0	3TK28 10-1
3TK28 21	3TK28 27			3TK28 41			3TK28 51				
3TK28 22	3TK28 28						3TK28 52				
3TK28 23							3TK28 53				
3TK28 24											
3TK28 25											
3TK28 26											
See page 11/10				See page 11/15			See page 11/18			See page 11/21	

Benefits

General

- Can be used for all safety applications thanks to compliance with the highest safety requirements (PL e according to ISO 13849-1 or SIL 3 according to IEC 61508)
- Suitable for use all over the world through compliance with all globally established certifications
- Compact, service-proven SIRIUS design creates more space in the control cabinet
- Flexible connectability and expandability make subsequent changes easy
- Removable terminal for greater plant availability
- Yellow front plate clearly identifies the device as an item of safety technology
- Sensor cable up to 2000 m long enables use in large-scale plants

Relay outputs

- Different voltages can be switched through the floating contacts
- Higher currents can be switched with relay contacts

Solid-state outputs

- Wear-free
- Suitable for operation in fast switching applications
- Insensitive to vibrations and dirt
- Good electrical endurance

Microprocessor systems

- Flexible use thanks to many different integrated functions
- Easy parameterization using DIP switches on the front
- High functional reliability based on extensive monitoring functions
- Operated by the machine control system
- Also connection of non-contact sensors (light arrays, light barriers etc.)

Application

SIRIUS safety relays are used mainly in autonomous safety applications which are not connected to a safety-oriented bus system.

Their function here is to evaluate the sensors and the safety-oriented shutdown of hazards. Also they check and monitor the sensors, actuators and safety-oriented functions of the safety relay.

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With relay enabling circuits

Overview



SIRIUS 3TK28 2. safety relay

Safety relays with relay enabling circuits – safety with floating contacts

SIRIUS safety relays with relay enabling circuits not only save a great deal of space thanks to their compact design but also offer extra safety in the form of positively driven pairs of make and break contacts. If one of the contacts becomes welded, the other will disconnect the circuit. A positively driven break contact (NC) then performs the fault detection of the faulty make contact (NO).

For two-hand operation consoles in press control systems the 3TK28 34 press control device serves as a safe evaluation unit.

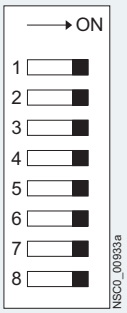
3TK28 30 expansion units are available to increase the number of enabling circuits.

3TK28 26 safety relays

The 3TK28 26 is a parameterizable safety relay. It is used as an evaluation unit for typical safety chains (detection, evaluation, disconnection). DIP switches on the front can be used to set many different functions. The 3TK28 26 is therefore universally applicable.

Safety sensors (e.g. EMERGENCY-STOP pushbuttons) are connected at the input side while contactors or valves for disconnecting the "hazardous function" are connected at the output side. The 3TK28 26 performs the monitoring of the sensor and actuator functions as well as the safe disconnection of the outputs (enabling circuits).

3TK28 26 with DIP switch:

OFF	Schematic	DIP switch No.	ON
Without crossover monitoring		1	Switching mat operation
NC/NO evaluation:		2	NC/NC contact evaluation
2 x 1-channel		3	1 x 2-channel
Debounce time for sensor inputs ≈50 ms		4	Debounce time for sensor inputs ≈ 10 ms
Sensor input autostart		5	Sensor input monitored start
Cascading input autostart		6	Cascading input monitored start
With start test		7	Without start test
Automatic start after mains failure (not permitted in connection with a start test)		8	Without automatic start after mains failure

Benefits

General

- Compact design
- Floating safe outputs
- 3TK28 34 safety relays also suitable for press and punch controls
- Can be used up to an ambient temperature of max. 70 °C

3TK28 26 safety relays

- Connection of all standard sensor types
- Many functions available in a single unit
- Status indications
- Expanded diagnostics options
- Approvals (EN 13849-1, IEC 61508, UL/CSA)
- Signaling of disconnect faults in the actuator circuit
- Floating outputs
- Units with wide voltage range
- Saving of the sensor status in the event of voltage failure

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Selection and ordering data

Type	Basic units					
	3TK28 20	**3TK28 21**	**3TK28 22**	**3TK28 23**	**3TK28 24**	**3TK28 25**
Sensors						
• Inputs	1	1	1	1	1	1
• Electronic	--	--	--	--	--	--
• With contacts	✓	✓	✓[1]	✓	✓	✓
• Magnetically operated switch (Reed contacts)	✓[2]	--	--	--	--	--
Safety mats	--	--	--	--	--	--
Start						
• Auto	✓	✓	✓	--	✓	✓
• Monitored	✓	✓	--	✓	✓	✓
Cascading input 24 V DC	--	--	--	--	--	--
Key-operated switch	--	--	--	--	--	--
Enabling circuit, floating						
• Stop category 0	3 NO	3 NO	2 NO	2 NO	2 NO	3 NO
• Stop category 1	--	--	--	--	--	--
Enabling circuit, solid-state						
• Stop category 0	--	--	--	--	--	--
• Stop category 1	--	--	--	--	--	--
Signaling outputs						
• Floating	1 NC	1 NC	--	--	--	2 NC
• Electronic	--	--	--	--	--	--
Standards	EN 60204-1, EN ISO 12100, ISO 13849-1, IEC 61508	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508
Compliance to standards	TÜV, UL, CSA	BG, SUVA, UL, CSA	BG, SUVA, UL, CSA	BG, SUVA, UL, CSA	BG, SUVA, UL, CSA	BG, SUVA, UL, CSA
Category according to EN 954-1 max	4 (according to ISO 13849-1)	3[3]	4	4	3[3]	4
SIL level max. according to IEC 61508	3	1	3	3	1	3
Performance level PL according to ISO 13849-1	e	c	e	e	c	e
Probability of a dangerous failure per hour (PFH_d)	9.38×10^{-10} 1/h	1.1×10^{-9} 1/h	1.3×10^{-9} 1/h	1.3×10^{-9} 1/h	8.7×10^{-10} 1/h	1.5×10^{-9} 1/h
Rated control supply voltage						
• 24 V DC	--	--	--	--	✓	✓
• 24 V AC/DC	✓	✓	✓	✓	✓	--
• 24 V AC	--	--	--	--	--	✓
• 115 V AC	✓	--	--	--	✓	✓
• 230 V AC	✓	--	--	--	✓	✓
• 24 ... 240 V AC/DC	--	--	--	--	--	--

✓ Available

-- Not available

1) The ON button is not monitored.

2) Only magnetically operated switches with a current carrying capacity of at least 250 mA.

3) Depending on the hazard assessment, additional measures may be necessary in the sensor circuit (e.g. protected laying).

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With relay enabling circuits

Type	Basic units						Two-hand control devices	Expansion units[2]
	3TK28 26				3TK28 27	3TK28 28	3TK28 34	3TK28 30
	24 V DC	Wide voltage range	24 V DC t_v	Wide voltage range t_v	t_v	t_v		
Sensors								
• Inputs	1	1	1	1	1	1	1	--
• Electronic	✓	--	✓	--	--	--	--	--
• With contacts	✓	✓	✓	✓	✓	✓	✓	--
• Magnetically operated switch (Reed contacts)	✓	✓	✓	✓	--	--	--	--
Safety mats	✓	✓	✓	✓	--	--	--	--
Start								
• Auto	✓	✓	✓	✓	--	✓	--	--
• Monitored	✓	✓	✓	✓	✓	--	--	--
Cascading input 24 V DC	✓	✓	✓	✓	--	--	--	--
Key-operated switch	--	--	--	--	--	--	--	--
Enabling circuit, floating								
• Stop category 0	4 NO	4 NO	2 NO	2 NO	2 NO	2 NO	2 NO+2 NC	4 NO
• Stop category 1	--	--	2 NO	2 NO	2 NO	2 NO	--	--
Enabling circuit, solid-state								
• Stop category 0	--	--	--	--	--	--	--	--
• Stop category 1	--	--	--	--	--	--	--	--
Signaling outputs								
• Floating	1 NC	1 NO + 1 NC	2 NC	1 NO + 2 NC	1 NC	1 NC	2	--
• Electronic	2	--	2	--	--	--	--	--
Standards	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508, EN 574	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508
Compliance to standards	TÜV, UL, CSA	TÜV, UL, CSA	TÜV, UL, CSA	TÜV, UL, CSA	BG, SUVA, UL, CSA	BG, SUVA, UL, CSA	BG, SUVA, UL, CSA, TÜV	BG, SUVA, UL, CSA, TÜV
Category according to EN 954-1 max	4	4	4	4	4[1]	4[1]	4	As basic unit
SIL level max. according to IEC 61508	3	3	3	3	3[3]	3[3]	--	As basic unit
Performance level PL according to ISO 13849-1	e	e	e	e	e[3]	e[3]	--	As basic unit
Probability of a dangerous failure per hour (PFH_d)	7.8 x 10^{-9} 1/h	7.8 x 10^{-9} 1/h	7.8 x 10^{-9} 1/h	7.8 x 10^{-9} 1/h	2.7 x 10^{-9} 1/h	2.7 x 10^{-9} 1/h	1.4 x 10^{-9} 1/h	1.2 x 10^{-9} 1/h
Rated control supply voltage								
• 24 V DC	✓	--	✓	--	✓	✓	✓	--
• 24 V AC/DC	--	--	--	--	--	--	--	✓
• 24 V AC	--	--	--	--	✓	✓	✓	--
• 115 V AC	--	--	--	--	✓	✓	✓	✓
• 230 V AC	--	--	--	--	✓	✓	✓	✓
• 24 ... 240 V AC/DC	--	✓	--	✓	--	--	--	--

✓ Available
-- Not available

1) Only possible for instantaneous enabling contacts, otherwise Category 3.
2) For expansion of Siemens safety products.
3) Only possible for instantaneous enabling contacts, otherwise SIL 2 or Performance Level PL d.

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With relay enabling circuits

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41L



3TK28 21-1CB30



3TK28 25-1BB40



3TK28 26-2BB40



3TK28 27-1BB41

Rated control supply voltage U_s	Start	OFF-delay t_v	DT	Screw terminals	DT	Spring-type terminals
V		s		Order No. / Price per PU		Order No. / Price per PU
Basic units						
With floating enabling circuits						
3TK28 20						
• 24 AC/DC	Auto/monitored	--	▶	**3TK28 20-1CB30**	▶	**3TK28 20-2CB30**
• 115 AC	Auto/monitored	--	▶	**3TK28 20-1AJ20**	▶	**3TK28 20-2AJ20**
• 230 AC	Auto/monitored	--	▶	**3TK28 20-1AL20**	▶	**3TK28 20-2AL20**
3TK28 21						
• 24 AC/DC	Auto/monitored	--	▶	**3TK28 21-1CB30**	▶	**3TK28 21-2CB30**
3TK28 22						
• 24 AC/DC	Auto	--	▶	**3TK28 22-1CB30**	A	**3TK28 22-2CB30**
3TK28 23						
• 24 AC/DC	Monitored	--	▶	**3TK28 23-1CB30**	A	**3TK28 23-2CB30**
3TK28 24						
• 24 AC/DC	Auto/monitored	--	▶	**3TK28 24-1CB30**	A	**3TK28 24-2CB30**
• 24 DC	Auto/monitored	--	▶	**3TK28 24-1BB40**	▶	**3TK28 24-2BB40**
• 115 AC	Auto/monitored	--	C	**3TK28 24-1AJ20**	C	**3TK28 24-2AJ20**
• 230 AC	Auto/monitored	--	▶	**3TK28 24-1AL20**	B	**3TK28 24-2AL20**
3TK28 25						
• 24 DC	Auto/monitored	--	▶	**3TK28 25-1BB40**	▶	**3TK28 25-2BB40**
• 24 AC	Auto/monitored	--	A	**3TK28 25-1AB20**	C	**3TK28 25-2AB20**
• 115 AC	Auto/monitored	--	▶	**3TK28 25-1AJ20**	B	**3TK28 25-2AJ20**
• 230 AC	Auto/monitored	--	▶	**3TK28 25-1AL20**	B	**3TK28 25-2AL20**
3TK28 26						
• 24 DC	Auto/monitored	--	▶	**3TK28 26-1BB40**	A	**3TK28 26-2BB40**
• 24 ... 240 AC/DC	Auto/monitored	--	▶	**3TK28 26-1CW30**	A	**3TK28 26-2CW30**
With time-delay enabling circuits						
3TK28 26 t_v						
• 24 DC	Auto/monitored	0.05 ... 3	A	**3TK28 26-1BB41**	A	**3TK28 26-2BB41**
• 24 ... 240 AC/DC	Auto/monitored	0.05 ... 3	A	**3TK28 26-1CW31**	A	**3TK28 26-2CW31**
• 24 DC	Auto/monitored	0.5 ... 30	A	**3TK28 26-1BB42**	A	**3TK28 26-2BB42**
• 24 ... 240 AC/DC	Auto/monitored	0.5 ... 30	A	**3TK28 26-1CW32**	A	**3TK28 26-2CW32**
• 24 DC	Auto/monitored	5 ... 300	A	**3TK28 26-1BB44**	A	**3TK28 26-2BB44**
• 24 ... 240 AC/DC	Auto/monitored	5 ... 300	A	**3TK28 26-1CW34**	A	**3TK28 26-2CW34**
3TK28 27 t_v						
• 24 DC	Monitored	0.05 ... 3	▶	**3TK28 27-1BB41**	A	**3TK28 27-2BB41**
• 24 AC	Monitored	0.05 ... 3	B	**3TK28 27-1AB21**	B	**3TK28 27-2AB21**
• 115 AC	Monitored	0.05 ... 3	B	**3TK28 27-1AJ21**	B	**3TK28 27-2AJ21**
• 230 AC	Monitored	0.05 ... 3	A	**3TK28 27-1AL21**	B	**3TK28 27-2AL21**
• 24 DC	Monitored	0.5 ... 30	▶	**3TK28 27-1BB40**	A	**3TK28 27-2BB40**
• 24 AC	Monitored	0.5 ... 30	A	**3TK28 27-1AB20**	C	**3TK28 27-2AB20**
• 115 AC	Monitored	0.5 ... 30	▶	**3TK28 27-1AJ20**	C	**3TK28 27-2AJ20**
• 230 AC	Monitored	0.5 ... 30	▶	**3TK28 27-1AL20**	B	**3TK28 27-2AL20**
3TK28 28 t_v						
• 24 DC	Auto	0.05 ... 3	▶	**3TK28 28-1BB41**	A	**3TK28 28-2BB41**
• 24 AC	Auto	0.05 ... 3	B	**3TK28 28-1AB21**	C	**3TK28 28-2AB21**
• 115 AC	Auto	0.05 ... 3	B	**3TK28 28-1AJ21**	B	**3TK28 28-2AJ21**
• 230 AC	Auto	0.05 ... 3	A	**3TK28 28-1AL21**	B	**3TK28 28-2AL21**
• 24 DC	Auto	0.5 ... 30	▶	**3TK28 28-1BB40**	▶	**3TK28 28-2BB40**
• 24 AC	Auto	0.5 ... 30	B	**3TK28 28-1AB20**	B	**3TK28 28-2AB20**
• 115 AC	Auto	0.5 ... 30	A	**3TK28 28-1AJ20**	B	**3TK28 28-2AJ20**
• 230 AC	Auto	0.5 ... 30	A	**3TK28 28-1AL20**	B	**3TK28 28-2AL20**

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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With relay enabling circuits

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41L



3TK28 30-1CB30

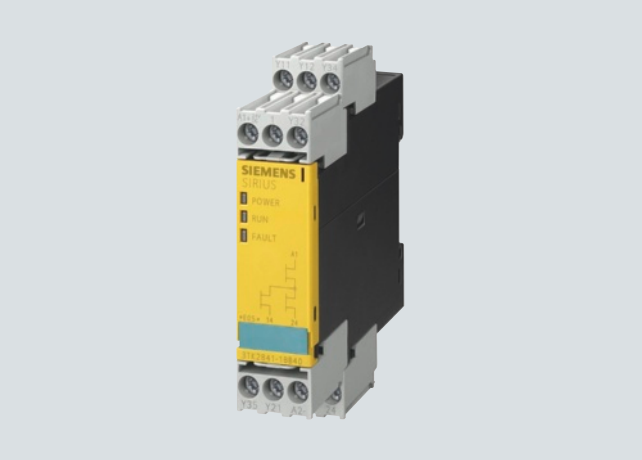
Rated control supply voltage U_s	Start	OFF-delay t_v	DT	Screw terminals		DT	Spring-type terminals	
V		s		Order No.	Price per PU		Order No.	Price per PU
Two-hand control devices								
With floating enabling circuits								
3TK28 34								
• 24 DC	--	--	▶	**3TK28 34-1BB40**		A	**3TK28 34-2BB40**	
• 24 AC	--	--	A	**3TK28 34-1AB20**		B	**3TK28 34-2AB20**	
• 115 AC	--	--	A	**3TK28 34-1AJ20**		C	**3TK28 34-2AJ20**	
• 230 AC	--	--	A	**3TK28 34-1AL20**		B	**3TK28 34-2AL20**	
Expansion units								
With floating enabling circuits								
3TK28 30								
• 24 AC/DC	--	--	▶	**3TK28 30-1CB30**		▶	**3TK28 30-2CB30**	
• 115 AC	--	--	A	**3TK28 30-1AJ20**		B	**3TK28 30-2AJ20**	
• 230 AC	--	--	A	**3TK28 30-1AL20**		B	**3TK28 30-2AL20**	

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



SIRIUS 3TK28 4. safety relay

Quick, safe and wear-free switching

Evaluation units with solid-state components are being used increasingly in safety applications because their permanent checking of functions and largely wear-free operation results in a far higher switching frequency and electrical endurance of equipment. The compact and lightweight units also permit series connection or normal switching duty, e.g. by a PLC.

If several enabling circuits or floating enabling circuits are required in one application, the units can be expanded with expansion units from the 3TK28 30 series.

3TK28 45 multi-function units

Up to now, standard combinations of safety applications such as EMERGENCY-STOP and protective door monitoring were possible only by using several individual safety relays. 3TK28 45 combines several functions in a single unit. Two solid-state and two relay enabling circuits ensure safe disconnection – in just a few actions, quickly and cheaply.

Benefits

- Permanent function checking
- No wear because switched electronically
- High switching frequency
- Long electrical endurance
- Evaluation of solid-state sensors
- Sensor lead up to max. 2 000 m
- Cascading possible
- Insensitive to vibrations and dirt
- Compact design, low weight
- Approved for the world market

3TK28 45 safety relays

- 2 sensor inputs (e.g. EMERGENCY-STOP, protective door)
- Also suitable for protective door interlocking and OK buttons
- 2 solid-state enabling circuits and 2 relay enabling circuits

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With electronic enabling circuits

Selection and ordering data

Type	Basic units			Multi-function units							
	3TK28 40	3TK28 41	3TK28 42	3TK28 45							
				"Automatic and monitored start"	"Automatic and monitored start"	"Monitored start"	"Monitored start"	OK button	OK button	"Spring-type interlocking"	"Magnet-locked interlocking"
			t_V		t_V		t_V		t_V	t_V	t_V
Sensors											
• Inputs	1	1	1	2	2	2	2	2	2	2	2
• Electronic	--	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
• With contacts	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
• Magnetically operated switch (Reed contacts)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Safety mats	--	✓	✓	✓	✓	✓	✓	--	--	--	--
Start											
• Auto	✓	✓	✓	1	1	--	--	1	1	--	--
• Monitored	✓	✓	✓	1	1	2	2	1	1	2	2
Cascading input 24 V DC	--	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Key-operated switch	--	--	--	✓	✓	✓	✓	✓	✓	✓	✓
Enabling circuit, floating											
• Stop category 0	--	--	--	2 NO	1 NO	2 NO	1 NO	2 NO	1 NO	1 NO	1 NO
• Stop category 1	--	--	--	--	1 NO	--	1 NO	--	1 NO	1 NO	1 NO
Enabling circuit, solid-state											
• Stop category 0	2[1)]	2	1	2	1	2	1	2	1	1	1
• Stop category 1	--	--	1	--	1	--	1	--	1	1	1
Signaling outputs											
• Floating	--	--	--	--	--	--	--	--	--	--	--
• Electronic	--	--	--	1	1	1	1	1	1	1	1
Standards	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508 EN 50156-1		EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508							
Test certificates	TÜV, UL, CSA										
Category according to EN 954-1 max	3	4	4	4	4	4	4	4	4	4	4
SIL level max. according to IEC 61508	2	3	3	3	3	3	3	3	3	3	3
Performance level PL according to ISO 13849-1	d	e	e	e	e	e	e	e	e	e	e
Probability of a dangerous failure per hour (PFH_d)	1.1×10^{-8} 1/h	5.4×10^{-11} 1/h	5.4×10^{-11} 1/h	6.9×10^{-9} 1/h	6.9×10^{-9} 1/h	6.9×10^{-9} 1/h	6.9×10^{-9} 1/h	6.9×10^{-9} 1/h	6.9×10^{-9} 1/h	6.9×10^{-9} 1/h	6.9×10^{-9} 1/h
Rated control supply voltage 24 V DC	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

✓ Available
-- Not available

[1)] The outputs are only safe when an external contactor is used.

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With electronic enabling circuits

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41L


3TK28 41-1BB40


3TK28 42-1BB41


3TK28 45-1HB40


3TK28 45-1HB41


3TK28 45-2DB40

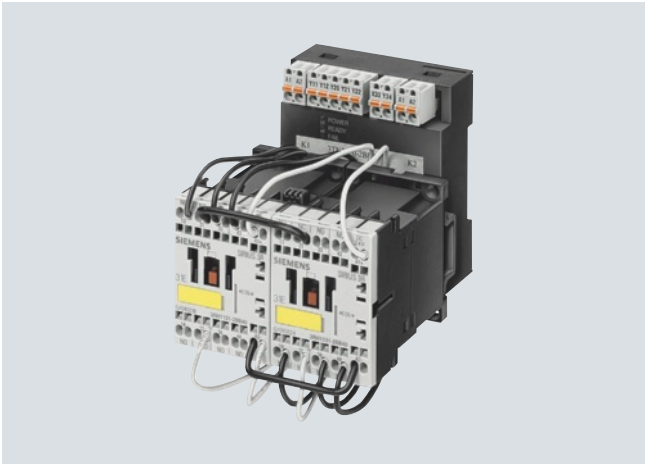
Rated control supply voltage U_s	Start	OFF-delay t_v	DT	Screw terminals		DT	Spring-type terminals	
				Order No.	Price per PU		Order No.	Price per PU
V		s						
Basic units								
With electronic enabling circuits								
3TK28 40								
• 24 DC	Auto/monitored	--	A	**3TK28 40-1BB40**		B	**3TK28 40-2BB40**	
3TK28 41								
• 24 DC	Auto/monitored	--	A	**3TK28 41-1BB40**		A	**3TK28 41-2BB40**	
With time-delay enabling circuits								
3TK28 42 t_v								
• 24 DC	Auto/monitored	0.05 ... 3	A	**3TK28 42-1BB41**		B	**3TK28 42-2BB41**	
	Auto/monitored	0.5 ... 30	A	**3TK28 42-1BB42**		A	**3TK28 42-2BB42**	
	Auto/monitored	5 ... 300	A	**3TK28 42-1BB44**		B	**3TK28 42-2BB44**	
Multi-function units								
3TK28 45 "Automatic and monitored start"								
• 24 DC	1/1	--	A	**3TK28 45-1HB40**		B	**3TK28 45-2HB40**	
3TK28 45 t_v "Automatic and monitored start"								
• 24 DC	1/1	0.05 ... 3	A	**3TK28 45-1HB41**		B	**3TK28 45-2HB41**	
	1/1	0.5 ... 30	A	**3TK28 45-1HB42**		B	**3TK28 45-2HB42**	
	1/1	5 ... 300	A	**3TK28 45-1HB44**		B	**3TK28 45-2HB44**	
3TK28 45 "Monitored start"								
• 24 DC	--/2	--	A	**3TK28 45-1DB40**		B	**3TK28 45-2DB40**	
3TK28 45 t_v "Monitored start"								
• 24 DC	--/2	0.05 ... 3	A	**3TK28 45-1DB41**		B	**3TK28 45-2DB41**	
	--/2	0.5 ... 30	A	**3TK28 45-1DB42**		B	**3TK28 45-2DB42**	
	--/2	5 ... 300	C	**3TK28 45-1DB44**		B	**3TK28 45-2DB44**	
3TK28 45 "OK button"								
• 24 DC	1/1	--	A	**3TK28 45-1EB40**		B	**3TK28 45-2EB40**	
3TK28 45 t_v"OK button"								
• 24 DC	1/1	0.05 ... 3	A	**3TK28 45-1EB41**		B	**3TK28 45-2EB41**	
	1/1	0.5 ... 30	A	**3TK28 45-1EB42**		B	**3TK28 45-2EB42**	
	1/1	5 ... 300	C	**3TK28 45-1EB44**		B	**3TK28 45-2EB44**	
3TK28 45 t_v "Spring-type interlocking"								
• 24 DC	--/2	0.05 ... 3	A	**3TK28 45-1FB41**		B	**3TK28 45-2FB41**	
	--/2	0.5 ... 30	A	**3TK28 45-1FB42**		B	**3TK28 45-2FB42**	
	--/2	5 ... 300	B	**3TK28 45-1FB44**		B	**3TK28 45-2FB44**	
3TK28 45 t_v "Solenoid interlocking"								
• 24 DC	--/2	0.05 ... 3	A	**3TK28 45-1GB41**		B	**3TK28 45-2GB41**	
	--/2	0.5 ... 30	A	**3TK28 45-1GB42**		B	**3TK28 45-2GB42**	
	--/2	5 ... 300	C	**3TK28 45-1GB44**		B	**3TK28 45-2GB44**	

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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With contactor relay enabling circuits

Overview



SIRIUS 3TK28 5. safety relay

The 3-in-1 complete unit

The 3TK28 5. safety relays are a perfect combination of solid-state safety functionality and two redundant SIRIUS contactor relays with contacts. They are ready-assembled, wired, tested and certified as a unit.

Expansion units (3TK28 56 and 3TK28 57) are available to increase the number of enabling circuits.

Benefits

- Enabling circuits, floating
- AC-15/DC-13 switching capacity
- Protective separation
- Long mechanical and electrical endurance
- Certified as a complete unit
- Fault minimization and cost reduction through factory wiring
- Low installation costs

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Selection and ordering data

Type	Basic units				Expansion units[1]	Expansion units[1]
	3TK28 50	3TK28 51	3TK28 52	3TK28 53	3TK28 56	3TK28 57 t_v
Sensors						
• Inputs	1	1	1	1	--	--
• Electronic	--	--	--	✓	--	--
• With contacts	✓	✓	✓	✓	--	--
• Magnetically operated switch (Reed contacts)	✓	✓	✓	✓	--	--
Safety mats	✓	✓	✓	✓	--	--
Start						
• Auto	✓	✓	✓	✓	--	--
• Monitored	✓	✓	✓	✓	--	--
Cascading input 24 V DC	--	--	--	✓	✓	✓
Key-operated switch	--	--	--	--	--	--
Enabling circuit, floating						
• Stop category 0	3 NO	2 NO	6 NO	3 NO	6 NO	--
• Stop category 1	--	--	--	--	--	3 NO
Enabling circuit, solid-state						
• Stop category 0	--	--	--	1	1	1
• Stop category 1	--	--	--	--	--	--
Signaling outputs						
• Floating	--	1 NC	1 NC	--	1 NC	--
• Electronic	--	--	--	--	--	--
Standards	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508
Test certificates	TÜV, UL, CSA	TÜV, UL, CSA	TÜV, UL, CSA	TÜV, UL, CSA	TÜV, UL, CSA	TÜV, UL, CSA
Category according to EN 954-1 max	3	3	3	4	As basic unit	As basic unit
SIL level max. according to IEC 61508	2	2	2	--	As basic unit	As basic unit
Performance level PL according to ISO 13849-1	d	d	d	e	As basic unit	As basic unit
Probability of a dangerous failure per hour (PFH_d)	1.2 x 10^{-8} 1/h	1.1 x 10^{-8} 1/h	1.1 x 10^{-8} 1/h	1.1 x 10^{-8} 1/h	1.1 x 10^{-8} 1/h	1.1 x 10^{-8} 1/h
Rated control supply voltage						
• 24 V DC	✓	✓	✓	✓	✓	✓
• 24 V AC/DC	--	--	--	--	--	--
• 24 V AC	✓	✓	--	--	--	--
• 115 V AC	✓	✓	--	--	--	--
• 230 V AC	✓	✓	✓	--	--	--
• 24 ... 240 V AC/DC	--	--	--	--	--	--
Rated operational voltage						
• 24 V DC	✓	✓	✓	✓	✓	✓
• 230 V AC	✓	✓	✓	✓	✓	✓
• 600 V AC	✓	✓	✓	✓	✓	✓
Switching capacity						
• AC-15 at U = 230 V	6 A	6 A	6 A	6 A	6 A	6 A
• DC-13 at U = 24 V	10 A	10 A	10 A	10 A	10 A	10 A

✓ Available
-- Not available

[1] For expansion of Siemens safety products.

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With contactor relay enabling circuits

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41L


3TK28 50-2BB40


3TK28 51-2BB40


3TK28 52-2BB40

Rated control supply voltage U_s	Start	OFF-delay t_v	DT	Screw terminals		DT	Spring-type terminals	
				Order No.	Price per PU		Order No.	Price per PU
V		s						
Basic units								
With contactor relay enabling circuits								
3TK28 50								
• 24 DC	Auto/monitored	--	A	**3TK28 50-1BB40**		B	**3TK28 50-2BB40**	
• 115 AC	Auto/monitored	--	B	**3TK28 50-1AJ20**		B	**3TK28 50-2AJ20**	
• 230 AC	Auto/monitored	--	B	**3TK28 50-1AL20**		B	**3TK28 50-2AL20**	
3TK28 51								
• 24 DC	Auto/monitored	--	B	**3TK28 51-1BB40**		B	**3TK28 51-2BB40**	
• 115 AC	Auto/monitored	--	C	**3TK28 51-1AJ20**		B	**3TK28 51-2AJ20**	
• 230 AC	Auto/monitored	--	C	**3TK28 51-1AL20**		B	**3TK28 51-2AL20**	
3TK28 52								
• 24 DC	Auto/monitored	--	A	**3TK28 52-1BB40**		B	**3TK28 52-2BB40**	
• 230 AC	Auto/monitored	--	B	**3TK28 52-1AL20**		B	**3TK28 52-2AL20**	
3TK28 53								
• 24 DC	Auto/monitored	--	A	**3TK28 53-1BB40**		B	**3TK28 53-2BB40**	
Expansion units								
With contactor relay enabling circuits								
3TK28 56								
• 24 DC	--	--	B	**3TK28 56-1BB40**		B	**3TK28 56-2BB40**	
3TK28 57 t_v								
• 24 DC	--	0.05 ... 3	A	**3TK28 57-1BB41**		B	**3TK28 57-2BB41**	
• 24 DC	--	0.5 ... 30	B	**3TK28 57-1BB42**		B	**3TK28 57-2BB42**	
• 24 DC	--	5 ... 300	B	**3TK28 57-1BB44**		B	**3TK28 57-2BB44**	

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



SIRIUS 3TK28 10 safety relays

3TK28 10-0 standstill monitor

The standstill monitor increases safety in hazardous areas. Without a sensor, it detects motor stoppage from the residual magnetization of the rotating motor. When an adjustable threshold value is undershot, it uses its outputs to allow access to hazardous areas for example by unlocking a protective door.

3TK28 10-1 overspeed monitors

The overspeed monitor combines two safety functions in one unit by continuously monitoring machines and plants for standstill and speed.

Through simple parameterization and permanent diagnosis on the display, faults can be quickly remedied at any time – often before they cause plant downtimes.

In addition to standstill and speed monitoring the unit also features integrated monitoring of a protective door with spring-type interlocking. An additional evaluation unit is not needed therefore.

Benefits

3TK28 10-0 standstill monitor

- No additional sensors required
- Signaling of faults with diagnostics display
- Standstill time can be set
- Unit can be used with frequency converters

3TK28 10-1 overspeed monitors

- Menu-prompted, easy parameterization
- Direct diagnosis on the display means shorter downtimes thanks to early fault detection
- Integrated protective door monitoring means greater safety because access to the plant is allowed only in the safe state
- Suitable for all standard sensors, i.e. high flexibility

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With special functions

Selection and ordering data

Type	Standstill monitors 3TK28 10-0	Overspeed monitors 3TK28 10-1
Sensors		
• Inputs	3	4
• Electronic	--	3
• With contacts	--	1
• Without sensors (measuring inputs)	3	--
• Magnetically operated switch (Reed contacts)	--	--
Safety mats	--	--
Start		
• Auto	✓	✓
• Monitored	--	✓
Cascading input 24 V DC	--	--
Key-operated switch	--	--
Enabling circuit, floating		
• Stop category 0	3 NO + 1 NC	2
• Stop category 1	--	--
Enabling circuit, solid-state		
• Stop category 0	--	--
• Stop category 1	--	--

Type	Standstill monitors 3TK28 10-0	Overspeed monitors 3TK28 10-1
Signaling outputs		
• Floating	1 CO	--
• Electronic	2	2
Standards	EN 60204-1, EN ISO 12100, EN 954-1, IEC 61508	IEC 60947-5-1, EN ISO 13849-1, EN 60204-1, IEC 61508
Test certificates	TÜV, UL, CSA	TÜV
Category according to EN 954-1 max	4	4
SIL level max. according to IEC 61508	3	3
Performance level PL according to ISO 13849-1	e	e
Probability of a dangerous failure per hour (PFH_d)	1.5 x 10^{-8} 1/h	3.38 x 10^{-9} 1/h
Rated control supply voltage		
• 24 V DC	✓	✓
• 230 V AC	✓	--
• 400 V AC	✓	--
• 120 ... 240 V AC/DC	--	✓

✓ Available
-- Not available

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 41L


3TK28 10-0BA01


3TK28 10-0GA02

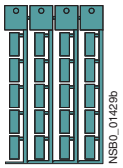

3TK28 10-1BA41

Rated control supply voltage U_s	OFF-delay t_v	DT	Screw terminals Order No.	Price per PU	DT	Spring-type terminals Order No.	Price per PU
V	s						
Standstill monitors							
3TK28 10-0							
• 24 DC	0.2... 6	A	**3TK28 10-0BA01**		A	**3TK28 10-0BA02**	
• 230 AC	0.2... 6	A	**3TK28 10-0GA01**		A	**3TK28 10-0GA02**	
• 400 AC	0.2... 6	A	**3TK28 10-0JA01**		B	**3TK28 10-0JA02**	
Overspeed monitors							
3TK28 10-1 for NPN/PNP proximity switches and encoders							
• 24 DC	0 ... 600	A	**3TK28 10-1BA41**		A	**3TK28 10-1BA42**	
• 120 ... 240 AC/DC	0 ... 600	A	**3TK28 10-1KA41**		A	**3TK28 10-1KA42**	
3TK28 10-1 for NAMUR proximity switches and encoders							
• 24 DC	0 ... 600	A	**3TK28 10-1BA41-0AA0**		A	**3TK28 10-1BA42-0AA0**	
• 120 ... 240 AC/DC	0 ... 600	A	**3TK28 10-1KA41-0AA0**		A	**3TK28 10-1KA42-0AA0**	

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Accessories

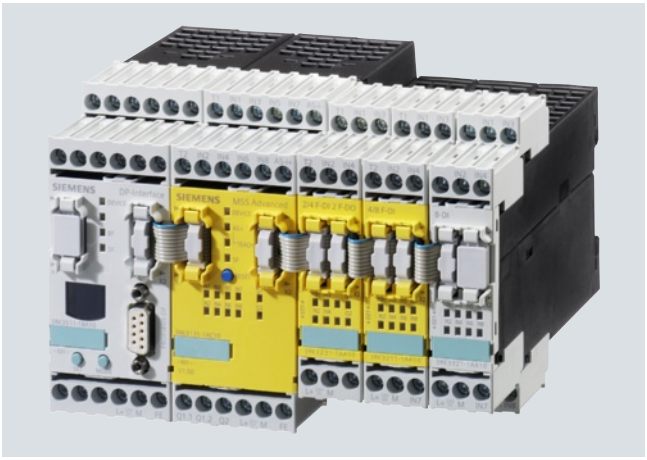
	Use	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Blank labels								
 3RT19 00-1SB20	For 3TK28	**Unit labeling plates** for SIRIUS devices						
		20 mm x 7 mm, pastel turquoise[1)]	D	**3RT19 00-1SB20**		100	340 units	41B
	For 3TK28	**Inscription labels for sticking** for SIRIUS devices						
		• 19 mm x 6 mm, pastel turquoise	C	**3RT19 00-1SB60**		100	3 060 units	41B
		• 19 mm x 6 mm zinc yellow	C	**3RT19 00-1SD60**		100	3 060 units	41B
Push-in lugs and covers								
 3RP19 03	For 3TK28	**Push-in lugs** For screw fixing, 2 units are required for each device	B	**3RP19 03**		1	10 units	41H
 3RP19 02	For 3TK28 21 to 3TK28 25, 3TK28 27, 3TK28 28, 3TK28 3.	**Sealable covers** for securing against unauthorized adjustment of setting knobs	B	**3RP19 02**		1	5 units	41H
	For 3TK28 26		B	**3TK28 26-0DA00-0HA0**		1	5 units	41L
	For 3TK28 20	**Sealing foils** For securing against unauthorized adjustment of setting knobs	►	**3TK28 20-0AA00**		1	1 unit	41L
Adapters and connection cables for overspeed monitors								
	For 3TK28 10-1	**Adapters** for connecting encoders of type Siemens/Heidenhain						
 3TK28 10-1A		• 15-pole	A	**3TK28 10-1A**		1	1 unit	41L
 3TK28 10-1B		• 25-pole	A	**3TK28 10-1B**		1	1 unit	41L
 3TK28 10-0A	For 3TK28 10-1	**Connection cables** for connecting the overspeed monitor to the 3TK28 10-1A or 3TK28 10-1B adapter	A	**3TK28 10-0A**		1	1 unit	41L
Tools for opening spring-type terminals								
 3RA29 08-1A	For auxiliary circuit connections	**Screwdrivers** For all SIRIUS devices with spring-type terminals 3.0 mm x 0.5 mm, length approx. 200 mm, titanium gray/black, partially insulated	A	**Spring-type terminals**  **3RA29 08-1A**		1	1 unit	41B

1) PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH
(see Chapter 16, "Appendix" → "External Partners") .

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General data

Overview



SIRIUS 3RK3 modular safety system

The 3RK3 modular safety system (MSS) is a freely parameterizable modular safety relay. Depending on the external circuit version, safety-oriented applications up to Category 4 according to EN 954-1, Performance Level e according to ISO 13849-1 or SIL3 according to IEC 62061 can be realized.

The modular safety relay enables the interconnection of several safety applications.

The comprehensive error and status diagnostics provides the possibility of finding errors in the system and localizing signals from sensors. Plant downtimes can be reduced as the result.

The MSS comprises the following system components:

- Central modules
- Expansion modules
- Interface modules
- Diagnostics modules
- Parameterization software
- Accessories

Central modules

MSS Basic

The 3RK3 Basic central module is used wherever more than three safety functions need to be evaluated and the wiring parameterization of safety relays would involve great cost and effort. It reads in inputs, controls outputs and communicates through an interface module with higher-level control systems. An application's entire safety program is processed in the central module. The 3RK3 Basic central module is the lowest expansion level and fully functional on its own, without the optional expansion modules.

MSS Advanced

The 3RK3 Advanced central module is the consistent expansion of the Basic central module with the functionality of an AS-i safety monitor. In addition to having a larger volume of project data and scope of functionality it can be integrated in AS-Interface and therefore make use of the many different possibilities offered by this bus system. The function can be optionally activated in the central module.

The service-proven insulation piercing method of AS-Interface enables not only the distributed expansion of the project data volume using safe AS-i outputs, safe AS-i sensors and other MSS Advanced or safety monitors (F cross traffic) but also a highly flexible adaptation of the application, e.g. very fast connection of AS-i outputs such as LV HRC command devices, position switches with and without interlock, or light curtains.

Safety-orientated disconnection using MSS or by distributed means using safe AS-i outputs and the formation of switch-off groups can be realized very easily. The same applies for any subsequent modifications. They are now easily possible by re-addressing, i.e. re-wiring is no longer necessary.

The AS-i bus is connected directly to the central module.

Expansion modules

With the optional expansion modules, both safety-related and standard, the system is flexibly adapted to the required safety applications.

Interface modules

The DP interface module is used for transferring diagnostics data and device status data to a higher-level PROFIBUS network, e.g. for purposes of visualization using HMI. When using the Basic central module, 32-bit cyclic data can be exchanged with the control system. If the Advanced central module is used, the number is doubled to 64-bit cycle data. The acyclic calling of diagnostics data is possible with both central modules.

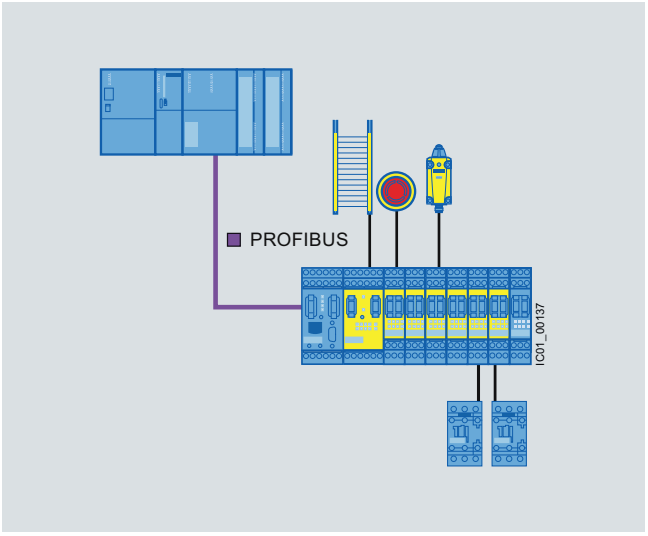
Diagnostics modules

Faults, e.g. crossover, are indicated directly on the diagnostics display. The fault is diagnosed directly in plain text by the detailed alarm message. The device is fully functional upon delivery. No programming is required.

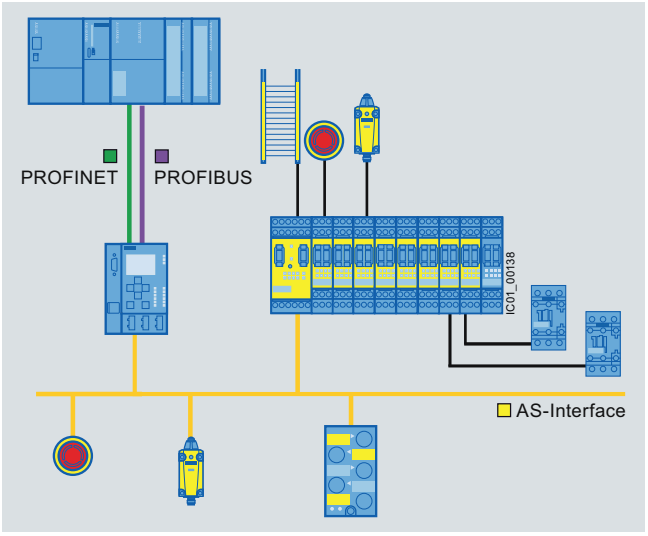
Parameterization software

Using the MSS ES graphical parameterization tool it is very easy to create the safety functions as well as their logical links on the PC. For example disconnection ranges, ON-delays, OFF-delays and other dependencies can be defined.

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System configuration with the Basic central module



System configuration with the Advanced central module

Order No. scheme

Digit of the Order No.	1st - 4th	5th	6th	7th		8th	9th	10th	11th	12th
	□□□□	□	□	□	–	□	□	□	□	□
Modular safety system	**3 R K 3**									
Device type		□								
Device type			□	□						
Connection type						□				
Communications							□	□	□	
Version										□
Example	**3 R K 3**	**1**	**1**	**1**	**–**	**1**	**A**	**A**	**1**	**0**

Note:

The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quoted in the catalog in the Selection and ordering data.

Benefits

- More functionality and flexibility through freely configurable safety logic
- Suitable for all safety applications thanks to compliance with the highest safety standards in production automation
- For use all over the world through compliance with all product-relevant, globally established certifications
- Modular hardware configuration
- Parameterization by means of software instead of wiring
- Removable terminals for greater plant availability
- Distributed collection from sensors and disconnection of actuators through AS-Interface
- All MSS ES logic functions can also be used for AS-Interface, e.g. muting, protective door with interlock
- Up to 12 independent safe switch-off groups on the AS-i bus
- Volume of project data can be greatly increased by means of AS-Interface
- Up to 50 two-channel enabling circuits per system

Communication through PROFIBUS

The 3RK3 modular safety system can be connected to PROFIBUS through the DP interface and exchange data with higher-level control systems.

The MSS supports among other things:

- Baud rates up to 12 Mbit/s
- Automatic baud rate detection
- Cyclic services (DPV0) and acyclic services (DPV1)
- Exchange of 32-bit cyclic data with MSS Basic or 64-bit cyclic data with MSS Advanced
- Diagnostics using data record invocations

AS-Interface communication

Using the Advanced central module, the 3RK3 modular safety system can be integrated in AS-Interface.

- MSS can read in up to 31 AS-i sensors
- Up to 12 prepared signals per MSS can be placed on the AS-i bus, e.g. for F cross traffic or for disconnecting safe AS-i outputs
- Safe cross traffic among Advanced systems or between Advanced systems and safety monitors
- Standard signals, e.g. for acknowledgment, can also be placed on the bus

MSS with communication function see page 11/29 onwards.

Accessories see page 11/30 onwards.

More information see also Chapter 14 "Parametrization, Configuration and Visualization with SIRIUS".

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General data

Application

The 3RK3 modular safety system can be used for all safety-oriented requirements in the manufacturing industry and offers the following safety functions:

	Symbol	MSS Basic	MSS Advanced
Monitoring functions			
Universal monitoring Evaluation of binary signals from single-channel and two-channel sensors		--	✓
EMERGENCY-STOP Evaluation of EMERGENCY-STOP devices with positive-opening contacts		✓	✓
Switching mats Evaluation of switching mats with NC contacts and/or crossover monitoring		✓	✓
Protective door monitoring Evaluation of protective door signals and/or protective flap signals		✓	✓
Protective door interlocking Evaluation of protective doors with interlock and of the actuation/release of this interlock		--	✓
Approval switches Evaluation of OK buttons with NO contact		✓	✓
Two-hand operator controls Evaluation of two-hand operator controls		✓	✓
BWS monitoring Evaluation of non-contact protective devices, e.g. light curtains and laser scanners		✓	✓
Muting Temporary bridging of non-contact protective devices, 2/4 sensors in parallel, 4 sensors in sequence		--	✓
Operating mode selector switches Evaluation of operating mode selector switches with NO contacts		✓	✓
Monitoring of AS-i (AS-i 2F-DI) Logic element for monitoring of AS-i input slaves		--	✓
Logic operation functions			
AND		✓	✓
OR		✓	✓
XOR		✓	✓
NAND		✓	✓

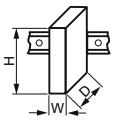
	Symbol	MSS Basic	MSS Advanced
Logic Operation Functions (continued)			
NOR		✓	✓
Negation		✓	✓
Flip-flop		✓	✓
Counting functions			
Counter 0 -> 1		✓	✓
Counter 1 -> 0		✓	✓
Counter 0 -> 1/1 -> 0		✓	✓
Time functions			
With ON-delay		✓	✓
Passing make contact		✓	✓
With OFF-delay		✓	✓
Clock-pulsing		✓	✓
Start functions			
Monitored start		✓	✓
Manual start		✓	✓
Output functions			
Standard output		✓	✓
F output		✓	✓
AS-i output function		--	✓
Status functions			
Element status		--	✓

✓ Available -- Not available

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Technical specifications

Type		Central modules	Expansion modules							Interface modules	Diagnostics modules
			4/8F-DI	2/4 F-DI 1/2 F-RO	2/4 F-DI 2F-DO	4/8 F-RO	4 F-DO	8 DI	8 DO		
Dimensions (W x H x D)											
											
• Screw terminals	mm	45 x 111 x 124	22.5 x 111 x 124			45 x 111 x 124	22.5 x 111 x 124			45 x 111 x 124	96 x 60 x 44
• Spring-type terminals	mm	45 x 113 x 124	22.5 x 113 x 124			45 x 113 x 124	22.5 x 113 x 124			45 x 113 x 124	--
Device data											
Shock resistance (sine pulse)	*g*/ms	15/11									
Touch protection acc. to VDE 0106 Part 100 or EN 60529		IP20									
Permissible mounting position		Vertical mounting surface (+10°/-10°), deviating mounting positions are permitted for reduced ambient temperature									
Minimum distances		For heat dissipation through convection from the devices 25 mm to the ventilation openings (top and bottom)									
Permissible ambient temperature											
• During operation	°C	-20 ... +60									
• During storage and transport	°C	-40 ... +85									
Number of sensor inputs (1-channel)		8	8	4	4	--	--	8	8	--	--
Number of test outputs		2	2	2	2	--	--	--	--	--	--
Number of outputs											
• Relay outputs											
- Single channel		--	--	2	--	8	--	--	--	--	--
- Two-channel		1	--	--	--	--	--	--	--	--	--
• Solid-state outputs											
- Single channel		--	--	--	--	--	--	--	8	--	--
- Two-channel		1	--	--	2	--	4	--	--	--	--
Weight	g	300	160	160	160	400	135	125	160	270	90
Installation altitude above sea level	m	2000									
Environmental data											
EMC interference immunity		IEC 60947-5-1									
Vibrations											
• Frequency	Hz	5 ... 500									
• Amplitude	mm	0.75									
Climatic withstand capability		EN 60068-2-78									

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General data

Type		Central modules	Expansion modules						Interface modules	Diagnostics modules
			4/8F-DI	2/4 F-DI 1/2 F-RO	2/4 F-DI 2F-DO	4/8 F-RO	4 F-DO	8 DI	8 DO		
Electrical specifications											
Rated control supply voltage U_s According to IEC 61131-2	V	24 DC ±15 %[1]	24 DC ±15 %	24 DC ±15 %	24 DC ±15 %	24 DC ±15 %	24 DC ±15 %	24 DC ±15 %	24 DC ±15 %	24 DC ±15 %	24 DC ±15 %[2]
Operating range		0.85 ... 1.15 x U_s									
Rated insulation voltage U_i	V	300	50	300	50	300	50	50	50	50	50
Rated impulse voltage U_{imp}	kV	4	500	4	500	4	500	500	500	500	500
Total current input	mA	185	60	85	85	140	8	78	60	--	24
Rated power at U_s	W	4.5	1.5	2	2	3	4.8	1.9	1.5	--	0.6
Utilization category according to EN 60947-5-1 (relay outputs)											
• AC-15 at 230 V	A	2	--	2	--	3	--	--	--	--	--
• DC-13 at 24 V	A	1	--	1	--	3	--	--	--	--	--
(semiconductor outputs)											
• DC-13 at 24 V	A	1.5	--	--	1	--	2	--	0.5	--	--
Mechanical endurance during rated operation	Operating cycles (relay)	10×10^6	--	10×10^6	--	10×10^6	--	--	--	--	--
Switching frequency z at rated operational current	1/h	1 000	--	1000	1000	360	1000	--	1000	--	--
Conventional thermal current I_{th}	A	2/1.5	--	1	1	3	2	--	0.5	--	--
Protection for output contacts Fuse links LV HRC Type 3NA, DIAZED Type 5SB, NEOZED Type 5SE											
• gG operational class	A	4	--	4	--	4	--	--	--	--	--
• Operational class quick	A	6	--	6	--	6	--	--	--	--	--
Safety specifications											
Probability of a dangerous failure											
• Per hour (PFH_d)	1/h	Basic: 5.14×10^{-9} Advanced: 2.8×10^{-9}	1.89×10^{-9}	3.79×10^{-9}	2.7×10^{-9}	7.15×10^{-9}	3.18×10^{-9}	--	--	--	--
• On demand (PFD)	1/h	Basic: 1.28×10^{-5} Advanced: 1.7×10^{-4}	4.29×10^{-6}	5.85×10^{-6}	8.34×10^{-6}	4.36×10^{-5}	2.2×10^{-5}	--	--	--	--
Parameters for cables											
Line resistance	Ω	100	100	100	100	--	--	100	--	--	--
Cable length from terminal to terminal											
With Cu 1.5 mm^2 and 150 nF/km	m	1000	1000	1000	1000	--	--	1000	--	--	--
Conductor capacity	nF	330	330	330	330	--	--	330	--	--	--

[1] Device current supply through a power supply unit acc. to IEC 60 536 protection class III (SELV or PELV).

[2] Via connecting cable to the central module.

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Selection and ordering data

PU (UNIT, SET, M) = 1, PS* = 1 unit, PG = 42B


3RK3 111-1AA10


3RK3 131-1AC10


3RK3 211-1AA10
3RK3 221-1AA10
3RK3 231-1AA10
3RK3 242-1AA10


3RK3 251-1AA10


3RK3 311-1AA10
3RK3 321-1AA10


3RK3 511-1BA10


3RK3 611-3AA00

Version	DT	Screw terminals Order No.	Price per PU	DT	Spring-type terminals Order No.	Price per PU
Central modules						
3RK3 Basic Central module with safety-orientated inputs and outputs • 8 inputs • 1 two-channel relay output • 1 two-channel solid-state output Max. 7 expansion modules can be connected *Note:* *Memory module 3RK3 931-0AA00 is included in the scope of supply.*	A	**3RK3 111-1AA10**		A	**3RK3 111-2AA10**	
3RK3 Advanced Central modules for connecting to AS-Interface with safety-orientated inputs and outputs and extended scope of functions • 8 inputs • 1 two-channel relay output • 1 two-channel solid-state output Max. 9 expansion modules can be connected *Note:* *Memory module 3RK3 931-0AA00 is included in the scope of supply.*	A	**3RK3 131-1AC10**		A	**3RK3 131-2AC10**	
Expansion modules						
4/8 F-DI Safety-related input modules • 8 inputs	A	**3RK3 211-1AA10**		A	**3RK3 211-2AA10**	
2/4 F-DI 1/2 F-RO Safety-related input/output modules • 4 inputs • 2 single-channel relay outputs	A	**3RK3 221-1AA10**		A	**3RK3 221-2AA10**	
2/4 F-DI 2F-DO Safety-related input/output modules • 4 inputs • 2 two-channel solid-state outputs	A	**3RK3 231-1AA10**		A	**3RK3 231-2AA10**	
4/8 F-RO Safety-related output modules • 8 single-channel relay outputs	A	**3RK3 251-1AA10**		A	**3RK3 251-2AA10**	
4 F-DO Safety-related output modules • 4 two-channel solid-state outputs	A	**3RK3 242-1AA10**		A	**3RK3 242-2AA10**	
8 DI Standard input module • 8 inputs	A	**3RK3 321-1AA10**		A	**3RK3 321-2AA10**	
8 DO Standard output module • 8 solid-state outputs	A	**3RK3 311-1AA10**		A	**3RK3 311-2AA10**	
Interface modules						
DP interface PROFIBUS DP interface, 12 Mbit/s, RS 485, 32-bit cyclic data exchange with Basic central module or 64-bit with Advanced central module, acyclic exchange of diagnostics data	A	**3RK3 511-1BA10**		A	**3RK3 511-2BA10**	
Operating and monitoring modules						
Diagnostics modules	A	**3RK3 611-3AA00**			**--**	

Note:

Connection cable required, see page 11/30.

More information see Chapter 2 "Industrial Communication" and on the Internet at www.siemens.com/sirius-mss

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Accessories

Selection and ordering data

Version			DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Connection cables (essential accessory)								
 3UF7 932-0AA00-0	For connection of Central modules with expansion modules or interface module	Diagnostics modules with central module or interface module						
	✓	✓	• Length 0.025 m (flat)	► **3UF7 930-0AA00-0**		1	1 unit	42J
	--	✓	• Length 0.1 m (flat)	► **3UF7 931-0AA00-0**		1	1 unit	42J
	--	✓	• Length 0.3 m (flat)	► **3UF7 935-0AA00-0**		1	1 unit	42J
	--	✓	• Length 0.5 m (flat)	► **3UF7 932-0AA00-0**		1	1 unit	42J
	--	✓	• Length 0.5 m (round)	► **3UF7 932-0BA00-0**		1	1 unit	42J
	--	✓	• Length 1.0 m (round)	► **3UF7 937-0BA00-0**		1	1 unit	42J
	--	✓	• Length 2.5 m (round)	► **3UF7 933-0BA00-0**		1	1 unit	42J
PC cables and adapters								
 3UF7 940-0AA00-0	**PC cable for PC/PG communication with 3RK3 modular safety system** Through the system interface, for connecting to the serial interface of the PC/PG			► **3UF7 940-0AA00-0**		1	1 unit	42J
	USB/serial adapters To connect a RS 232 PC cable to the USB port of a PC, recommended for use in conjunction with 3RK3		B	**3UF7 946-0AA00-0**		1	1 unit	42J
Interface covers								
 3UF7 950-0AA00-0	For system interface			► **3UF7 950-0AA00-0**		1	5 units	42J
Memory modules								
 3RK3 931-0AA00	For parameterizing the 3RK3 Modular Safety System without a PC/PG through the system interface		A	**3RK3 931-0AA00**		1	1 unit	42C
Door adapters								
 3UF7 920-0AA00-0	For external connection of the system interface, e.g. outside a control cabinet			► **3UF7 920-0AA00-0**		1	1 unit	42J
Push-in lugs								
 3RP19 03	For screw fixing e.g. on mounting plate, 2 units required per device Can be used for 3RK3		B	**3RP19 03**		1	10 units	41H
Manuals								
	Manual for 3RK3 modular safety system (MSS)							
	• English		C	**3ZX1012-0RK31-1AC1**		1	1 unit	401
	• German		C	**3ZX1012-0RK31-1AB1**		1	1 unit	401

✓ Available
-- Not available

More accessories see Chapter 2 "Industrial Communication".

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Parameterization, start-up and diagnostics software for 3RK3

- Runs under Windows XP Professional (Service Pack 2), Windows 7 32 bit Professional/Ultimate/Business
- Delivered without PC cable

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Modular Safety System ES 2008 Basic						
 3ZS1 314-4CC10-0YA5						
Floating license for one user Engineering software in limited-function version for diagnostics purposes, software and documentation on CD, 3 languages (German/English/French), communication through the system interface						
• License key on USB stick, Class A	►	**3ZS1 314-4CC10-0YA5**		1	1 unit	42B
• License key download, Class A	►	**3ZS1 314-4CE10-0YB5**		1	1 unit	42B
Modular Safety System ES 2008 Standard						
 3ZS1 314-5CC10-0YA5						
Floating license for one user Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through system interface						
• License key on USB stick, Class A	B	**3ZS1 314-5CC10-0YA5**		1	1 unit	42B
• License key download, Class A	►	**3ZS1 314-5CE10-0YB5**		1	1 unit	42B
Powerpack for MSS ES 2008 Basic to Standard Floating license for one user, engineering software, software and documentation on CD, license key on USB stick, Class A, 3 languages (German/English/French), communication through the system interface	►	**3ZS1 314-5CC10-0YD5**		1	1 unit	42B
Software Update Service For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through the system interface	►	**3ZS1 314-5CC10-0YL5**		1	1 unit	42B
Modular Safety System ES 2008 Premium						
 3ZS1 314-6CC10-0YA5						
Floating license for one user Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through PROFIBUS or the system interface, creating, importing and exporting macros						
• License key on USB stick, Class A	B	**3ZS1 314-6CC10-0YA5**		1	1 unit	42B
• License key download, Class A	►	**3ZS1 314-6CE10-0YB5**		1	1 unit	42B
Powerpack for MSS ES 2008 Standard to Premium Floating license for one user, engineering software, license key on USB stick, Class A, 3 languages (German/English/French), communication through PROFIBUS or the system interface, creating, importing and exporting macros	►	**3ZS1 314-6CC10-0YD5**		1	1 unit	42B
Software Update Service For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through PROFIBUS or the system interface, creating, importing and exporting macros	►	**3ZS1 314-6CC10-0YL5**		1	1 unit	42B

Note:

Description of the software versions see Chapter 14 "Parametrization, Configuration and Visualization with SIRIUS".

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Notes

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Position and Safety Switches



Price groups
PG 41K, 42A

12/2 **Introduction**

SIRIUS 3SE5 mechanical position switches
12/4 General data
3SE5, plastic enclosures
12/13 - Enclosure width 31 mm acc. to EN 50047
12/18 - Enclosure width 40 mm acc. to EN 50041
12/22 - Enclosure width 50 mm
12/26 - Ambient temperature to –40 °C
3SE5, metal enclosures
12/30 - Enclosure width 31 mm acc. to EN 50047
12/34 - Enclosure width 40 mm acc. to EN 50041
12/38 - Enclosure width 56 mm
12/42 - Enclosure width 56 mm, XL
12/45 - Ambient temperature to –40 °C
12/48 - Compact design
12/50 3SE5, open-type design
12/51 Accessories and spare parts

SIRIUS 3SE5, 3SE2 mechanical safety switches
With separate actuator
12/54 General data
12/59 3SE5, plastic enclosures
12/61 3SE5, metal enclosures
12/63 Accessories
12/64 3SE2, plastic enclosures
With solenoid interlocking
12/65 General data
12/69 3SE5, plastic enclosures
12/70 3SE5, metal enclosures
12/71 Accessories
Hinge switches
12/72 General data
12/74 3SE5, plastic enclosures
12/75 3SE5, metal enclosures
12/76 3SE2, plastic enclosures

SIRIUS 3SE5 mechanical position switches for explosion protection
12/78 General data
12/79 3SE5, metal enclosures

SIRIUS 3SE5 mechanical safety switches for explosion protection
With separate actuator
12/84 3SE5, metal enclosures
Hinge switches
12/85 3SE5, metal enclosures

SIRIUS 3SF1 mechanical safety switches for AS-Interface
12/86 General data
12/88 Plastic enclosures
12/92 Metal enclosures
With separate actuator
12/94 General data
12/95 Plastic enclosures
12/96 Metal enclosures
12/97 Accessories
With solenoid interlocking
12/98 General data
12/99 Plastic enclosures
12/100 Metal enclosures
Hinge switches
12/101 Plastic enclosures
12/102 Metal enclosures

SIRIUS 3SE6 non-contact safety switches
Magnet
12/103 3SE6 6, 3SE6 7 magnetically operated switches
RFID
12/105 3SE63 RFID safety switches new

More information can be found on the Internet: see opening information, page 13

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Introduction

Overview



3SE5 23.,
3SE5 21.
3SF1 2.4



3SE5 24.,

3SF1 244



3SE5 13.,
3SE5 11.,
3SF1 114



3SE5 12.,

3SF1 124



3SE5 16.



3SE5 232,
3SE5 212,
3SF1 2.4



3SE5 132,
3SE5 112,
3SF1 1.4

	Position switches, standard					Safety hinge switches	
Enclosure							
Plastic	✓	✓	✓	--	--	✓	✓
Metal	✓	--	✓	✓	✓	✓	✓
Dimensions (W x H x D) in mm	31 × 68 × 33	50 × 53 × 33	40 × 78 × 38	56 × 78 × 38	56 × 100 × 38	31 × 68 × 33	40 × 78 × 38
Degree of protection	IP65, IP66/IP67	IP66/IP67	IP66/IP67	IP66/IP67	IP66/IP67	IP65, IP66/IP67	IP66/IP67
Standards							
IEC 60947-5-1	Mounting and operating points acc. to EN 50047	Operating points acc. to EN 50047	Mounting and operating points acc. to EN 50041	Operating points acc. to EN 50041	Operating points acc. to EN 50047	Mounting and operating points acc. to EN 50047	Mounting and operating points acc. to EN 50041
Approvals	CE, UL, CSA, CCC		CE, UL, CSA, CCC			CE, UL, CSA, CCC	
Contact blocks							
2 slow-action contacts	1 NO + 1 NC, 2 NC		1 NO + 1 NC, 2 NC		--	1 NO + 1 NC	
2 snap-action contacts	1 NO + 1 NC		1 NO + 1 NC		--	1 NO + 1 NC	
• Short stroke	1 NO + 1 NC		✓		--	✓	
• With 2 × 2 mm contact gap	1 NO + 1 NC		✓		--	✓	
3 slow-action contacts	1 NO + 2 NC, 2 NO + 1 NC		1 NO + 2 NC, 2 NO + 1 NC		--	1 NO + 2 NC	
• With make-before-break	1 NO + 2 NC		1 NO + 2 NC		--	1 NO + 2 NC	
3 snap-action contacts	1 NO + 2 NC		1 NO + 2 NC		--	1 NO + 2 NC	
2 x (2 or 3 contacts)	--		--		✓	--	
Special features							
LED status display	✓		✓		--	✓	
Increased corrosion protection	✓		✓		✓	✓	
Explosion protection (ATEX)	--		✓		✓	✓	
ASIsafe integrated	✓		✓		--	✓	
Electrical specifications							
Insulation voltage U_i	400 V		400 V			400 V	
Conventional thermal current I_{the}	6 A/10 A (3-/2-pole)		6 A/10 A (3-/2-pole)			6 A/10 A (3-/2-pole)	
Connections							
Cable entry	1 × M20 × 1.5	2 × M20 × 1.5	1 × M20 × 1.5	3 × M20 × 1.5	1 × M20 × 1.5	1 × M20 × 1.5	1 × M20 × 1.5
M12 connector socket, 4-, 5- or 8-pole	✓	✓	✓	✓	✓	✓	✓
Connector socket, 6-pole + PE	--	--	✓	✓	--	--	--
Actuators							
Rounded plungers and roller plungers	✓		✓			--	
Roller and angular roller levers	✓		✓			--	
Spring rod	✓		✓			--	
Twist levers and rod actuators	✓		✓			--	
Fork lever	--		✓			--	
Hinge switches	--		--			✓	
Page							
Complete units	12/13, 12/30	12/22	12/18, 12/34	12/38	12/42	12/74	12/75
Modular system	12/16, 12/32	12/24	12/20, 12/36	12/40	12/43	--	--
Ambient temperature –40 °C	12/26, 12/45	12/26	12/29, 12/46	12/46	12/46	--	--
ASIsafe	12/88, 12/90	12/88	12/92	12/92	--	12/101	12/102
ATEX	12/79	--	12/81	12/81	12/82	12/85	12/85

✓ Available
-- Not available

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3SE5 413, 3SE5 423



3SE5 250



3SE5 232, 3SE5 242, 3SF1 2.4



3SE5 112, 3SE5 122, 3SF1 1.4



3SE5 322, 3SE5 312, 3SF1 3.4



3SE63

	Compact design	Open-type	Safety switches with separate actuator		Safety switches with solenoid interlocking	RFID safety switch
Enclosure						
Plastic	--	✓	✓	✓	✓	✓
Metal	✓		✓	✓	✓	--
Dimensions (W x H x D) in mm	30 × .. × .., 40 × .. × ..	30 × 48.5 × 20	31 × 68 × 33, 50 × 53 × 33	40 × 78 × 38, 56 × 78 × 38	54 × 185 × 44	25 × 91 × 22
Degree of protection	IP66/IP67	IP10 or IP20	IP65, IP66/IP67	IP66/IP67	IP66/IP67	IP69K
Standards IEC 60947-5-1	--	Mounting and operating points acc. to EN 50047	Mounting acc. to EN 50047	Mounting acc. to EN 50041	EN 1088	Category 4 acc. to ISO 13849-1, PL e acc. to ISO 13849-1, SIL 3 acc. to IEC 61508
Approvals	CE, UL, CSA	--	CE, TÜV, UL, CSA, CCC		CE, TÜV, UL, CSA, CCC	CE, TÜV
Contact blocks						
2 slow-action contacts	--	1 NO + 1 NC	1 NO + 1 NC		--	--
2 snap-action contacts	1 NO + 1 NC	1 NO + 1 NC	--		--	--
• Short stroke	--	✓				
• With 2 × 2 mm contact gap	--	✓				
3 slow-action contacts	--	1 NO + 2 NC	1 NO + 2 NC		--	--
• With make-before-break	--	1 NO + 2 NC				
3 snap-action contacts	--	1 NO + 2 NC	--		--	--
6 slow-action contacts	--	--	--		2 × (1 NO + 2 NC)	--
Special features						
LED status display	--	--	✓		✓	✓
Increased corrosion protection	--	--	✓		✓	✓
Explosion protection (ATEX)	--	--	✓		--	--
ASIsafe integrated	--	--	✓		✓	--
Electrical specifications						
Insulation voltage U_i	400 V	400 V	400 V		400 V	--
Conventional thermal current I_{the}	10 A	6 A	6 A		6 A	--
Connections						
Cable entry	--	--	1 × M20 × 1.5, 2 × M20 × 1.5	1 × M20 × 1.5, 3 × M20 × 1.5	3 × M20 × 1.5	--
M12 connector socket, 4-, 5- or 8-pole	✓	--	✓	✓	✓	✓
Molded cables	✓	--	--	--	--	--
AS-Interface	--	--	✓	✓	✓	--
Actuators						
Plungers, twist levers	✓	✓	--		--	--
Separate actuators	--	--	✓		✓	--
Page						
Complete units	12/48	12/50	12/59, 12/61	12/60, 12/62	12/69, 12/70	--
Modular system	--	--	--	--	--	12/105
ASIsafe	--	--	12/95	12/96	12/99, 12/100	--
ATEX	--	--	12/84	12/84	--	--

✓ Available
-- Not available

Note:
Safety characteristics see Chapter 16, "Appendix" ➞ "Standards and Approvals" ➞ "Overview".

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General data

Overview

The innovative SIRIUS 3SE5 position switches are modern in design, compact, modular and simple to connect. They save time and increase flexibility during installation of a whole range of switch versions. In principle it is possible to combine any enclosure with any operating mechanism, paying due consideration to the EN 50041 and EN 50047 standards where necessary.

Complete units

Popular versions of the position switches in standard enclosures are available as complete units.



3SE5 position switches with plastic and metal enclosures

Modular system

The 3SE5 series features a new modular system comprising different sizes of the basic switch and an actuator which must be ordered separately. Thanks to the modular design of the switch the user can select the right solution for his application from numerous versions and install it himself in a very short time.

An easy plug-in method enables fast replacement of the actuator heads.



Examples of selection options in the modular system

Design

All enclosure versions have an integrated chlorinated rubber diaphragm (high functional safety in cold and aggressive environments).

Enclosure sizes

The 3SE5 switches are available in five different enclosure sizes with 2 or 3 contacts and with the XL enclosure:

- Open-type position switch IP20 or IP10
- Plastic enclosures according to EN 50047, 31 mm wide, IP65, 1 cable entry
- Metal enclosures according to EN 50047, 31 mm wide, IP66/IP67, 1 cable entry
- Plastic and metal enclosures according to EN 50041, 40 mm wide, IP66/IP67, 1 cable entry
- Plastic enclosures, 50 mm wide, IP66/IP67, 2 cable entries
- Metal enclosures, 56 mm wide, IP66/IP67, 3 cable entries
- XL metal enclosures with 4 to 6 contacts, 56 mm wide, IP66/IP67, 3 cable entries

Enclosure versions

Various basic switches can be selected for the 3SE5 series:

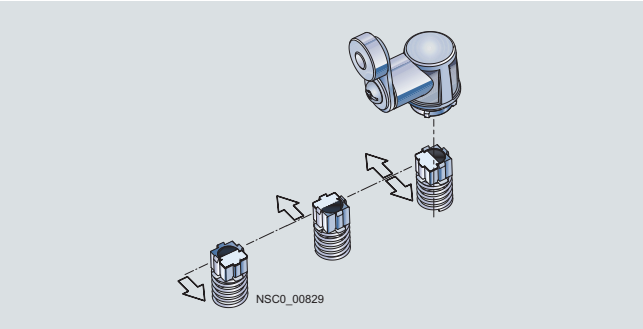
- With contact blocks with two or three contacts (screw terminals) designed as slow-action or snap-action contacts; the slow-action contacts also with make-before-break
- Optional LED status display
- With mounted four- or five-pole M12 connector socket (available for the wide enclosures as an accessory for self-assembly)
- With 6-pole connector socket + PE on the metal enclosures
- Versions with increased corrosion protection
- Versions for operating temperature up to –40 °C
- Metal enclosures for explosion protection (ATEX) (see page 12/78)
- AS-Interface version with integrated ASIsafe electronics for all enclosure designs (see page 12/86)

Actuator versions

All operating mechanisms can be rotated around the axis in increments of 22.5°. The following actuator versions are available:

- Standard, rounded and roller plungers
- Roller and angular roller levers
- Spring rod
- Twist levers and rod actuators with twist actuator
- Fork levers with twist actuator

The actuator rollers are available with various materials and diameters.



Twist actuators for twist levers and rod actuators, with setting of switching to right, left or right/left (standard for all twist actuators except fork levers)

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Optional LED indicators

LED indicators
available for all enclosure sizes.



The enclosure versions can be supplied with an LED signaling indicator (1 × green + 1 × yellow). This is the first time that optical signaling equipment is also available for small standard enclosures according to EN 50047. The LED signaling indicators are available in all common voltages (24 V DC and 230 V AC).

Additional contacts

Exchangeable two and three-pole contact blocks
for all enclosure sizes



The three-pole contact block with snap-action or slow-action contacts is regularly available for all enclosure forms. The same installation space is required as for a two-pole block. The version with 1 NO + 2 NC offers for example more safety through redundant shutdowns (2 NC contacts) with simultaneous signaling (1 NO contact). The three-pole blocks are also available with make-before-break and with 2 NO + 1 NC.

Contact reliability

The new contact blocks ensure an extremely high contact stability. This applies even when the devices are switching low voltages and currents, e.g. 1 mA at 5 V DC.

Positive opening ➔

The NC contacts of the switch are forced open mechanically, positively-driven and reliably by the plunger. This is referred to as "positive opening".

Mounting

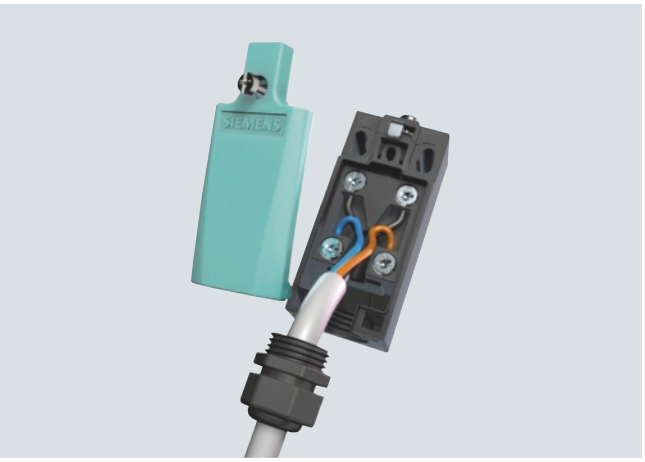
Easy plug-in method
for fast replacement of the actuator heads



Open the cover (1)
Actuate the locking lever (2)
Replace the head (turnable by 16 x 22.5°) (3)
Lock and close the cover

Quick-connect technology

For plastic enclosure with a width of 31 mm



These position switches can be wired quickly and easily as an added customer benefit. The connecting cable is first connected to the terminals of the contact block and then guided through a slit into the cable gland opening. The time saved through this new connection method is approx. 20 to 25 %.

A cable gland with seal must be used with the quick-connect method.

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General data

Benefits

The 3SE5 position switches differ from the previous series through the following new characteristics:

- The modular design of the product range allows a number of versions with a smaller number of bearing types for enclosures and operating mechanisms.
- All actuators can be turned around the axis in increments of 22.5° (see picture on page 12/5).
- Rounded and roller plungers according to EN 50041 with 3 mm overtravel (total travel 9 mm) for greater tolerance when switching
- All enclosure sizes – now also including the small enclosure 31 mm wide – are optionally available with an LED signaling indicator (see picture on page 12/5).
- All enclosure versions have an integrated chlorinated rubber diaphragm (high functional safety in cold and aggressive environments).
- All contact blocks are replaceable (see page 12/52).
- The three-pole contact blocks are available for all enclosure sizes (see picture on page 12/5).
- Elements with 1 NO + 2 NC slow-action contacts with make-before-break and 2 NO + 1 NC
- The short-stroke contact block 1 NO + 1 NC improves the precision of the switching operation through a reduced actuation path.
- The contact block with 1 NO + 1 NC snap-action contacts with 2 x 2 mm contact opening is suitable for simultaneous disconnection and signaling, particularly in the elevator industry
- NEW: XL enclosures for accommodating two 2- or 3-pole contact blocks
- The plastic enclosure with a width of 31 mm has simple and fast wiring equipment which makes it possible to save from approx. 20 to 25 % of the time when connecting (see picture on page 12/5).
- The ASIsafe electric component is integrated for the versions with the AS-Interface connection (see page 12/86); an additional adapter is not required.

Application

With the standard position switches, mechanical positions of moved machine parts are converted into electrical signals. Through their modular and uniform design and large number of versions, the devices can meet practically all requirements in industry.

Devices are available with enclosure versions to suit the particular ambient conditions. Different control tasks can be performed with the best contact blocks suited for the particular purpose. And many different actuator versions are available to match the mechanical configuration of the moved machined parts. Dimensions, fixing points and characteristics are largely in accordance with the EN 50041 or EN 50047 standards.

The devices are suitable for use in any climate.

Standards

IEC 60947-5-1 or EN 60947-5-1.

The protective measure of "total insulation" by the molded-plastic enclosure is guaranteed by the use of molded-plastic screw-glands.

Safety position switches

For controls according to IEC 60204-1 or EN 60204-1 the devices can be used as a safety position switch. To secure position switches against changes in their position, keyed techniques must be employed on installation.

Safety circuits

IEC 60947-5-1 and EN 60947-5-1 require positive opening of the NC contacts, i.e. for the purposes of personal safety, the assured opening of NC contacts is expressly stipulated for the electrical equipment of machines in all safety circuits and marked according to the IEC standard 60947-5-1 with the symbol ➔.

Category 2 according to ISO 13849-1 (EN 954-1) can be attained with 3SE5 position switches with ➔, and category 3 or 4 when using an additional position switch, if the corresponding failsafe evaluation units are selected and correctly installed, e.g. the 3TK28 safety relays or matching devices from the ASIsafe, SIMATIC or SINUMERIK product ranges. The operating mechanisms (actuators) must also be connected to the enclosure by keyed techniques. The corresponding operating mechanisms are marked in the catalog with ➔.

Contacts for each application

- Snap-action contacts: NC and NO contacts switch simultaneously – regardless of the actuating speed (v_{min} = 0.01 m/s) and contact erosion.
- Slow-action contacts: Difference in travel between "NC contact opens" and "NO contact closes"; the switching speed is the same as or proportional to the actuating speed (v_{min} = 0.4 m/s).
- Slow-action contacts with make-before-break: e.g. suitable for adding a second function to a sequence control.

Operating mechanisms for each application

Standard, rounded and roller plungers

- Operation in direction of the plunger axis or in case of roller plunger with bar at right angles to the plunger axis
- The roller plunger is recommended for lateral actuation and relatively long overtravel.

Roller and angular roller levers

- For actuators made of finely ground steel in the form of cams, straight-edges (approach angle 30°) or cam disks

Spring rod

- Can be used for undefined actuations and changing starting conditions
- Starting from any direction is possible

Twist levers and rod actuators

- For a high starting speed (v = 1.5 m/s)
- Variety of starting options
- Insensitive to oil, grinding dust and coarse-grained material
- Adjustment of the lever in increments of 10°.
- Can be adjusted with left or right switching

Fork lever

- Switchable in two directions
- Latching actuator
- For reciprocating movements

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Technical specifications

Type		3SE5 1.., 3SE5 2..		3SE5 41.	3SE5 42.
General data					
Standards		IEC 60947-5-1, EN 60947-5-1			
Rated insulation voltage U_i	V	400		400	
Pollution degree acc. to IEC 60664-1		Class 3		Class 3	
Rated impulse withstand voltage U_{imp}	kV	6		4	
Rated operational voltage U_e	V	400 V AC, over 300 V AC only for equal potential[1]		300 AC	
Conventional thermal current I_{th}	A	10	6	10	
Rated operational current I_e		2-pole	3-pole	2-pole	
• With alternating current 50/60 Hz		I_e/AC-15	I_e/AC-15	I_e/AC-15	
- At 24 V	A	6	6	6	
- At 120 V	A	6	3	6	
- At 240 V	A	3	1.5	3	
• For direct current		I_e/DC-13	I_e/DC-13	I_e/DC-13	
- At 24 V	A	3	3	3	
- At 125 V	A	0.55	0.55	0.55	
- At 250 V	A	0.27	0.27	0.27	
Short-circuit protection[2]					
• With DIAZED fuse links, gG operational class	A	6			
• With miniature circuit breaker, Char. C	A	1	2	1	
Mechanical endurance					
• Basic switches		15 ×10^6 operating cycles		30 ×10^6 operating cycles	30 ×10^6 operating cycles
• With spring rod, 3SE5 ...-..R..		10 ×10^6 operating cycles		--	--
• With fork lever 3SE5 1..-..T..		1 ×10^6 operating cycles		--	--
Electrical endurance					
• With 3RH.1, 3RT contactors in size S00, S0		10 ×10^6 operating cycles		10 ×10^6 operating cycles	5 ×10^6 operating cycles
• For utilization category AC-15 when switching off I_e/AC-15 at 240 V		0.1 ×10^6 operating cycles		--	--
• With utilization category DC-12/DC-13		For direct current depending on the loading of the switch			
Switching frequency With 3RH.1, 3RT contactors in size S00, S0		6000 operating cycles/h		1800 operating cycles/h	
Switching accuracy For repeated switching, measured at the plunger of the contact block	mm	0.05			
• With twist actuators		1°			
Rated data acc. to ⓒ, Ⓝ **and** ᵁᴸ.					
• Rated voltage	V	300			
• Uninterrupted current	A	6			
• Switching capacity		Heavy duty, A 300 / B 300 / Q 300		A 300 / Q 300	

1) For slow-action contacts 1 NO + 2 NC with make-before-break and 2 NO + 1 NC the following applies: over 250 V AC only equal potential

2) Without any welds according to IEC 60947-5-1.

Type		3SE5 23.	3SE5 13	3SE5 24.	3SE5 21.	3SE5 11.	3SE5 12., 3SE5 16.	3SE5 4..	3SE5 25.
Enclosure									
Enclosure									
• Material		Ultramid A3X2G7			Zinc diecasting GD Zn Al4 Cu1				--
• Width	mm	31	40	50	31	40	56	30 / 40	30
Degree of protection acc. to IEC 60529		IP65	IP66/IP67[1]					IP67	IP20, IP10
Ambient temperature									
• During operation	°C	–25 ... +85						–25 ... +85	–25 ... +85
• In operation, switch with LEDs	°C	–25 ... +70						--	--
• Storage, transport	°C	–40 ... +90						–40 ... +90	–40 ... +90
Mounting position		Any							
Connection									
Cable entry		1 × (M20 × 1.5)		2 × (M20 × 1.5)	1 × (M20 × 1.5)		3 × (M20 × 1.5)	--	--
Conductor cross-sections[2]									
• Solid	mm^2	2 x (0.5 ... 0.75), 1 × (0.5 ... 1.5)							
• Finely stranded with end sleeve	mm^2	2 × (0.5 ... 1.5)							
Tightening torque, contact block	Nm	0.8 ... 1.0							
Protective conductor connection inside enclosure		--			M3.5			--	--

1) For twist actuators with spring rod and rod actuators: IP65/IP67.

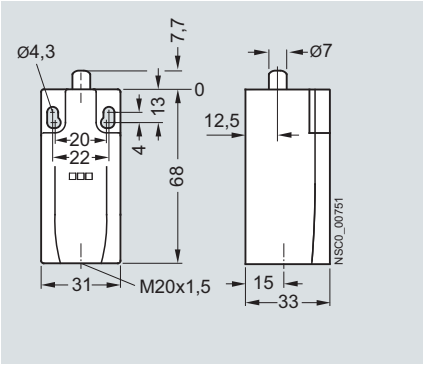
2) For the maximum number of connectable conductors for the respective contact block see operating instructions.

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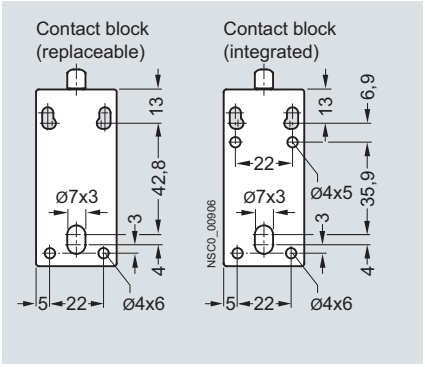
General data

Dimensions of the basic switches

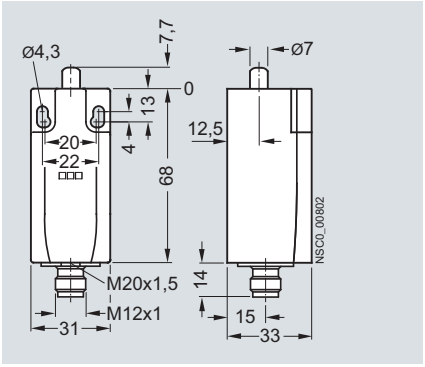
Enclosure width 31 mm, EN 50047, with M20 × 1.5 connecting thread 3SE5 232, 3SE5 212



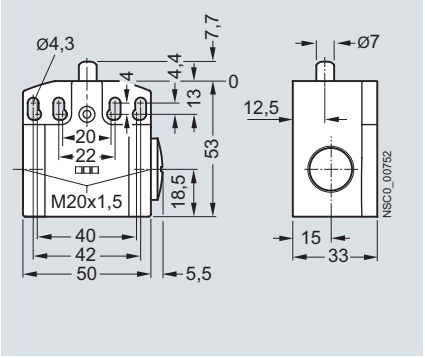
Enclosure width 31 mm, EN 50047, rear with fixing holes 3SE5 232, 3SE5 212



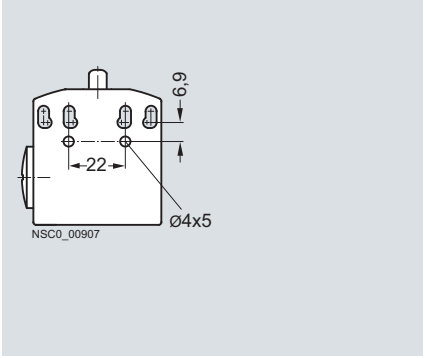
Enclosure width 31 mm, EN 50047, with M12 connector socket 3SE5 234, 3SE5 212



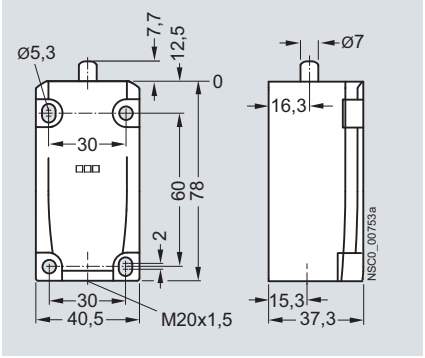
Enclosure width 50 mm, with M20 × 1.5 connecting thread 3SE5 242



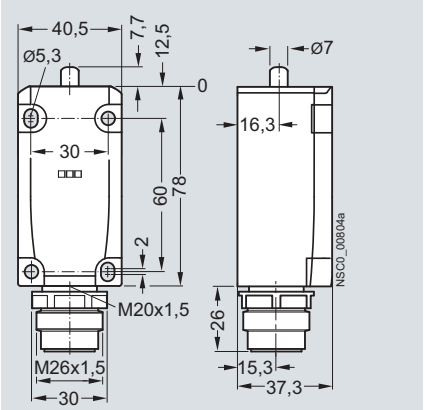
Enclosure width 50 mm, rear with fixing holes 3SE5 242



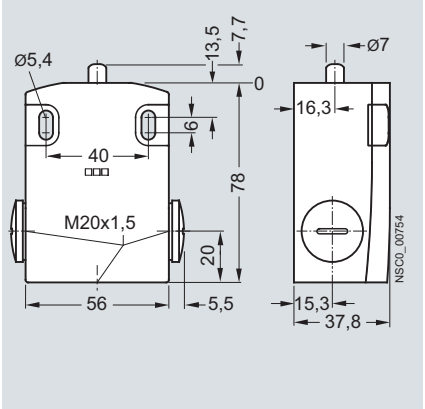
Enclosure width 40 mm, EN 50041, with M20 × 1.5 connecting thread 3SE5 112, 3SE5 132



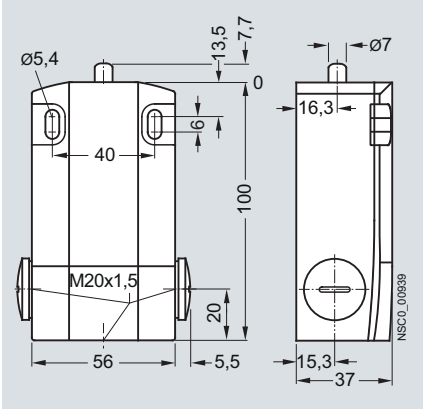
Enclosure width 40 mm, EN 50041, with 6-pole connector socket 3SE5 115



Enclosure width 56 mm, with M20 × 1.5 connecting thread 3SE5 122



XL enclosure, width 56 mm, with M20 × 1.5 connecting thread 3SE5 162

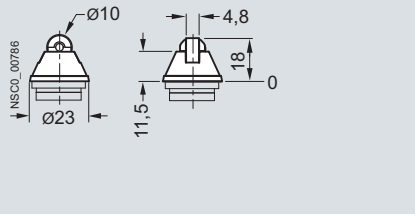


Operating mechanisms for basic switches, see pages 12/9 and 12/10.

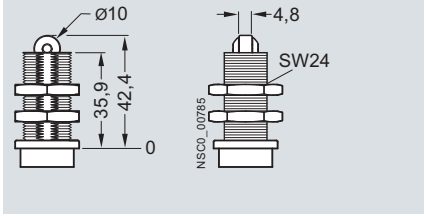
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Operating mechanisms for enclosure width 31 mm and 50 mm

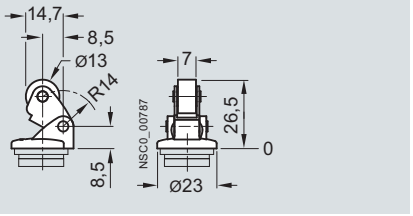
Roller plunger, type C acc. to EN 50047



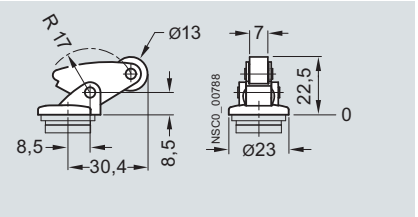
Roller plunger with central fixing



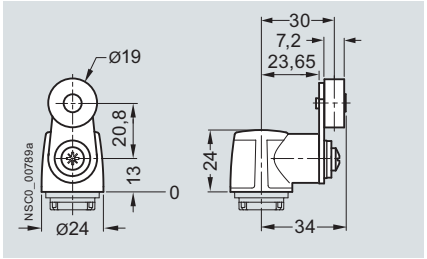
Roller lever, type E acc. to EN 50047



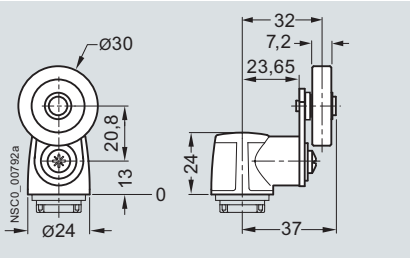
Angular roller lever



Twist lever, type A acc. to EN 50047

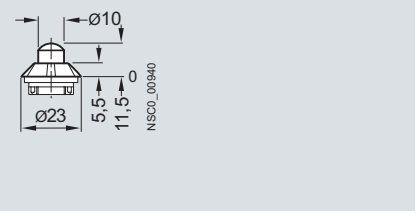


Twist lever, roller 30 mm

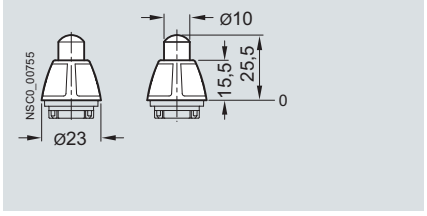


Operating mechanism for enclosure width 40 mm and 56 mm

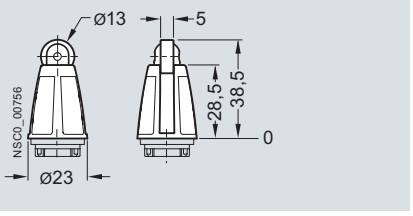
Plain plunger



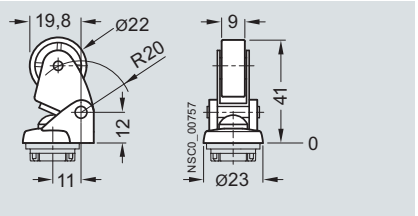
Rounded plunger, type B acc. to EN 50041



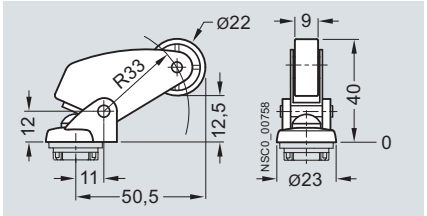
Roller plunger, type C acc. to EN 50041



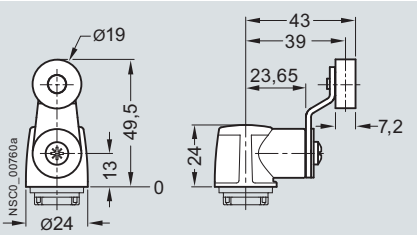
Roller lever



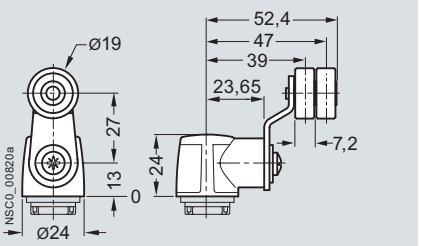
Angular roller lever



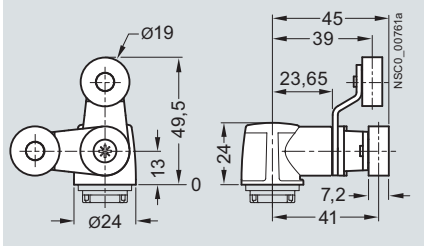
Twist lever, type A acc. to EN 50041



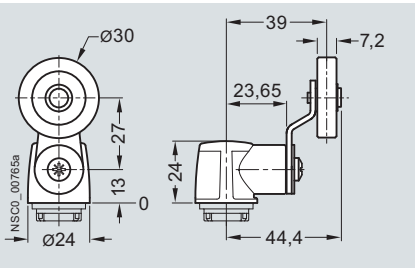
Twist lever, 2 rollers 19 mm



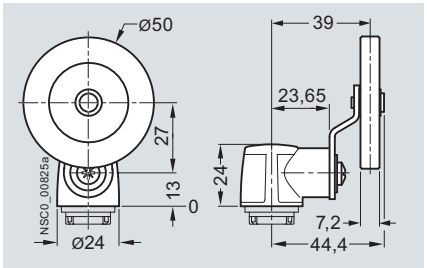
Fork lever, roller 19 mm



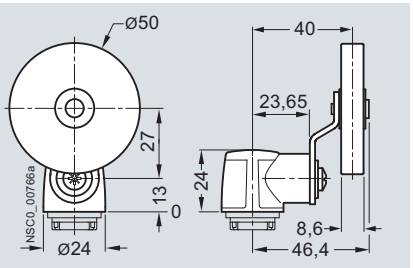
Twist lever, roller 30 mm



Twist lever, roller 50 mm



Twist lever, rubber roller 50 mm

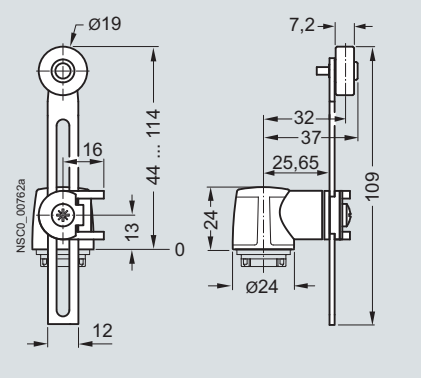


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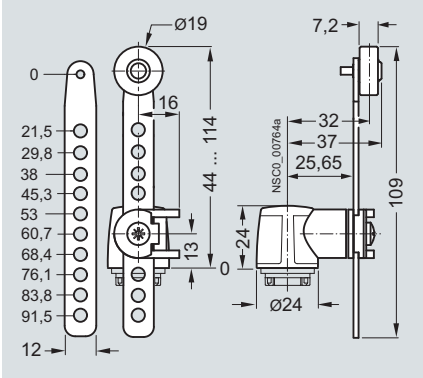
General data

Operating mechanisms for all enclosure widths

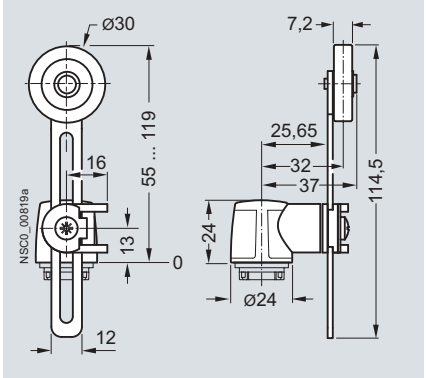
Twist lever, adjustable length, roller 19 mm



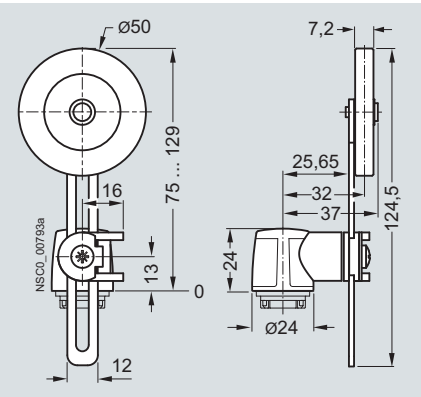
Twist lever, adjustable length, with grid hole, roller 19 mm



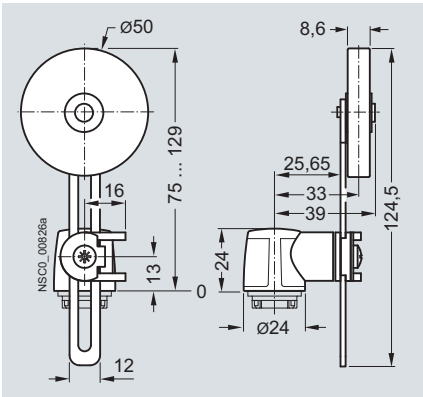
Twist lever, adjustable length, roller 30 mm



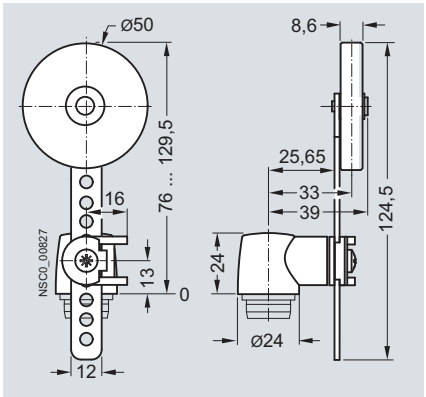
Twist lever, adjustable length, roller 50 mm



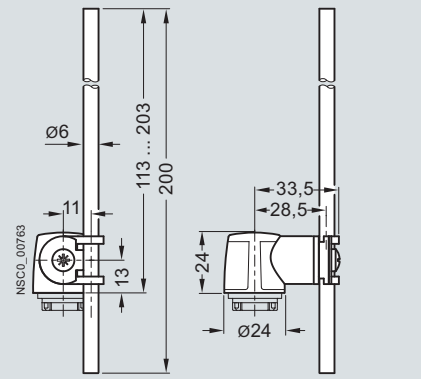
Twist lever, adjustable length, rubber roller 50 mm



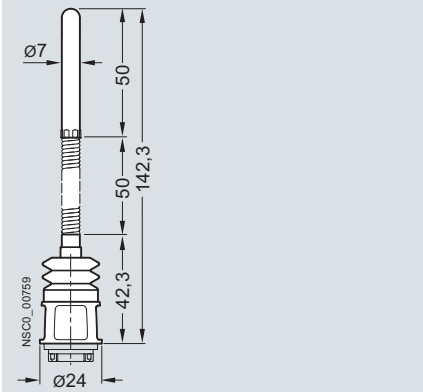
Twist lever, adjustable length, with grid hole, rubber roller 50 mm



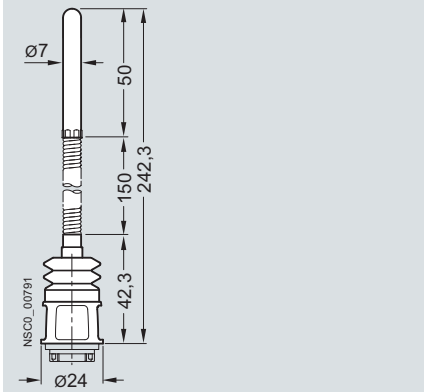
Rod actuator



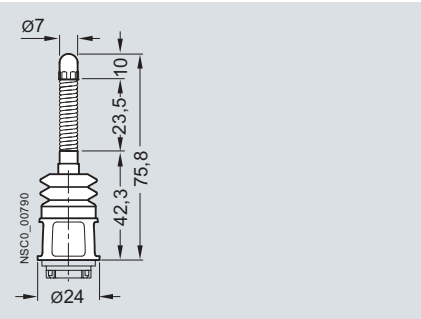
Spring rod, length 142.5 mm



Spring rod, length 242.5 mm



Spring rod, length 76 mm

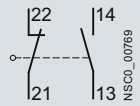


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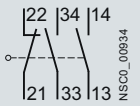
Circuit diagrams

Enclosure widths 31, 40, 50 and 56 mm

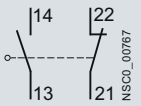
Slow-action contacts
1 NO + 1 NC
3SE5 ...-.B..., -.R...



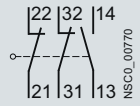
Slow-action contacts
2 NO + 1 NC
3SE5 ...-.P...



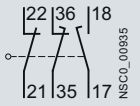
Snap-action contacts
1 NO + 1 NC
3SE5 ...-.C..., -.F..., -.G..., -.H..., -.N...



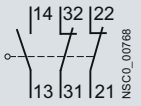
Slow-action contacts
1 NO + 2 NC
3SE5 ...-.K..., -.Q...



Slow-action contacts
1 NO + 2 NC with make-before-break, 3SE5 ...-.M...

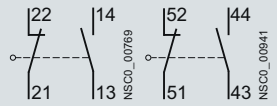


Snap-action contacts
1 NO + 2 NC
3SE5 ...-.L...

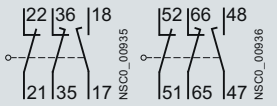


XL enclosures, width 56 mm

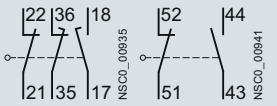
Slow-action contacts
2 x (1 NO + 1 NC)
3SE5 162-0B...



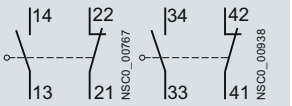
Slow-action contacts
2 x (1 NO + 2 NC) with make-before-break, 3SE5 162-0D...



For slow-action contacts
1 NO + 2 NC with make-before-break, 1 NO + 1 NC, 3SE5 162-0E...



Snap-action contacts
2 x (1 NO + 1 NC)
3SE5 162-0C...

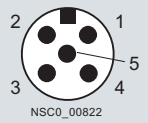


3SE5 connector assignment

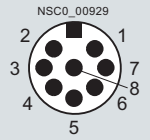
M12 connector socket, 4-pole
3SY3 127



M12 connector socket, 5-pole
3SY3 128



M12 connector socket, 8-pole
3SY3 134



Connector sockets, 6-pole + PE
3SY3 131



Order No.	Connector sockets	Contacts	LEDs	Connections								
	Type	Version	Version	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	PE
M12 connector sockets (4-, 5- or 8-pole)												
3SE5..4-0....-1AC4	3SY3 127	1 NO + 1 NC	--	21	22	13	14	--	--	--	--	--
3SE5..4-0....-1AC5	3SY3 128	1 NO + 1 NC	--	21	22	13	14	PE	--	--	--	--
3SE5..4-0....-1AE0	3SY3 127	2 NC	--	21	22	31	32	--	--	--	--	--
3SE5..4-0....-1AE1	3SY3 128	2 NC	--	21	22	31	32	PE	--	--	--	--
3SE5..4-1C...-1AF3	3SY3 128	1 NO + 1 NC snap action	2 LEDs	21	22	13 / LED gn	14 / LED ye	Ground LED	--	--	--	--
3SE5..4-1B...-1AF3	3SY3 128	1 NO + 1 NC slow-action	2 LEDs	21	22	14 / LED gn	13/ LED ye	Ground LED	--	--	--	--
3SE5..4-1L...-1AD4	3SY3 134	1 NO + 2 NC snap action	2 LEDs	21	22	13 / LED gn	14 / LED ye	31	32	Ground LED	PE	--
3SE5..4-1K...-1AD4	3SY3 134	1 NO + 2 NC slow-action	2 LEDs	21	22	14 / LED gn	13/ LED ye	31	32	Ground LED	PE	--
Connector sockets, 6-pole + PE												
3SE5..5-0....-1AD0	3SY3 131	1 NO + 1 NC	--	21	22	13	14	--	--	--	--	✓
3SE5..5-0....-1AD1	3SY3 131	1 NO + 2 NC	--	21	22	13	14	31	32	--	--	✓
3SE5..5-.C...-1AF2	3SY3 131	1 NO + 1 NC snap action	2 LEDs	21	22	13 / LED gn	14 / LED ye	--	Ground LED	--	--	✓
3SE5..5-.B...-1AF2	3SY3 131	1 NO + 1 NC slow-action	2 LEDs	21	22	14 / LED gn	13 / LED ye	--	Ground LED	--	--	✓
3SE5..5-.L...-1AD2	3SY3 131	2 NC snap-action	2 LEDs	21	22	31	32	13 / LED gn	Ground LED	--	--	✓
3SE5..5-.K...-1AD2	3SY3 131	2 NC slow-action	2 LEDs	21	22	31	32	14 / LED gn	Ground LED	--	--	✓

gn Green
ye Yellow

✓ Connected
-- Not available

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General data

Options

On the following pages you will find selection tables for complete units as well as components of the modular system.

☐ Complete units

☒ Modular system

The differences between the units are indicated in the selection and ordering data by the symbols shown on orange backgrounds.

Using the modular system you can assemble switch versions which are not available as complete units. Each complete unit can also be supplied as a module.

A basic switch for the modular system comprises an enclosure with a contact block and a cover. Among the basic switches the following versions, for example, can be selected:

- Basic enclosure with teflon plunger
- Version with increased corrosion protection
- Version with 2 LEDs
- Version with M12 connector socket or 6-pole + PE
- Version with M12 connector socket and with 2 LEDs

For the enclosures with a width of 31 and 50 mm the basic switches are designed as complete units with rounded plunger (according to standard).

Online configurator

The online configurator for 3SE5/3SF1 helps you not only to select and order the right position switch but also to create complete product documentation.

- Product data sheets
- Dimensional drawings
- Operating travel diagrams
- CAD data in 2D and 3D model images
- Ordering data
- Product photos

www.siemens.com/sirius/configurators

Complete units

Ordering example

Required:
- Position switch according to EN 50047 in a plastic enclosure
- Contact block with slow-action contacts 1 NO + 1 NC
- Angular roller lever, metal lever and plastic roller

To be ordered:

Version	Complete units ☐
	Order No.
Complete units • Enclosure width 31 mm	
 ***Angular roller levers*** **With metal lever and plastic roller 13 mm** Slow-action contacts 1 NO + 1 NC	**3SE5 232-0BF10**

Modular system

Ordering example 1

Required:
- Position switch according to EN 50047 in a plastic enclosure
- Contact block with slow-action contacts 1 NO + 1 NC
- Angular roller lever, metal lever and plastic roller

To be ordered separately:

Version	Modular system ☒
	Order No.
Basic switches • Enclosure width 31 mm	
 **With teflon plunger** Slow-action contacts 1 NO + 1 NC	**3SE5 232-0BC05**
+	
Operating mechanisms	
 **Angular roller levers** Metal lever, plastic roller	**3SE5 000-0AF10**

Ordering example 2

Required:
- Position switch according to EN 50047 in a plastic enclosure
- Contact block with slow-action contacts 1 NO + 1 NC
- Twist lever, high-grade steel lever and plastic roller

To be ordered separately:

Version	Modular system ☒
	Order No.
Basic switches • Enclosure width 31 mm	
 **With teflon plunger** Slow-action contacts 1 NO + 1 NC	**3SE5 232-0BC05**
+	
Twist actuators	
 **Twist actuator**	**3SE5 000-0AK00**
 **Twist levers** High-grade steel lever, plastic roller	**3SE5 000-0AA31**

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Selection and ordering data

Complete units

2 or 3 contacts · Degree of protection IP65 · Cable entry M20 × 1.5[1)]

Version	Contacts	LEDs	DT	Complete units / Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Complete units[2)] • Enclosure width 31 mm								
Rounded plungers, type B, acc. to EN 50047								
With teflon plunger								
 Rounded plungers								
Slow-action contacts	1 NO + 1 NC	--	⊖ ▶	**3SE5 232-0BC05**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 232-0CC05**		1	1 unit	41K
Snap-action contacts, integrated[3)]	1 NO + 1 NC	--	⊖ ▶	**3SE5 232-0HC05**		1	1 unit	41K
Snap-action contacts • Short stroke, integrated[3)]	1 NO + 1 NC	--	⊖ B	**3SE5 232-0FC05**		1	1 unit	41K
Snap-action contacts • 2 × 2 mm contact gap	1 NO + 1 NC	--	⊖ B	**3SE5 232-0GC05**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ ▶	**3SE5 232-0KC05**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ ▶	**3SE5 232-0LC05**		1	1 unit	41K
Slow-action contacts with make-before-break	1 NO + 2 NC	--	⊖ A	**3SE5 232-0MC05**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	⊖ A	**3SE5 232-0PC05**		1	1 unit	41K
With increased corrosion protection								
 With increased corrosion protection								
Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 232-0BC05-1CA0**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 232-0CC05-1CA0**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 232-0KC05-1CA0**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 232-0LC05-1CA0**		1	1 unit	41K
Slow-action contacts with make-before-break	1 NO + 2 NC	--	⊖ B	**3SE5 232-0MC05-1CA0**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	⊖ B	**3SE5 232-0PC05-1CA0**		1	1 unit	41K
With M12 connector socket, 4-pole (250 V, 4 A)								
Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 234-0BC05-1AC4**		1	1 unit	41K
Snap-action contacts, integrated[3)]	1 NO + 1 NC	--	⊖ A	**3SE5 234-0HC05-1AC4**		1	1 unit	41K
Slow-action contacts	2 NC	--	⊖ B	**3SE5 234-0KC05-1AE0**		1	1 unit	41K
Snap-action contacts	2 NC	--	⊖ A	**3SE5 234-0LC05-1AE0**		1	1 unit	41K
With 2 LEDs, yellow/green								
 With 2 LEDs								
Slow-action contacts	1 NO + 2 NC	24 V DC	⊖ B	**3SE5 232-1KC05**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	24 V DC	⊖ B	**3SE5 232-1LC05**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	230 V AC	⊖ B	**3SE5 232-3KC05**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	230 V AC	⊖ B	**3SE5 232-3LC05**		1	1 unit	41K
With M12 connector socket, 5-pole (125 V, 4 A) **and 2 LEDs**								
Slow-action contacts	1 NO + 1 NC	24 V DC	⊖ B	**3SE5 234-1BC05-1AF3**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	24 V DC	⊖ B	**3SE5 234-1CC05-1AF3**		1	1 unit	41K

⚙ For online configurator see www.siemens.com/sirius/configurators .

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

1) A cable gland with seal must be used with the quick-connect method.

2) Popular versions.

3) Subsequent replacement of contact blocks is not possible.

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3SE5, plastic enclosures
Enclosure width 31 mm acc. to EN 50047

2 or 3 contacts · Degree of protection IP65 · Cable entry M20 × 1.5[1)]

Version	Contacts	LEDs	DT	Complete units / Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Complete units[2)] • Enclosure width 31 mm								
 Roller plunger	***Roller plungers, type C acc. to EN 50047***							
	With plastic roller 10 mm							
Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 232-0BD03**		1	1 unit	41K
Snap-action contacts • Integrated[3)]	1 NO + 1 NC	--	⊖ ▶	**3SE5 232-0HD03**		1	1 unit	41K
Snap-action contacts • Short stroke, integrated[3)]	1 NO + 1 NC	--	⊖ B	**3SE5 232-0FD03**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 232-0KD03**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 232-0LD03**		1	1 unit	41K
Actuator head rotated by 90°								
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 232-0LD03-1AH0**		1	1 unit	41K
With M12 connector socket, 4-pole (250 V, 4 A)								
Snap-action contacts, integrated[3)]	1 NO + 1 NC	--	⊖ B	**3SE5 234-0HD03-1AC4**		1	1 unit	41K
 Roller plunger with central fixing	***Roller plungers with central fixing***							
Snap-action contacts, integrated[3)]	1 NO + 1 NC	--	⊖ B	**3SE5 232-0HD10**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 232-0KD10**		1	1 unit	41K
 Roller lever	***Roller levers, type E acc. to EN 50047***							
	With metal lever and plastic roller 13 mm							
Slow-action contacts	1 NO + 1 NC	--	⊖ A	**3SE5 232-0BE10**		1	1 unit	41K
Snap-action contacts, integrated[3)]	1 NO + 1 NC	--	⊖ ▶	**3SE5 232-0HE10**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 232-0KE10**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 232-0LE10**		1	1 unit	41K
With M12 connector socket, 4-pole (250 V, 4 A)								
Snap-action contacts, integrated[3)]	1 NO + 1 NC	--	⊖ B	**3SE5 234-0HE10-1AC4**		1	1 unit	41K
 Angular roller lever	***Angular roller levers***							
	With metal lever and plastic roller 13 mm							
Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 232-0BF10**		1	1 unit	41K
Snap-action contacts, integrated[3)]	1 NO + 1 NC	--	⊖ A	**3SE5 232-0HF10**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 232-0KF10**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 232-0LF10**		1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators .

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

1) A cable gland with seal must be used with the quick-connect method.

2) Popular versions.

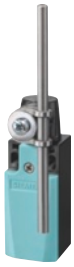
3) Subsequent replacement of contact blocks is not possible.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3SE5, plastic enclosures
Enclosure width 31 mm acc. to EN 50047

2 or 3 contacts · Degree of protection IP65 · Cable entry M20 × 1.5[1)]

Version	Contacts	LEDs	DT	Complete units / Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Complete units[2)] • Enclosure width 31 mm								
 Spring rod								
Spring rods								
Length 142.5 mm, with plastic plunger 50 mm								
Snap-action contacts, integrated[3)]	1 NO + 1 NC	--	A	**3SE5 232-0HR01**		1	1 unit	41K
With M12 connector socket, 4-pole (250 V, 4 A)								
Snap-action contacts, integrated[3)]	1 NO + 1 NC	--	B	**3SE5 234-0HR01-1AC4**		1	1 unit	41K
Twist levers, type A acc. to EN 50047								
With metal lever 21 mm and plastic roller 19 mm								
Slow-action contacts	1 NO + 1 NC	--	⊖ A	**3SE5 232-0BK21**		1	1 unit	41K
Snap-action contacts, integrated[3)]	1 NO + 1 NC	--	⊖ B	**3SE5 232-0HK21**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 232-0KK21**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 232-0LK21**		1	1 unit	41K
With M12 connector socket, 4-pole (250 V, 4 A)								
Snap-action contacts, integrated[3)]	1 NO + 1 NC	--	⊖ B	**3SE5 234-0HK21-1AC4**		1	1 unit	41K
With metal lever 35 mm and plastic roller 19 mm								
Snap-action contacts, integrated[3)]	1 NO + 1 NC	--	⊖ B	**3SE5 232-0HK15**		1	1 unit	41K
 Twist lever								
Twist levers, adjustable length								
With metal lever with grid hole and plastic roller 19 mm								
Snap-action contacts, integrated[3)]	1 NO + 1 NC	--	⊖ A	**3SE5 232-0HK60**		1	1 unit	41K
With metal lever and plastic roller 19 mm								
Slow-action contacts	1 NO + 1 NC	--	B	**3SE5 232-0BK50**		1	1 unit	41K
Snap-action contacts, integrated[3)]	1 NO + 1 NC	--	▶	**3SE5 232-0HK50**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	B	**3SE5 232-0LK50**		1	1 unit	41K
With M12 connector socket, 4-pole (250 V, 4 A)								
Snap-action contacts, integrated[3)]	1 NO + 1 NC	--	B	**3SE5 234-0HK50-1AC4**		1	1 unit	41K
 Twist lever, adjustable length								
Rod actuators								
With aluminum rod, length 200 mm								
Snap-action contacts, integrated[3)]	1 NO + 1 NC	--	B	**3SE5 232-0HK80**		1	1 unit	41K
With plastic rod, length 200 mm								
Snap-action contacts, integrated[3)]	1 NO + 1 NC	--	B	**3SE5 232-0HK82**		1	1 unit	41K
With M12 connector socket, 4-pole (250 V, 4 A)								
Snap-action contacts, integrated[3)]	1 NO + 1 NC	--	B	**3SE5 234-0HK82-1AC4**		1	1 unit	41K
Rod actuator								

For online configurator see www.siemens.com/sirius/configurators .

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

1) A cable gland with seal must be used with the quick-connect method.

2) Popular versions.

3) Subsequent replacement of contact blocks is not possible.

Note:

If the device you require is not available as a complete unit, see "Modular System", page 12/16.

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3SE5, plastic enclosures
Enclosure width 31 mm acc. to EN 50047

Modular system

2 or 3 contacts · Degree of protection IP65 · Cable entry M20 × 1.5[1)]

Version	Contacts	LEDs	DT	Modular system / Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Basic switches • Enclosure width 31 mm (with rounded plunger[2)])								
 Basic switch								
With teflon plunger								
Slow-action contacts	1 NO + 1 NC	--	⊖ ▶	**3SE5 232-0BC05**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 232-0CC05**		1	1 unit	41K
Snap-action contacts, integrated[3)]	1 NO + 1 NC	--	⊖ ▶	**3SE5 232-0HC05**		1	1 unit	41K
Snap-action contacts • Short stroke, integrated[3)]	1 NO + 1 NC	--	⊖ B	**3SE5 232-0FC05**		1	1 unit	41K
Snap-action contacts • 2 × 2 mm contact gap	1 NO + 1 NC	--	⊖ B	**3SE5 232-0GC05**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ ▶	**3SE5 232-0KC05**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ ▶	**3SE5 232-0LC05**		1	1 unit	41K
Slow-action contacts with make-before-break	1 NO + 2 NC	--	⊖ A	**3SE5 232-0MC05**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	⊖ A	**3SE5 232-0PC05**		1	1 unit	41K
 With increased corrosion protection								
With increased corrosion protection[4)]								
Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 232-0BC05-1CA0**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 232-0CC05-1CA0**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 232-0KC05-1CA0**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 232-0LC05-1CA0**		1	1 unit	41K
Slow-action contacts with make-before-break	1 NO + 2 NC	--	⊖ B	**3SE5 232-0MC05-1CA0**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	⊖ B	**3SE5 232-0PC05-1CA0**		1	1 unit	41K
 With M12 socket								
With M12 connector socket, 4-pole (250 V, 4 A)								
Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 234-0BC05-1AC4**		1	1 unit	41K
Snap-action contacts, integrated[3)]	1 NO + 1 NC	--	⊖ A	**3SE5 234-0HC05-1AC4**		1	1 unit	41K
Slow-action contacts	2 NC	--	⊖ B	**3SE5 234-0KC05-1AE0**		1	1 unit	41K
Snap-action contacts	2 NC	--	⊖ A	**3SE5 234-0LC05-1AE0**		1	1 unit	41K
 With 2 LEDs								
With 2 LEDs, yellow/green								
Slow-action contacts	1 NO + 2 NC	24 V DC	⊖ B	**3SE5 232-1KC05**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	24 V DC	⊖ B	**3SE5 232-1LC05**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	230 V AC	⊖ B	**3SE5 232-3KC05**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	230 V AC	⊖ B	**3SE5 232-3LC05**		1	1 unit	41K
 With M12 socket and 2 LEDs								
With M12 connector socket, 5-pole (125 V, 4 A) **and 2 LEDs**								
Slow-action contacts	1 NO + 1 NC	24 V DC	⊖ B	**3SE5 234-1BC05-1AF3**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	24 V DC	⊖ B	**3SE5 234-1CC05-1AF3**		1	1 unit	41K

⚙ For online configurator see www.siemens.com/sirius/configurators .

⊖ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

1) A cable gland with seal must be used with the quick-connect method.

2) For enclosures with widths of 31mm, the basic switch is a complete unit with rounded plungers.

3) Subsequent replacement of contact blocks is not possible.

4) Use corresponding high-grade steel lever.

Note:

Selection aid see page 12/12.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3SE5 Mechanical Position Switches

3SE5, plastic enclosures
Enclosure width 31 mm acc. to EN 50047

	Version	Diameter	DT	Modular system Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		mm						
Operating mechanisms								
 Roller plunger	**Roller plungers, type C acc. to EN 50047**							
	Plastic rollers	10	➔ A	**3SE5 000-0AD03**		1	1 unit	41K
	High-grade steel rollers	10	➔ B	**3SE5 000-0AD04**		1	1 unit	41K
 With central fixing	**Roller plungers with central fixing**							
	Plastic rollers	10	➔ B	**3SE5 000-0AD10**		1	1 unit	41K
	High-grade steel rollers	10	➔ B	**3SE5 000-0AD11**		1	1 unit	41K
 Roller lever	**Roller levers, type E acc. to EN 50047**							
	Metal lever, plastic roller	13	➔ A	**3SE5 000-0AE10**		1	1 unit	41K
	Metal lever, high-grade steel roller	13	➔ B	**3SE5 000-0AE11**		1	1 unit	41K
	High-grade steel lever, plastic roller	13	➔ B	**3SE5 000-0AE12**		1	1 unit	41K
	High-grade steel lever, high-grade steel roller	13	➔ B	**3SE5 000-0AE13**		1	1 unit	41K
 Angular roller lever	**Angular roller levers**							
	Metal lever, plastic roller	13	➔ A	**3SE5 000-0AF10**		1	1 unit	41K
	Metal lever, high-grade steel roller	13	➔ B	**3SE5 000-0AF11**		1	1 unit	41K
	High-grade steel lever, plastic roller	13	➔ A	**3SE5 000-0AF12**		1	1 unit	41K
	High-grade steel lever, high-grade steel roller	13	➔ B	**3SE5 000-0AF13**		1	1 unit	41K
 Spring rod	**Spring rods** (for switches with snap-action contacts only)							
	Plastic plunger and high-grade steel spring:	7						
	• Length 142.5 mm (spring 50 mm, plunger 50 mm)		B	**3SE5 000-0AR01**		1	1 unit	41K
	• Length 76 mm (spring 23.5 mm, plunger 10 mm)		B	**3SE5 000-0AR03**		1	1 unit	41K
	• Length 242.5 mm (spring 150 mm, plunger 50 mm)		B	**3SE5 000-0AR04**		1	1 unit	41K
	High-grade steel plunger and spring:	7						
	• Length 142.5 mm (spring 50 mm, plunger 50 mm)		B	**3SE5 000-0AR02**		1	1 unit	41K
Twist actuators								
 Twist actuator	**Twist actuators**, plastic (without lever)							
	Switching right and/or left, adjustable		➔ A	**3SE5 000-0AK00**		1	1 unit	41K
	Levers for twist actuators							
	Twist levers 21 mm, straight, type A acc. to EN 50047							
 Twist lever	Metal lever, plastic roller	19	➔ A	**3SE5 000-0AA21**		1	1 unit	41K
	Metal lever, high-grade steel roller	19	➔ B	**3SE5 000-0AA22**		1	1 unit	41K
	Metal lever, roller with ball bearing	19	➔ B	**3SE5 000-0AA23**		1	1 unit	41K
	Metal lever, plastic roller	30	➔ B	**3SE5 000-0AA25**		1	1 unit	41K
	High-grade steel lever, plastic roller	19	➔ B	**3SE5 000-0AA31**		1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	➔ B	**3SE5 000-0AA32**		1	1 unit	41K
 Twist lever, adjustable length	**Twist levers 30 mm, straight**[1]							
	Metal lever, plastic roller	19	➔ B	**3SE5 000-0AA24**		1	1 unit	41K
	Twist levers, adjustable length, with grid hole							
	Metal lever, plastic roller	19	➔ B	**3SE5 000-0AA60**		1	1 unit	41K
	Metal lever, high-grade steel roller	19	➔ B	**3SE5 000-0AA61**		1	1 unit	41K
	Metal lever, plastic roller	50	➔ B	**3SE5 000-0AA67**		1	1 unit	41K
	Metal lever, rubber roller	50	➔ B	**3SE5 000-0AA68**		1	1 unit	41K
	High-grade steel lever, plastic roller	19	➔ B	**3SE5 000-0AA62**		1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	➔ B	**3SE5 000-0AA63**		1	1 unit	41K
 Rod actuator	**Twist levers, adjustable length**							
	Metal lever, plastic roller	19	A	**3SE5 000-0AA50**		1	1 unit	41K
	Metal lever, high-grade steel roller	19	B	**3SE5 000-0AA51**		1	1 unit	41K
	Metal lever, plastic roller	30	B	**3SE5 000-0AA55**		1	1 unit	41K
	Metal lever, plastic roller	50	B	**3SE5 000-0AA57**		1	1 unit	41K
	Metal lever, rubber roller	50	B	**3SE5 000-0AA58**		1	1 unit	41K
	High-grade steel lever, plastic roller	19	B	**3SE5 000-0AA52**		1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	B	**3SE5 000-0AA53**		1	1 unit	41K
	Rod actuators							
	Aluminum rod, length 200 mm	6	B	**3SE5 000-0AA80**		1	1 unit	41K
	Spring rod, length 200 mm	6	B	**3SE5 000-0AA81**		1	1 unit	41K
	Plastic rod, length 200 mm	6	B	**3SE5 000-0AA82**		1	1 unit	41K

➔ Positively driven actuator, necessary in safety circuits.

[1] Can be clinch mounted (turned through 180°, rear of lever).

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3SE5, plastic enclosures
Enclosure width 40 mm acc. to EN 50041

Selection and ordering data

Complete units

2 or 3 contacts · Degree of protection IP66/67 · Cable entry M20 × 1.5

Version	Contacts	LEDs	DT	Complete units / Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Complete units[1] • Enclosure width 40 mm								
 Plain plunger								
Plain plungers								
With high-grade steel plunger								
Slow-action contacts	1 NO + 1 NC	--	B	**3SE5 132-0BB01**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	B	**3SE5 132-0CB01**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	B	**3SE5 132-0KB01**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	B	**3SE5 132-0LB01**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	B	**3SE5 132-0PB01**		1	1 unit	41K
 Rounded plunger								
Rounded plungers, type B acc. to EN 50041								
With plastic plunger								
Slow-action contacts	1 NO + 1 NC	--	A	**3SE5 132-0BC03**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	A	**3SE5 132-0CC03**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	B	**3SE5 132-0KC03**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	B	**3SE5 132-0LC03**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	B	**3SE5 132-0PC03**		1	1 unit	41K
 Roller plunger								
Roller plungers, type C acc. to EN 50041								
With plastic roller 13 mm								
Slow-action contacts	1 NO + 1 NC	--	B	**3SE5 132-0BD05**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	A	**3SE5 132-0CD05**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	B	**3SE5 132-0KD05**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	B	**3SE5 132-0LD05**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	B	**3SE5 132-0PD05**		1	1 unit	41K
 Roller lever								
Roller levers								
With metal lever and plastic roller 22 mm								
Slow-action contacts	1 NO + 1 NC	--	B	**3SE5 132-0BE05**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	A	**3SE5 132-0CE05**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	B	**3SE5 132-0KE05**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	B	**3SE5 132-0LE05**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	B	**3SE5 132-0PE05**		1	1 unit	41K
 Angular roller lever								
Angular roller levers								
With metal lever and plastic roller 22 mm								
Slow-action contacts	1 NO + 1 NC	--	B	**3SE5 132-0BF05**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	B	**3SE5 132-0CF05**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	B	**3SE5 132-0LF05**		1	1 unit	41K
 Spring rod								
Spring rods								
Length 142.5 mm, with plastic plunger 50 mm								
Snap-action contacts	1 NO + 1 NC	--	B	**3SE5 132-0CR01**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	B	**3SE5 132-0LR01**		1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators .

Positive opening according to IEC 60947-5-1, Appendix K.

[1] Popular versions.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3SE5, plastic enclosures
Enclosure width 40 mm acc. to EN 50041

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

Version	Contacts	LEDs	DT	Complete units / Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Complete units[1] • Enclosure width 40 mm								
Twist levers, type A acc. to EN 50041								
With metal lever 27 mm and plastic roller 19 mm								
Slow-action contacts	1 NO + 1 NC	--	A	**3SE5 132-0BJ01**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	A	**3SE5 132-0CJ01**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	B	**3SE5 132-0KJ01**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	B	**3SE5 132-0LJ01**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	B	**3SE5 132-0PJ01**		1	1 unit	41K
Twist levers, adjustable length								
With metal lever with grid hole and plastic roller 19 mm								
Snap-action contacts	1 NO + 1 NC	--	B	**3SE5 132-0CJ60**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	B	**3SE5 132-0LJ60**		1	1 unit	41K
With metal lever and plastic roller 19 mm								
Snap-action contacts	1 NO + 1 NC	--	A	**3SE5 132-0CJ50**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	B	**3SE5 132-0LJ50**		1	1 unit	41K
Rod actuators, type D, acc. to EN 50041								
With aluminum rod, length 200 mm								
Snap-action contacts	1 NO + 1 NC	--	B	**3SE5 132-0CJ80**		1	1 unit	41K
With plastic rod, length 200 mm								
Snap-action contacts	1 NO + 1 NC	--	A	**3SE5 132-0CJ82**		1	1 unit	41K


Twist lever


Twist lever, adjustable length, with grid hole


Twist lever, adjustable length


Rod actuator

For online configurator see www.siemens.com/sirius/configurators .

Positive opening according to IEC 60947-5-1, Appendix K.

1) Popular versions.

Note:

If the device you require is not available as a complete unit, see "Modular System", page 12/20.

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3SE5, plastic enclosures
Enclosure width 40 mm acc. to EN 50041

Modular system

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

Version	Contacts	LEDs	DT	Modular system / Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Basic switches • Enclosure width 40 mm								
 Basic switch	**With M20 × 1.5 connecting thread**							
	Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 132-0BA00**	1	1 unit	41K
	Snap-action contacts	1 NO + 1 NC	--	⊖ A	**3SE5 132-0CA00**	1	1 unit	41K
	• Gold-plated contacts			⊖ B	**3SE5 132-0CA00-1AC1**	1	1 unit	41K
	Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 132-0KA00**	1	1 unit	41K
	Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 132-0LA00**	1	1 unit	41K
	Slow-action contacts with make-before-break	1 NO + 2 NC	--	⊖ B	**3SE5 132-0MA00**	1	1 unit	41K
	Slow-action contacts	2 NO + 1 NC	--	⊖ B	**3SE5 132-0PA00**	1	1 unit	41K
 With increased corrosion protection	**With increased corrosion protection**[1]							
	Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 132-0BA00-1CA0**	1	1 unit	41K
	Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 132-0CA00-1CA0**	1	1 unit	41K
	Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 132-0KA00-1CA0**	1	1 unit	41K
	Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 132-0LA00-1CA0**	1	1 unit	41K
	Slow-action contacts with make-before-break	1 NO + 2 NC	--	⊖ B	**3SE5 132-0MA00-1CA0**	1	1 unit	41K
	Slow-action contacts	2 NO + 1 NC	--	⊖ B	**3SE5 132-0PA00-1CA0**	1	1 unit	41K
 With M12 socket	**With M12 connector socket, 4-pole** (250 V, 4 A)							
	Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 134-0BA00-1AC4**	1	1 unit	41K
	Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 134-0CA00-1AC4**	1	1 unit	41K
	Slow-action contacts	2 NC	--	⊖ B	**3SE5 134-0KA00-1AE0**	1	1 unit	41K
	Snap-action contacts	2 NC	--	⊖ B	**3SE5 134-0LA00-1AE0**	1	1 unit	41K
 With 2 LEDs	**With 2 LEDs, yellow/green**							
	Slow-action contacts	1 NO + 2 NC	24 V DC	⊖ C	**3SE5 132-1KA00**	1	1 unit	41K
	Snap-action contacts	1 NO + 2 NC	24 V DC	⊖ C	**3SE5 132-1LA00**	1	1 unit	41K
	Slow-action contacts	1 NO + 2 NC	230 V AC	⊖ C	**3SE5 132-3KA00**	1	1 unit	41K
	Snap-action contacts	1 NO + 2 NC	230 V AC	⊖ C	**3SE5 132-3LA00**	1	1 unit	41K

⚙ For online configurator see www.siemens.com/sirius/configurators .

⊖ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

1) Use corresponding high-grade steel lever.

Note:

Selection aid see page 12/12.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3SE5, plastic enclosures
Enclosure width 40 mm acc. to EN 50041

	Version	Diameter mm	DT	Modular system ◇ Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Operating mechanisms								
 Plain plunger	**Plain plungers**							
	High-grade steel plungers	10	➔ A	**3SE5 000-0AB01**		1	1 unit	41K
 Plunger	**Rounded plungers, type B acc. to EN 50041**							
	Plastic plungers	10	➔ B	**3SE5 000-0AC03**		1	1 unit	41K
	Roller plungers, type C acc. to EN 50041							
	Plastic plunger, plastic roller	13	➔ B	**3SE5 000-0AD05**		1	1 unit	41K
	Plastic plunger, high-grade steel roller	13	➔ B	**3SE5 000-0AD06**		1	1 unit	41K
 Roller lever	**Roller levers**							
	Metal lever with plastic roller, plastic base	22	➔ B	**3SE5 000-0AE05**		1	1 unit	41K
 Angular roller lever	**Angular roller levers**							
	Metal lever with plastic roller, plastic base	22	➔ B	**3SE5 000-0AF05**		1	1 unit	41K
 Spring rod	**Spring rods** (for switches with snap-action contacts only)							
	Plastic plunger and high-grade steel spring:	7						
	• Length 142.5 mm (spring 50 mm, plunger 50 mm)		B	**3SE5 000-0AR01**		1	1 unit	41K
	• Length 76 mm (spring 23.5 mm, plunger 10 mm)		B	**3SE5 000-0AR03**		1	1 unit	41K
	• Length 242.5 mm (spring 150 mm, plunger 50 mm)		B	**3SE5 000-0AR04**		1	1 unit	41K
	High-grade steel plunger and spring:	7						
	• Length 142.5 mm (spring 50 mm, plunger 50 mm)		B	**3SE5 000-0AR02**		1	1 unit	41K
Twist actuators								
 Twist actuator	**Twist actuators**, plastic (without lever)							
	• For twist levers and rod actuators, switching right and/or left, adjustable		➔ B	**3SE5 000-0AJ00**		1	1 unit	41K
	Levers for twist actuators							
	Twist levers, offset, type A acc. to EN 50041							
 Twist lever	Metal lever 27 mm, plastic roller	19	➔ A	**3SE5 000-0AA01**		1	1 unit	41K
	Metal lever 27 mm, high-grade steel roller	19	➔ A	**3SE5 000-0AA02**		1	1 unit	41K
	Metal lever 27 mm, roller with ball bearing	19	➔ B	**3SE5 000-0AA03**		1	1 unit	41K
	Metal lever 27 mm, 2 plastic rollers	19	➔ B	**3SE5 000-0AA04**		1	1 unit	41K
	Metal lever 27 mm, plastic roller	30	➔ B	**3SE5 000-0AA05**		1	1 unit	41K
	Metal lever 27 mm, rubber roller	50	➔ B	**3SE5 000-0AA08**		1	1 unit	41K
	High-grade steel lever 27 mm, plastic roller	19	➔ B	**3SE5 000-0AA11**		1	1 unit	41K
	High-grade steel lever 27 mm, high-grade steel roller	19	➔ B	**3SE5 000-0AA12**		1	1 unit	41K
	Metal lever 35 mm, plastic roller	19	➔ B	**3SE5 000-0AA15**		1	1 unit	41K
 Twist lever, adjustable length	**Twist levers 30 mm, straight**[1]							
	Metal lever, plastic roller	19	➔ B	**3SE5 000-0AA24**		1	1 unit	41K
	Metal lever, plastic roller	30	➔ B	**3SE5 000-0AA26**		1	1 unit	41K
	Twist levers, adjustable length, with grid hole							
	Metal lever, plastic roller	19	➔ B	**3SE5 000-0AA60**		1	1 unit	41K
	Metal lever, high-grade steel roller	19	➔ B	**3SE5 000-0AA61**		1	1 unit	41K
	Metal lever, rubber roller	50	➔ B	**3SE5 000-0AA68**		1	1 unit	41K
	High-grade steel lever, plastic roller	19	➔ B	**3SE5 000-0AA62**		1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	➔ B	**3SE5 000-0AA63**		1	1 unit	41K
 Rod actuator	**Twist levers, adjustable length**							
	Metal lever, plastic roller	19	A	**3SE5 000-0AA50**		1	1 unit	41K
	Metal lever, high-grade steel roller	19	B	**3SE5 000-0AA51**		1	1 unit	41K
	Metal lever, plastic roller	30	B	**3SE5 000-0AA55**		1	1 unit	41K
	Metal lever, rubber roller	50	B	**3SE5 000-0AA58**		1	1 unit	41K
	High-grade steel lever, plastic roller	19	B	**3SE5 000-0AA52**		1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	B	**3SE5 000-0AA53**		1	1 unit	41K
	Rod actuators, type D acc. to EN 50041							
	Aluminum rod, length 200 mm	6	B	**3SE5 000-0AA80**		1	1 unit	41K
	Spring rod, length 200 mm	6	B	**3SE5 000-0AA81**		1	1 unit	41K
	Plastic rod, length 200 mm	6	B	**3SE5 000-0AA82**		1	1 unit	41K

➔ Positively driven actuator, necessary in safety circuits.

[1] Can be clinch mounted (turned through 180°, rear of lever).

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3SE5, plastic enclosures
Enclosure width 50 mm

Selection and ordering data

Complete units

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry 2 × (M20 × 1.5)

	Version	Contacts	LEDs	DT	Complete units / Configurator / Order No.	PU (UNIT, SET, M)	PS*	PG
Complete units[1] • Enclosure width 50 mm								
 Rounded plunger	***Rounded plungers***							
	With teflon plunger							
	Slow-action contacts	1 NO + 1 NC	--	A	**3SE5 242-0BC05**	1	1 unit	41K
	Snap-action contacts	1 NO + 1 NC	--	B	**3SE5 242-0CC05**	1	1 unit	41K
	Snap-action contacts, integrated[2]	1 NO + 1 NC	--	▶	**3SE5 242-0HC05**	1	1 unit	41K
	Snap-action contacts • Short stroke, integrated[2]	1 NO + 1 NC	--	B	**3SE5 242-0FC05**	1	1 unit	41K
	Snap-action contacts • 2 × 2 mm contact gap	1 NO + 1 NC	--	B	**3SE5 242-0GC05**	1	1 unit	41K
	Slow-action contacts	1 NO + 2 NC	--	B	**3SE5 242-0KC05**	1	1 unit	41K
	Snap-action contacts	1 NO + 2 NC	--	B	**3SE5 242-0LC05**	1	1 unit	41K
	Slow-action contacts with make-before-break	1 NO + 2 NC	--	A	**3SE5 242-0MC05**	1	1 unit	41K
	Slow-action contacts	2 NO + 1 NC	--	A	**3SE5 242-0PC05**	1	1 unit	41K
 With increased corrosion protection	**With increased corrosion protection**							
	Slow-action contacts	1 NO + 1 NC	--	B	**3SE5 242-0BC05-1CA0**	1	1 unit	41K
	Snap-action contacts, integrated[2]	1 NO + 1 NC	--	B	**3SE5 242-0HC05-1CA0**	1	1 unit	41K
	Slow-action contacts	1 NO + 2 NC	--	B	**3SE5 242-0KC05-1CA0**	1	1 unit	41K
	Snap-action contacts	1 NO + 2 NC	--	B	**3SE5 242-0LC05-1CA0**	1	1 unit	41K
	Slow-action contacts with make-before-break	1 NO + 2 NC	--	B	**3SE5 242-0MC05-1CA0**	1	1 unit	41K
	Slow-action contacts	2 NO + 1 NC	--	B	**3SE5 242-0PC05-1CA0**	1	1 unit	41K
 With 2 LEDs	**With 2 LEDs, yellow/green**							
	Slow-action contacts	1 NO + 2 NC	24 V DC	B	**3SE5 242-1KC05**	1	1 unit	41K
	Snap-action contacts	1 NO + 2 NC	24 V DC	B	**3SE5 242-1LC05**	1	1 unit	41K
	Slow-action contacts	1 NO + 2 NC	230 V AC	B	**3SE5 242-3KC05**	1	1 unit	41K
	Snap-action contacts	1 NO + 2 NC	230 V AC	B	**3SE5 242-3LC05**	1	1 unit	41K
 Roller plunger	***Roller plungers***							
	With plastic roller 10 mm							
	Slow-action contacts	1 NO + 1 NC	--	B	**3SE5 242-0BD03**	1	1 unit	41K
	Snap-action contacts, integrated[2]	1 NO + 1 NC	--	B	**3SE5 242-0HD03**	1	1 unit	41K
	Snap-action contacts	1 NO + 2 NC	--	B	**3SE5 242-0LD03**	1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators .

Positive opening according to IEC 60947-5-1, Appendix K.

1) Popular versions.

2) Subsequent replacement of contact blocks is not possible.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3SE5, plastic enclosures
Enclosure width 50 mm

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry 2 × (M20 × 1.5)

Version	Contacts	LEDs	DT	Complete units / Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Complete units[1] • Enclosure width 50 mm								
 Roller lever								
Roller levers								
With metal lever and plastic roller 13 mm								
Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 242-0BE10**		1	1 unit	41K
Snap-action contacts, integrated[2]	1 NO + 1 NC	--	⊖ A	**3SE5 242-0HE10**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 242-0LE10**		1	1 unit	41K
With M12 connector socket, 4-pole right (250 V, 4 A)								
Snap-action contacts	2 NC	--	⊖ B	**3SE5 244-0LE10-1AE0**		1	1 unit	41K
 Twist lever								
Twist levers								
With metal lever 21 mm and plastic roller 19 mm								
Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 242-0BK21**		1	1 unit	41K
Snap-action contacts, integrated[2]	1 NO + 1 NC	--	⊖ B	**3SE5 242-0HK21**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 242-0LK21**		1	1 unit	41K
 Twist lever, adjustable length								
Twist levers, adjustable length								
With metal lever and plastic roller 19 mm								
Snap-action contacts, integrated[2]	1 NO + 1 NC	--	B	**3SE5 242-0HK50**		1	1 unit	41K

⚙ For online configurator see www.siemens.com/sirius/configurators .

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

1) Popular versions.

2) Subsequent replacement of contact blocks is not possible.

Note:

If the device you require is not available as a complete unit, see "Modular System", page 12/24.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

© Siemens AG 2012

3SE5, plastic enclosures
Enclosure width 50 mm

Modular system

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry 2 × (M20 × 1.5)

Version	Contacts	LEDs	DT	Modular system / Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Basic switches • Enclosure width 50 mm (with rounded plunger[1])								
 Basic switches								
With teflon plunger								
Slow-action contacts	1 NO + 1 NC	--	A	**3SE5 242-0BC05**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	B	**3SE5 242-0CC05**		1	1 unit	41K
Snap-action contacts, integrated[2]	1 NO + 1 NC	--	▶	**3SE5 242-0HC05**		1	1 unit	41K
Snap-action contacts • Short stroke, integrated[2]	1 NO + 1 NC	--	B	**3SE5 242-0FC05**		1	1 unit	41K
Snap-action contacts • 2 × 2 mm contact gap	1 NO + 1 NC	--	B	**3SE5 242-0GC05**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	B	**3SE5 242-0KC05**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	B	**3SE5 242-0LC05**		1	1 unit	41K
Slow-action contacts with make-before-break	1 NO + 2 NC	--	A	**3SE5 242-0MC05**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	A	**3SE5 242-0PC05**		1	1 unit	41K
 With increased corrosion protection								
With increased corrosion protection[3]								
Slow-action contacts	1 NO + 1 NC	--	B	**3SE5 242-0BC05-1CA0**		1	1 unit	41K
Snap-action contacts, integrated[2]	1 NO + 1 NC	--	B	**3SE5 242-0HC05-1CA0**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	B	**3SE5 242-0KC05-1CA0**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	B	**3SE5 242-0LC05-1CA0**		1	1 unit	41K
Slow-action contacts with make-before-break	1 NO + 2 NC	--	B	**3SE5 242-0MC05-1CA0**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	B	**3SE5 242-0PC05-1CA0**		1	1 unit	41K
 With 2 LEDs								
With 2 LEDs, yellow/green								
Slow-action contacts	1 NO + 2 NC	24 V DC	B	**3SE5 242-1KC05**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	24 V DC	B	**3SE5 242-1LC05**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	230 V AC	B	**3SE5 242-3KC05**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	230 V AC	B	**3SE5 242-3LC05**		1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators .

Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

1) For enclosures with widths of 50 mm, the basic switch is a complete unit with rounded plungers.

2) Subsequent replacement of contact blocks is not possible.

3) Use corresponding high-grade steel lever.

Note:

Selection aid see page 12/12.

Version	Diameter mm	DT	Modular system / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Operating mechanisms							
 Roller plungers							
Roller plungers, type C acc. to EN 50047							
Plastic rollers	10	A	**3SE5 000-0AD03**		1	1 unit	41K
High-grade steel rollers	10	B	**3SE5 000-0AD04**		1	1 unit	41K
 With central fixing							
Roller plungers with central fixing							
Plastic rollers	10	B	**3SE5 000-0AD10**		1	1 unit	41K
High-grade steel rollers	10	B	**3SE5 000-0AD11**		1	1 unit	41K

Positively driven actuator, necessary in safety circuits.

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3SE5, plastic enclosures
Enclosure width 50 mm

	Version	Diameter	DT	Modular system ◇ Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		mm						
Operating mechanisms								
 Roller lever	**Roller levers, type E acc. to EN 50047**							
	Metal lever, plastic roller	13	➔ A	**3SE5 000-0AE10**		1	1 unit	41K
	Metal lever, high-grade steel roller	13	➔ B	**3SE5 000-0AE11**		1	1 unit	41K
	High-grade steel lever, plastic roller	13	➔ B	**3SE5 000-0AE12**		1	1 unit	41K
	High-grade steel lever, high-grade steel roller	13	➔ B	**3SE5 000-0AE13**		1	1 unit	41K
 Angular roller lever	**Angular roller levers**							
	Metal lever, plastic roller	13	➔ A	**3SE5 000-0AF10**		1	1 unit	41K
	Metal lever, high-grade steel roller	13	➔ B	**3SE5 000-0AF11**		1	1 unit	41K
	High-grade steel lever, plastic roller	13	➔ A	**3SE5 000-0AF12**		1	1 unit	41K
	High-grade steel lever, high-grade steel roller	13	➔ B	**3SE5 000-0AF13**		1	1 unit	41K
 Spring rod	**Spring rods** (for switches with snap-action contacts only)							
	Plastic plunger and high-grade steel spring:	7						
	• Length 142.5 mm (spring 50 mm, plunger 50 mm)		B	**3SE5 000-0AR01**		1	1 unit	41K
	• Length 76 mm (spring 23.5 mm, plunger 10 mm)		B	**3SE5 000-0AR03**		1	1 unit	41K
	• Length 242.5 mm (spring 150 mm, plunger 50 mm)		B	**3SE5 000-0AR04**		1	1 unit	41K
	High-grade steel plunger and spring:	7						
	• Length 142.5 mm (spring 50 mm, plunger 50 mm)		B	**3SE5 000-0AR02**		1	1 unit	41K
Twist actuators								
 Twist actuator	**Twist actuators**, plastic (without lever)							
	Switching right and/or left, adjustable		➔ A	**3SE5 000-0AK00**		1	1 unit	41K
	Levers for twist actuators							
	Twist levers 21 mm, straight, type A acc. to EN 50047							
 Twist lever	Metal lever, plastic roller	19	➔ A	**3SE5 000-0AA21**		1	1 unit	41K
	Metal lever, high-grade steel roller	19	➔ B	**3SE5 000-0AA22**		1	1 unit	41K
	Metal lever, roller with ball bearing	19	➔ B	**3SE5 000-0AA23**		1	1 unit	41K
	Metal lever, plastic roller	30	➔ B	**3SE5 000-0AA25**		1	1 unit	41K
	High-grade steel lever, plastic roller	19	➔ B	**3SE5 000-0AA31**		1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	➔ B	**3SE5 000-0AA32**		1	1 unit	41K
 Twist lever, adjustable length	**Twist levers 30 mm, straight**[1]							
	Metal lever, plastic roller	19	➔ B	**3SE5 000-0AA24**		1	1 unit	41K
	Metal lever, plastic roller	30	➔ B	**3SE5 000-0AA26**		1	1 unit	41K
	Twist levers, adjustable length, with grid hole							
	Metal lever, plastic roller	19	➔ B	**3SE5 000-0AA60**		1	1 unit	41K
	Metal lever, high-grade steel roller	19	➔ B	**3SE5 000-0AA61**		1	1 unit	41K
	Metal lever, plastic roller	50	➔ B	**3SE5 000-0AA67**		1	1 unit	41K
	Metal lever, rubber roller	50	➔ B	**3SE5 000-0AA68**		1	1 unit	41K
	High-grade steel lever, plastic roller	19	➔ B	**3SE5 000-0AA62**		1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	➔ B	**3SE5 000-0AA63**		1	1 unit	41K
 Rod actuator	**Twist levers, adjustable length**							
	Metal lever, plastic roller	19	A	**3SE5 000-0AA50**		1	1 unit	41K
	Metal lever, high-grade steel roller	19	B	**3SE5 000-0AA51**		1	1 unit	41K
	Metal lever, plastic roller	30	B	**3SE5 000-0AA55**		1	1 unit	41K
	Metal lever, plastic roller	50	B	**3SE5 000-0AA57**		1	1 unit	41K
	Metal lever, rubber roller	50	B	**3SE5 000-0AA58**		1	1 unit	41K
	High-grade steel lever, plastic roller	19	B	**3SE5 000-0AA52**		1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	B	**3SE5 000-0AA53**		1	1 unit	41K
	Rod actuators							
	Aluminum rod, length 200 mm	6	B	**3SE5 000-0AA80**		1	1 unit	41K
	Spring rod, length 200 mm	6	B	**3SE5 000-0AA81**		1	1 unit	41K
	Plastic rod, length 200 mm	6	B	**3SE5 000-0AA82**		1	1 unit	41K

➔ Positively driven actuator, necessary in safety circuits.

1) Can be clinch mounted (turned through 180°, rear of lever).

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3SE5, plastic enclosures
Ambient temperature to –40 °C

Selection and ordering data

Complete units

2 or 3 contacts · Degree of protection IP65 or IP66/IP67 · Cable entry M20 × 1.5

	Version	Contacts	LEDs	DT	Complete units / Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Complete units[1] • Enclosure width 31 mm									
 Roller plunger with central fixing	***Roller plungers with central fixing***								
	Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 232-0CD10-1AJ0**		1	1 unit	41K
 Twist lever	***Twist levers, type A acc. to EN 50047***								
	With high-grade steel lever 21 mm and plastic roller 19 mm								
	Snap-action contacts	1 NO + 1 NC	--	⊖ A	**3SE5 232-0CK31-1AJ0**		1	1 unit	41K
 Twist lever, adjustable length	***Twist levers, adjustable length***								
	With high-grade steel lever with grid hole and plastic roller 19 mm								
	Snap-action contacts	1 NO + 1 NC	--	⊖ A	**3SE5 232-0CK62-1AJ0**		1	1 unit	41K
	Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 232-0LK62-1AJ0**		1	1 unit	41K
Complete units[1] • Enclosure width 50 mm									
 Twist lever, adjustable length	***Twist levers***								
	With metal lever 21 mm and plastic roller 19 mm								
	Snap-action contacts, integrated[2]	1 NO + 1 NC	--	⊖ B	**3SE5 242-0HK21-1AJ0**		1	1 unit	41K
	Twist levers, adjustable length								
	With high-grade steel lever with grid hole and plastic roller 19 mm								
	Snap-action contacts, integrated[2]	1 NO + 1 NC	--	⊖ B	**3SE5 242-0HK62-1AJ0**		1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators .

⊖ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

1) Popular versions.

2) Subsequent replacement of contact blocks is not possible.

Note:

If the device you require is not available as a complete unit, see "Modular System", page 12/27.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3SE5, plastic enclosures
Ambient temperature to –40 °C

Modular system

2 or 3 contacts · Degree of protection IP65 or IP66/IP67 · Cable entry M20 × 1.5

Version	Contacts	LEDs	DT	Modular system / Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Basic switches • Enclosure width 31 mm (with rounded plunger[1])								
With teflon plunger								
Snap-action contacts	1 NO + 1 NC	--	➔ B	**3SE5 232-0CC05-1AJ0**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	➔ B	**3SE5 232-0KC05-1AJ0**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	➔ B	**3SE5 232-0LC05-1AJ0**		1	1 unit	41K
Basic switches • Enclosure width 50 mm (with rounded plunger[1])								
With teflon plunger								
Slow-action contacts	1 NO + 1 NC	--	➔ B	**3SE5 242-0BC05-1AJ0**		1	1 unit	41K
Snap-action contacts, integrated[2]	1 NO + 1 NC	--	➔ B	**3SE5 242-0HC05-1AJ0**		1	1 unit	41K



Basic switch



Basic switch

For online configurator see www.siemens.com/sirius/configurators .

➔ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

1) For enclosures with widths of 31 and 50 mm, the basic switch is a complete unit with rounded plungers.

2) Subsequent replacement of contact blocks is not possible.

Note:

Selection aid see page 12/12.

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3SE5, plastic enclosures
Ambient temperature to –40 °C

	Version	Diameter	DT	Modular system Order No.	PU (UNIT, SET, M) Price per PU	PS*	PG
		mm					
Operating mechanisms							
 Roller plunger	**Roller plungers, type C acc. to EN 50047**						
	Plastic rollers	10	➔ B	**3SE5 000-0AD03-1AJ0**	1	1 unit	41K
 Roller lever	**Roller levers, type E acc. to EN 50047**						
	Metal lever, plastic roller	13	➔ B	**3SE5 000-0AE10-1AJ0**	1	1 unit	41K
	High-grade steel lever, plastic roller	13	➔ B	**3SE5 000-0AE12-1AJ0**	1	1 unit	41K
 Angular roller lever	**Angular roller levers**						
	Metal lever, plastic roller	13	➔ B	**3SE5 000-0AF10-1AJ0**	1	1 unit	41K
	High-grade steel lever, plastic roller	13	➔ B	**3SE5 000-0AF12-1AJ0**	1	1 unit	41K
Twist actuators							
 Twist actuator	**Twist actuators**, plastic (without lever)						
	Switching right and/or left, adjustable		➔ B	**3SE5 000-0AK00-1AJ0**	1	1 unit	41K
 Twist lever	***Levers for twist actuators***						
	Twist levers straight, 21 mm, type A acc. to EN 50047						
	Metal lever, plastic roller	19	➔ B	**3SE5 000-0AA21-1AJ0**	1	1 unit	41K
	High-grade steel lever, plastic roller	19	➔ B	**3SE5 000-0AA31-1AJ0**	1	1 unit	41K
 Twist lever, adjustable length	**Twist levers, adjustable length, with grid hole**						
	Metal lever, plastic roller	19	➔ B	**3SE5 000-0AA60-1AJ0**	1	1 unit	41K
	High-grade steel lever, plastic roller	19	➔ B	**3SE5 000-0AA62-1AJ0**	1	1 unit	41K

➔ Positively driven actuator, necessary in safety circuits.

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3SE5, plastic enclosures
Ambient temperature to –40 °C

Modular system

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

Version	Contacts	LEDs	DT	Modular system / Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Basic switches • Enclosure width 40 mm								
With M20 × 1.5 connecting thread								
Snap-action contacts	1 NO + 1 NC	--	➔ B	**3SE5 132-0CA00-1AJ0**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	➔ B	**3SE5 132-0KA00-1AJ0**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	➔ B	**3SE5 132-0LA00-1AJ0**		1	1 unit	41K



Basic switch

For online configurator see www.siemens.com/sirius/configurators .

➔ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

Note:

Selection aid see page 12/12.

Version	Diameter mm	DT	Modular system / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Operating mechanisms							
Rounded plungers, type B acc. to EN 50041							
Plastic plunger	10	➔ B	**3SE5 000-0AC03-1AJ0**		1	1 unit	41K
Roller plungers, type C acc. to EN 50041							
Plastic plunger, plastic roller	13	➔ B	**3SE5 000-0AD05-1AJ0**		1	1 unit	41K
Roller levers							
Metal lever with plastic roller, plastic base	22	➔ B	**3SE5 000-0AE05-1AJ0**		1	1 unit	41K
Twist actuators							
Twist actuators, plastic (without lever) • For twist levers and rod actuators, switching right and/or left, adjustable		➔ B	**3SE5 000-0AJ00-1AJ0**		1	1 unit	41K
Levers for twist actuators							
Twist lever, type A acc. to EN 50041							
Metal lever, plastic roller	19	➔ B	**3SE5 000-0AA01-1AJ0**		1	1 unit	41K
High-grade steel lever, plastic roller	19	➔ B	**3SE5 000-0AA11-1AJ0**		1	1 unit	41K
Twist levers, adjustable length, with grid hole							
Metal lever, plastic roller	19	➔ B	**3SE5 000-0AA60-1AJ0**		1	1 unit	41K
High-grade steel lever, plastic roller	19	➔ B	**3SE5 000-0AA62-1AJ0**		1	1 unit	41K



Rounded plunger



Roller plunger



Roller lever



Twist actuator



Twist levers



Twist lever, adjustable length

➔ Positively driven actuator, necessary in safety circuits.

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3SE5, metal enclosures
Enclosure width 31 mm acc. to EN 50047

Selection and ordering data

Complete units

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

Version	Contacts	LEDs	DT	Complete units / Configurator / Order No.	PU (UNIT, SET, M)	PS*	PG
Complete units[1] • Enclosure width 31 mm							
 Rounded plunger	***Rounded plungers, type B, acc. to EN 50047***						
	With plunger						
	Slow-action contacts	1 NO + 1 NC	--	⊖ A	**3SE5 212-0BC05**	1	1 unit	41K
	Snap-action contacts	1 NO + 1 NC	--	⊖ A	**3SE5 212-0CC05**	1	1 unit	41K
	Slow-action contacts	1 NO + 2 NC	--	⊖ A	**3SE5 212-0KC05**	1	1 unit	41K
	Snap-action contacts	1 NO + 2 NC	--	⊖ A	**3SE5 212-0LC05**	1	1 unit	41K
	Slow-action contacts with make-before-break	1 NO + 2 NC	--	⊖ A	**3SE5 212-0MC05**	1	1 unit	41K
	Slow-action contacts	2 NO + 1 NC	--	⊖ A	**3SE5 212-0PC05**	1	1 unit	41K
 With increased corrosion protection	**With increased corrosion protection**						
	Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 212-0BC05-1CA0**	1	1 unit	41K
	Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 212-0CC05-1CA0**	1	1 unit	41K
	Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 212-0KC05-1CA0**	1	1 unit	41K
	Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 212-0LC05-1CA0**	1	1 unit	41K
	Slow-action contacts with make-before-break	1 NO + 2 NC	--	⊖ B	**3SE5 212-0MC05-1CA0**	1	1 unit	41K
	Slow-action contacts	2 NO + 1 NC	--	⊖ B	**3SE5 212-0PC05-1CA0**	1	1 unit	41K
	With M12 connector socket, 5-pole (125 V, 4 A)						
	Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 214-0BC05-1AC5**	1	1 unit	41K
	Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 214-0CC05-1AC5**	1	1 unit	41K
	Slow-action contacts	2 NC	--	⊖ B	**3SE5 214-0KC05-1AE1**	1	1 unit	41K
	Snap-action contacts	2 NC	--	⊖ B	**3SE5 214-0LC05-1AE1**	1	1 unit	41K
 With 2 LEDs	**With 2 LEDs, yellow/green**						
	Slow-action contacts	1 NO + 2 NC	24 V DC	⊖ B	**3SE5 212-1KC05**	1	1 unit	41K
	Snap-action contacts	1 NO + 2 NC	24 V DC	⊖ A	**3SE5 212-1LC05**	1	1 unit	41K
	Slow-action contacts	1 NO + 2 NC	230 V AC	⊖ B	**3SE5 212-3KC05**	1	1 unit	41K
	Snap-action contacts	1 NO + 2 NC	230 V AC	⊖ B	**3SE5 212-3LC05**	1	1 unit	41K
	With M12 connector socket, 5-pole and 2 LEDs (125 V, 4 A)						
	Slow-action contacts	1 NO + 1 NC	24 V DC	⊖ B	**3SE5 214-1BC05-1AF3**	1	1 unit	41K
	Snap-action contacts	1 NO + 1 NC	24 V DC	⊖ B	**3SE5 214-1CC05-1AF3**	1	1 unit	41K
 Plain plunger	***Plain plungers***						
	With high-grade steel plunger						
	Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 212-0BB01**	1	1 unit	41K
	Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 212-0CB01**	1	1 unit	41K
	Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 212-0KB01**	1	1 unit	41K
	Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 212-0LB01**	1	1 unit	41K
 Roller plunger	***Roller plungers, type C acc. to EN 50047***						
	With plastic roller 10 mm						
	Slow-action contacts	1 NO + 1 NC	--	⊖ A	**3SE5 212-0BD03**	1	1 unit	41K
	Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 212-0CD03**	1	1 unit	41K
	Slow-action contacts	1 NO + 2 NC	--	⊖ A	**3SE5 212-0KD03**	1	1 unit	41K
	Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 212-0LD03**	1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators .

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

1) Popular versions.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3SE5, metal enclosures
Enclosure width 31 mm acc. to EN 50047

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

Version	Contacts	LEDs	DT	Complete units / Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Complete units[1] • Enclosure width 31 mm								
Roller levers, type E acc. to EN 50047								
With metal lever and plastic roller 13 mm								
Slow-action contacts	1 NO + 1 NC	--	⊖ A	**3SE5 212-0BE10**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 212-0CE10**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 212-0KE10**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 212-0LE10**		1	1 unit	41K
Angular roller levers								
With metal lever and plastic roller 13 mm								
Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 212-0BF10**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 212-0CF10**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 212-0KF10**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 212-0LF10**		1	1 unit	41K
Twist levers, type A acc. to EN 50047								
With metal lever 21 mm and plastic roller 19 mm								
Slow-action contacts	1 NO + 1 NC	--	⊖ A	**3SE5 212-0BK21**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	⊖ A	**3SE5 212-0CK21**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 212-0KK21**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 212-0LK21**		1	1 unit	41K
Twist levers, adjustable length								
With metal lever with grid hole and plastic roller 19 mm								
Snap-action contacts	1 NO + 1 NC	--	⊖ A	**3SE5 212-0CK60**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 212-0KK60**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 212-0LK60**		1	1 unit	41K
With metal lever and plastic roller 19 mm								
Slow-action contacts	1 NO + 1 NC	--	A	**3SE5 212-0BK50**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	B	**3SE5 212-0CK50**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	B	**3SE5 212-0LK50**		1	1 unit	41K


Roller lever


Angular roller lever


Twist lever


Twist lever, adjustable length

For online configurator see www.siemens.com/sirius/configurators .

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

1) Popular versions.

Note:

If the device you require is not available as a complete unit, see "Modular System", page 12/32.

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3SE5, metal enclosures
Enclosure width 31 mm acc. to EN 50047

Modular system

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

Version	Contacts	LEDs	DT	Modular system / Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Basic switches • Enclosure width 31 mm (with rounded plunger[1])								
With plunger								
Slow-action contacts	1 NO + 1 NC	--	→ A	**3SE5 212-0BC05**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	→ A	**3SE5 212-0CC05**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	→ A	**3SE5 212-0KC05**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	→ A	**3SE5 212-0LC05**		1	1 unit	41K
Slow-action contacts with make-before-break	1 NO + 2 NC	--	→ A	**3SE5 212-0MC05**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	→ A	**3SE5 212-0PC05**		1	1 unit	41K
With increased corrosion protection[2]								
Slow-action contacts	1 NO + 1 NC	--	→ B	**3SE5 212-0BC05-1CA0**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	→ B	**3SE5 212-0CC05-1CA0**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	→ B	**3SE5 212-0KC05-1CA0**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	→ B	**3SE5 212-0LC05-1CA0**		1	1 unit	41K
Slow-action contacts with make-before-break	1 NO + 2 NC	--	→ B	**3SE5 212-0MC05-1CA0**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	→ B	**3SE5 212-0PC05-1CA0**		1	1 unit	41K
With M12 connector socket, 5-pole (125 V, 4 A)								
Slow-action contacts	1 NO + 1 NC	--	→ B	**3SE5 214-0BC05-1AC5**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	→ B	**3SE5 214-0CC05-1AC5**		1	1 unit	41K
Slow-action contacts	2 NC	--	→ B	**3SE5 214-0KC05-1AE1**		1	1 unit	41K
Snap-action contacts	2 NC	--	→ B	**3SE5 214-0LC05-1AE1**		1	1 unit	41K
With 2 LEDs, yellow/green								
Slow-action contacts	1 NO + 2 NC	24 V DC	→ B	**3SE5 212-1KC05**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	24 V DC	→ A	**3SE5 212-1LC05**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	230 V AC	→ B	**3SE5 212-3KC05**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	230 V AC	→ B	**3SE5 212-3LC05**		1	1 unit	41K
With M12 connector socket, 5-pole (125 V, 4 A) **and 2 LEDs**								
Slow-action contacts	1 NO + 1 NC	24 V DC	→ B	**3SE5 214-1BC05-1AF3**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	24 V DC	→ B	**3SE5 214-1CC05-1AF3**		1	1 unit	41K


Basic switch


With increased corrosion protection


With M12 socket


With 2 LEDs


With M12 socket and 2 LEDs

For online configurator see www.siemens.com/sirius/configurators .

→ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

1) For enclosures with widths of 31mm, the basic switch is a complete unit with rounded plungers.

2) Use corresponding high-grade steel lever.

Note:

Selection aid see page 12/12.

Version	Diameter mm	DT	Modular system / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Operating mechanisms							
Plain plungers							
High-grade steel plungers	10	→ A	**3SE5 000-0AB01**		1	1 unit	41K
Roller plungers, type C acc. to EN 50047							
Plastic rollers	10	→ A	**3SE5 000-0AD03**		1	1 unit	41K
High-grade steel rollers	10	→ B	**3SE5 000-0AD04**		1	1 unit	41K


Plain plunger


Roller plunger

→ Positively driven actuator, necessary in safety circuits.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3SE5, metal enclosures
Enclosure width 31 mm acc. to EN 50047

	Version	Diameter mm	DT	Modular system Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Operating mechanisms								
 With central fixing	**Roller plungers with central fixing**							
	Plastic rollers	10	➔ B	**3SE5 000-0AD10**		1	1 unit	41K
	High-grade steel rollers	10	➔ B	**3SE5 000-0AD11**		1	1 unit	41K
 Roller lever	**Roller levers, type E acc. to EN 50047**							
	Metal lever, plastic roller	13	➔ A	**3SE5 000-0AE10**		1	1 unit	41K
	Metal lever, high-grade steel roller	13	➔ B	**3SE5 000-0AE11**		1	1 unit	41K
	High-grade steel lever, plastic roller	13	➔ B	**3SE5 000-0AE12**		1	1 unit	41K
	High-grade steel lever, high-grade steel roller	13	➔ B	**3SE5 000-0AE13**		1	1 unit	41K
 Angular roller lever	**Angular roller levers**							
	Metal lever, plastic roller	13	➔ A	**3SE5 000-0AF10**		1	1 unit	41K
	Metal lever, high-grade steel roller	13	➔ B	**3SE5 000-0AF11**		1	1 unit	41K
	High-grade steel lever, plastic roller	13	➔ A	**3SE5 000-0AF12**		1	1 unit	41K
	High-grade steel lever, high-grade steel roller	13	➔ B	**3SE5 000-0AF13**		1	1 unit	41K
 Spring rod	**Spring rods** (for switches with snap-action contacts only)							
	Plastic plunger and high-grade steel spring:	7						
	• Length 142.5 mm (spring 50 mm, plunger 50 mm)		B	**3SE5 000-0AR01**		1	1 unit	41K
	• Length 76 mm (spring 23.5 mm, plunger 10 mm)		B	**3SE5 000-0AR03**		1	1 unit	41K
	• Length 242.5 mm (spring 150 mm, plunger 50 mm)		B	**3SE5 000-0AR04**		1	1 unit	41K
	High-grade steel plunger and spring:	7						
	• Length 142.5 mm (spring 50 mm, plunger 50 mm)		B	**3SE5 000-0AR02**		1	1 unit	41K
Twist actuators								
 Twist actuator	**Twist actuators**, plastic (without lever)							
	Switching right and/or left, adjustable		➔ A	**3SE5 000-0AK00**		1	1 unit	41K
	Levers for twist actuators							
	Twist levers, straight, type A acc. to EN 50047							
 Twist levers	Metal lever 21 mm, plastic roller	19	➔ A	**3SE5 000-0AA21**		1	1 unit	41K
	Metal lever 21 mm, high-grade steel roller	19	➔ B	**3SE5 000-0AA22**		1	1 unit	41K
	Metal lever 21 mm, roller with ball bearing	19	➔ B	**3SE5 000-0AA23**		1	1 unit	41K
	Metal lever 21 mm, plastic roller	30	➔ B	**3SE5 000-0AA25**		1	1 unit	41K
	High-grade steel lever 21 mm, plastic roller	19	➔ B	**3SE5 000-0AA31**		1	1 unit	41K
	High-grade steel lever 21 mm, high-grade steel roller	19	➔ B	**3SE5 000-0AA32**		1	1 unit	41K
 Twist lever, adjustable length	**Twist levers 30 mm, straight**[1]							
	Metal lever, plastic roller	19	➔ B	**3SE5 000-0AA24**		1	1 unit	41K
	Metal lever, plastic roller	30	➔ B	**3SE5 000-0AA26**		1	1 unit	41K
	Twist levers, adjustable length, with grid hole							
	Metal lever, plastic roller	19	➔ B	**3SE5 000-0AA60**		1	1 unit	41K
	Metal lever, high-grade steel roller	19	➔ B	**3SE5 000-0AA61**		1	1 unit	41K
	Metal lever, plastic roller	50	➔ B	**3SE5 000-0AA67**		1	1 unit	41K
	Metal lever, rubber roller	50	➔ B	**3SE5 000-0AA68**		1	1 unit	41K
	High-grade steel lever, plastic roller	19	➔ B	**3SE5 000-0AA62**		1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	➔ B	**3SE5 000-0AA63**		1	1 unit	41K
 Rod actuator	**Twist levers, adjustable length**							
	Metal lever, plastic roller	19	A	**3SE5 000-0AA50**		1	1 unit	41K
	Metal lever, high-grade steel roller	19	B	**3SE5 000-0AA51**		1	1 unit	41K
	Metal lever, plastic roller	30	B	**3SE5 000-0AA55**		1	1 unit	41K
	Metal lever, plastic roller	50	B	**3SE5 000-0AA57**		1	1 unit	41K
	Metal lever, rubber roller	50	B	**3SE5 000-0AA58**		1	1 unit	41K
	High-grade steel lever, plastic roller	19	B	**3SE5 000-0AA52**		1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	B	**3SE5 000-0AA53**		1	1 unit	41K
	Rod actuators, type D acc. to EN 50041							
	Aluminum rod, length 200 mm	6	B	**3SE5 000-0AA80**		1	1 unit	41K
	Spring rod, length 200 mm	6	B	**3SE5 000-0AA81**		1	1 unit	41K
	Plastic rod, length 200 mm	6	B	**3SE5 000-0AA82**		1	1 unit	41K
	Plastic rod, length 330 mm	6	B	**3SE5 000-0AA83**		1	1 unit	41K

➔ Positively driven actuator, necessary in safety circuits.

[1] Can be clinch mounted (turned through 180°, rear of lever).

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3SE5, metal enclosures
Enclosure width 40 mm acc. to EN 50041

Selection and ordering data

Complete units

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

Version	Contacts	LEDs	DT	Complete units / Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Complete units[1] • Enclosure width 40 mm								
 Plain plunger								
Plain plungers								
With high-grade steel plunger								
Slow-action contacts	1 NO + 1 NC	--	A	**3SE5 112-0BB01**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	A	**3SE5 112-0CB01**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	B	**3SE5 112-0KB01**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	B	**3SE5 112-0LB01**		1	1 unit	41K
 Rounded plunger								
Rounded plungers, type B acc. to EN 50041								
With high-grade steel plungers, with 3 mm overtravel								
Slow-action contacts	1 NO + 1 NC	--	B	**3SE5 112-0BC02**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	▶	**3SE5 112-0CC02**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	B	**3SE5 112-0KC02**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	B	**3SE5 112-0LC02**		1	1 unit	41K
 Roller plunger								
Roller plungers, type C acc. to EN 50041								
With high-grade steel roller 13 mm, with 3 mm overtravel								
Slow-action contacts	1 NO + 1 NC	--	B	**3SE5 112-0BD02**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	▶	**3SE5 112-0CD02**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	B	**3SE5 112-0KD02**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	B	**3SE5 112-0LD02**		1	1 unit	41K
With M12 connector socket, 5-pole (125 V, 4 A) **and 2 LEDs**								
Snap-action contacts	1 NO + 1 NC	24 V DC	B	**3SE5 114-1CD02-1AF3**		1	1 unit	41K
 Roller lever								
Roller levers								
With metal lever and plastic roller 22 mm								
Slow-action contacts	1 NO + 1 NC	--	B	**3SE5 112-0BE01**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	▶	**3SE5 112-0CE01**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	B	**3SE5 112-0KE01**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	B	**3SE5 112-0LE01**		1	1 unit	41K
 Angular roller lever								
Angular roller levers								
With metal lever and plastic roller 22 mm								
Slow-action contacts	1 NO + 1 NC	--	B	**3SE5 112-0BF01**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	A	**3SE5 112-0CF01**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	B	**3SE5 112-0LF01**		1	1 unit	41K
 Spring rod								
Spring rods								
Length 142.5 mm, with plastic plunger 50 mm								
Snap-action contacts	1 NO + 1 NC	--	▶	**3SE5 112-0CR01**		1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators .

Positive opening according to IEC 60947-5-1, Appendix K.

[1] Popular versions.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3SE5, metal enclosures
Enclosure width 40 mm acc. to EN 50041

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

Version	Contacts	LEDs	DT	Complete units / Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Complete units[1] • Enclosure width 40 mm								
Twist levers, type A acc. to EN 50041								
With metal lever 27 mm and plastic roller 19 mm								
Slow-action contacts	1 NO + 1 NC	--	⊖	B	**3SE5 112-0BH01**	1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	⊖	▶	**3SE5 112-0CH01**	1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖	B	**3SE5 112-0KH01**	1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖	B	**3SE5 112-0LH01**	1	1 unit	41K
With M12 connector socket, 5-pole (125 V, 4 A)								
Snap-action contacts	1 NO + 1 NC	--	⊖	A	**3SE5 114-0CH01-1AC5**	1	1 unit	41K
With M12 connector socket, 5-pole (125 V, 4 A) **and 2 LEDs**								
Snap-action contacts	1 NO + 1 NC	24 V DC	⊖	B	**3SE5 114-1CH01-1AF3**	1	1 unit	41K
With metal lever 27 mm and high-grade steel roller 19 mm								
Slow-action contacts	1 NO + 1 NC	--	⊖	B	**3SE5 112-0BH02**	1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	⊖	A	**3SE5 112-0CH02**	1	1 unit	41K
With M12 connector socket, 5-pole (125 V, 4 A) **and 2 LEDs**								
Snap-action contacts	1 NO + 1 NC	--	⊖	B	**3SE5 114-1CH02-1AF3**	1	1 unit	41K
With metal lever 30 mm and plastic roller 19 mm								
Snap-action contacts	1 NO + 1 NC	--	⊖	▶	**3SE5 112-0CH24**	1	1 unit	41K
Twist levers, adjustable length								
With metal lever with grid hole and plastic roller 19 mm								
Slow-action contacts	1 NO + 1 NC	--	⊖	B	**3SE5 112-0BH60**	1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	⊖	▶	**3SE5 112-0CH60**	1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖	B	**3SE5 112-0LH60**	1	1 unit	41K
With metal lever and plastic roller 19 mm								
Slow-action contacts	1 NO + 1 NC	--		B	**3SE5 112-0BH50**	1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--		▶	**3SE5 112-0CH50**	1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--		B	**3SE5 112-0LH50**	1	1 unit	41K
With M12 connector socket, 8-pole (30 V, 2 A) **and 2 LEDs**								
Snap-action contacts	1 NO + 2 NC	24 V DC		B	**3SE5 114-1LH50-1AD4**	1	1 unit	41K
With metal lever and high-grade steel roller 19 mm								
Snap-action contacts	1 NO + 1 NC	--		B	**3SE5 112-0CH51**	1	1 unit	41K
Fork levers, latching								
With metal lever and 2 plastic rollers 19 mm								
Snap-action contacts	1 NO + 1 NC	--	⊖	B	**3SE5 112-0CT11**	1	1 unit	41K
Rod actuators, type D, acc. to EN 50041								
With aluminum rod, length 200 mm								
Snap-action contacts	1 NO + 1 NC	--		▶	**3SE5 112-0CH80**	1	1 unit	41K
With plastic rod, length 200 mm								
Snap-action contacts	1 NO + 1 NC	--		B	**3SE5 112-0CH82**	1	1 unit	41K


Twist lever


Twist lever, adjustable length, with grid hole


Twist lever, adjustable length


Fork lever


Rod actuator

⚙ For online configurator see www.siemens.com/sirius/configurators .

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

1) Popular versions.

Note:

If the device you require is not available as a complete unit, see "Modular System", page 12/36.

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3SE5, metal enclosures
Enclosure width 40 mm acc. to EN 50041

Modular system

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

Version	Contacts	LEDs	DT	Modular system / Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Basic switches • Enclosure width 40 mm								
 Basic switch								
With M20 × 1.5 connecting thread								
Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 112-0BA00**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	⊖ A	**3SE5 112-0CA00**		1	1 unit	41K
• Gold-plated contacts			⊖ B	**3SE5 112-0CA00-1AC1**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ A	**3SE5 112-0KA00**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ A	**3SE5 112-0LA00**		1	1 unit	41K
Slow-action contacts with make-before-break	1 NO + 2 NC	--	⊖ A	**3SE5 112-0MA00**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	⊖ A	**3SE5 112-0PA00**		1	1 unit	41K
 With increased corrosion protection								
With increased corrosion protection[1]								
Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 112-0BA00-1CA0**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 112-0CA00-1CA0**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 112-0KA00-1CA0**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 112-0LA00-1CA0**		1	1 unit	41K
Slow-action contacts with make-before-break	1 NO + 2 NC	--	⊖ B	**3SE5 112-0MA00-1CA0**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	⊖ B	**3SE5 112-0PA00-1CA0**		1	1 unit	41K
 With M12 socket								
With M12 connector socket, 5-pole (125 V, 4 A)								
Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 114-0BA00-1AC5**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 114-0CA00-1AC5**		1	1 unit	41K
Slow-action contacts	2 NC	--	⊖ B	**3SE5 114-0KA00-1AE1**		1	1 unit	41K
Snap-action contacts	2 NC	--	⊖ B	**3SE5 114-0LA00-1AE1**		1	1 unit	41K
 With plug, 6-pole + PE								
With connector socket, 6-pole + PE (250 V, 10 A)								
Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 115-0KA00-1AD1**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 115-0LA00-1AD1**		1	1 unit	41K
With connector socket, 6-pole + PE (250 V, 10 A) **and quick-release device**								
Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 115-0CA00-1AD0**		1	1 unit	41K
 With 2 LEDs								
With 2 LEDs, yellow/green								
Slow-action contacts	1 NO + 2 NC	24 V DC	⊖ B	**3SE5 112-1KA00**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	24 V DC	⊖ B	**3SE5 112-1LA00**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	230 V AC	⊖ B	**3SE5 112-3KA00**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	230 V AC	⊖ B	**3SE5 112-3LA00**		1	1 unit	41K
 With M12 socket and 2 LEDs								
With M12 connector socket, 5-pole (125 V, 4 A) **and 2 LEDs**								
Slow-action contacts	1 NO + 1 NC	24 V DC	⊖ B	**3SE5 114-1BA00-1AF3**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	24 V DC	⊖ B	**3SE5 114-1CA00-1AF3**		1	1 unit	41K
With M12 connector socket, 8-pole (30 V, 2 A) **and 2 LEDs**								
Snap-action contacts	1 NO + 2 NC	24 V DC	⊖ B	**3SE5 114-1LA00-1AD4**		1	1 unit	41K
 With socket, 6-pole + PE, and 2 LEDs								
With connector socket, 6-pole + PE (10 A)**, and 2 LEDs**								
Slow-action contacts	1 NO + 1 NC	24 V DC	⊖ B	**3SE5 115-1BA00-1AF2**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	24 V DC	⊖ B	**3SE5 115-1CA00-1AF2**		1	1 unit	41K
Snap-action contacts	2 NC	24 V DC	⊖ B	**3SE5 115-1LA00-1AD2**		1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators .

⊖ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

[1] Use corresponding high-grade steel lever.

Note:

Selection aid see page 12/12.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3SE5, metal enclosures
Enclosure width 40 mm acc. to EN 50041

Version	Diameter	DT	Modular system ◇ Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	mm						
Operating mechanisms							
 Plunger							
Plain plungers							
High-grade steel plungers	10	⊖ A	**3SE5 000-0AB01**		1	1 unit	41K
Rounded plungers, type B acc. to EN 50041							
High-grade steel plungers, with 3 mm overtravel	10	⊖ B	**3SE5 000-0AC02**		1	1 unit	41K
Roller plungers, type C acc. to EN 50041							
High-grade steel roller, with 3 mm overtravel	13	⊖ B	**3SE5 000-0AD02**		1	1 unit	41K
 Roller lever							
Roller levers							
Metal lever, plastic roller	22	⊖ A	**3SE5 000-0AE01**		1	1 unit	41K
Metal lever, high-grade steel roller	22	⊖ B	**3SE5 000-0AE02**		1	1 unit	41K
High-grade steel lever, plastic roller	22	⊖ B	**3SE5 000-0AE03**		1	1 unit	41K
High-grade steel lever, high-grade steel roller	22	⊖ B	**3SE5 000-0AE04**		1	1 unit	41K
 Angular roller lever							
Angular roller levers							
Metal lever, plastic roller	22	⊖ A	**3SE5 000-0AF01**		1	1 unit	41K
Metal lever, high-grade steel roller	22	⊖ B	**3SE5 000-0AF02**		1	1 unit	41K
High-grade steel lever, plastic roller	22	⊖ B	**3SE5 000-0AF03**		1	1 unit	41K
High-grade steel lever, high-grade steel roller	22	⊖ B	**3SE5 000-0AF04**		1	1 unit	41K
 Spring rod							
Spring rods (for switches with snap-action contacts only)							
Plastic plunger and high-grade steel spring:	7						
• Length 142.5 mm (spring 50 mm, plunger 50 mm)		B	**3SE5 000-0AR01**		1	1 unit	41K
• Length 76 mm (spring 23.5 mm, plunger 10 mm)		B	**3SE5 000-0AR03**		1	1 unit	41K
• Length 242.5 mm (spring 150 mm, plunger 50 mm)		B	**3SE5 000-0AR04**		1	1 unit	41K
High-grade steel plunger and spring:	7						
• Length 142.5 mm (spring 50 mm, plunger 50 mm)		B	**3SE5 000-0AR02**		1	1 unit	41K
Twist actuators							
 Twist actuator							
Twist actuators, metal (without lever)							
• For twist levers and rod actuators, switching right and/or left, adjustable		⊖ A	**3SE5 000-0AH00**		1	1 unit	41K
• For fork levers, latching		⊖ B	**3SE5 000-0AT10**		1	1 unit	41K
Levers for twist actuators							
 Twist levers							
Twist levers, offset, type A acc. to EN 50041							
Metal lever 27 mm, plastic roller	19	⊖ A	**3SE5 000-0AA01**		1	1 unit	41K
Metal lever 27 mm, high-grade steel roller	19	⊖ A	**3SE5 000-0AA02**		1	1 unit	41K
Metal lever 27 mm, roller with ball bearing	19	⊖ B	**3SE5 000-0AA03**		1	1 unit	41K
Metal lever 27 mm, 2 plastic rollers	19	⊖ B	**3SE5 000-0AA04**		1	1 unit	41K
Metal lever 27 mm, plastic roller	30	⊖ B	**3SE5 000-0AA05**		1	1 unit	41K
Metal lever 27 mm, rubber roller	50	⊖ B	**3SE5 000-0AA08**		1	1 unit	41K
High-grade steel lever 27 mm, plastic roller	19	⊖ B	**3SE5 000-0AA11**		1	1 unit	41K
High-grade steel lever 27 mm, high-grade steel roller	19	⊖ B	**3SE5 000-0AA12**		1	1 unit	41K
Metal lever 35 mm, plastic roller	19	⊖ B	**3SE5 000-0AA15**		1	1 unit	41K
 Twist lever, adjustable length							
Twist levers 30 mm, straight[1]							
Metal lever, plastic roller	19	⊖ B	**3SE5 000-0AA24**		1	1 unit	41K
Twist levers, adjustable length, with grid hole							
Metal lever, plastic roller	19	⊖ B	**3SE5 000-0AA60**		1	1 unit	41K
Metal lever, high-grade steel roller	19	⊖ B	**3SE5 000-0AA61**		1	1 unit	41K
Metal lever, rubber roller	50	⊖ B	**3SE5 000-0AA68**		1	1 unit	41K
High-grade steel lever, plastic roller	19	⊖ B	**3SE5 000-0AA62**		1	1 unit	41K
High-grade steel lever, high-grade steel roller	19	⊖ B	**3SE5 000-0AA63**		1	1 unit	41K
 Fork lever							
Twist levers, adjustable length							
Metal lever, plastic roller	19	A	**3SE5 000-0AA50**		1	1 unit	41K
Metal lever, high-grade steel roller	19	B	**3SE5 000-0AA51**		1	1 unit	41K
Metal lever, plastic roller	30	B	**3SE5 000-0AA55**		1	1 unit	41K
Metal lever, rubber roller	50	B	**3SE5 000-0AA58**		1	1 unit	41K
High-grade steel lever, plastic roller	19	B	**3SE5 000-0AA52**		1	1 unit	41K
High-grade steel lever, high-grade steel roller	19	B	**3SE5 000-0AA53**		1	1 unit	41K
 Rod actuator							
Fork levers (for switches with snap-action contacts only)							
2 metal levers, 2 plastic rollers	19	⊖ B	**3SE5 000-0AT01**		1	1 unit	41K
2 metal levers, 2 high-grade steel rollers	19	⊖ B	**3SE5 000-0AT02**		1	1 unit	41K
2 high-grade steel levers, 2 plastic rollers	19	⊖ B	**3SE5 000-0AT03**		1	1 unit	41K
Rod actuators, type D acc. to EN 50041							
Aluminum rod, length 200 mm	6	B	**3SE5 000-0AA80**		1	1 unit	41K
Spring rod, length 200 mm	6	B	**3SE5 000-0AA81**		1	1 unit	41K
Plastic rod, length 200 mm	6	B	**3SE5 000-0AA82**		1	1 unit	41K

⊖ Positively driven actuator, necessary in safety circuits.

[1] Can be clinch mounted (turned through 180°, rear of lever).

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3SE5, metal enclosures
Enclosure width 56 mm

Selection and ordering data

Complete units

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry 3 × (M20 × 1.5)

Version	Contacts	LEDs	DT	Complete units / Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Complete units[1] • Enclosure width 56 mm								
Plain plungers								
With high-grade steel plunger								
Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 122-0BB01**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 122-0CB01**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 122-0KB01**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 122-0LB01**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	⊖ B	**3SE5 122-0PB01**		1	1 unit	41K
Rounded plungers								
With high-grade steel plungers, with 3 mm overtravel								
Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 122-0BC02**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	⊖ ▶	**3SE5 122-0CC02**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 122-0KC02**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 122-0LC02**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	⊖ B	**3SE5 122-0PC02**		1	1 unit	41K
Roller plungers								
With high-grade steel roller 13 mm, with 3 mm overtravel								
Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 122-0BD02**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	⊖ A	**3SE5 122-0CD02**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 122-0KD02**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 122-0LD02**		1	1 unit	41K
Roller levers								
With metal lever and plastic roller 22 mm								
Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 122-0BE01**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	⊖ A	**3SE5 122-0CE01**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 122-0KE01**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 122-0LE01**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	⊖ B	**3SE5 122-0PE01**		1	1 unit	41K
With metal lever and high-grade steel roller 22 mm								
Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 122-0CE02**		1	1 unit	41K
Angular roller levers								
With metal lever and plastic roller 22 mm								
Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 122-0BF01**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 122-0CF01**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	⊖ B	**3SE5 122-0PF01**		1	1 unit	41K


Plain plunger


Rounded plunger


Roller plunger


Roller lever


Angular roller lever

For online configurator see www.siemens.com/sirius/configurators .

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

1) Popular versions.

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3SE5, metal enclosures
Enclosure width 56 mm

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry 3 × (M20 × 1.5)

Version	Contacts	LEDs	DT	Complete units / Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Complete units[1] • Enclosure width 56 mm								
 Spring rod								
Spring rods								
Length 142.5 mm, with plastic plunger 50 mm								
Snap-action contacts	1 NO + 1 NC	--	B	**3SE5 122-0CR01**		1	1 unit	41K
 Twist lever								
Twist levers								
With metal lever 27 mm and plastic roller 19 mm								
Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 122-0BH01**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	⊖ A	**3SE5 122-0CH01**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 122-0KH01**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 122-0LH01**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	⊖ B	**3SE5 122-0PH01**		1	1 unit	41K
With metal lever 27 mm and high-grade steel roller 19 mm								
Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 122-0CH02**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 122-0LH02**		1	1 unit	41K
 Twist lever, adjustable length								
Twist levers, adjustable length								
With metal lever with grid hole and plastic roller 19 mm								
Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 122-0BH60**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 122-0CH60**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 122-0LH60**		1	1 unit	41K
With metal lever and plastic roller 19 mm								
Slow-action contacts	1 NO + 1 NC	--	B	**3SE5 122-0BH50**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	A	**3SE5 122-0CH50**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	B	**3SE5 122-0LH50**		1	1 unit	41K
 Fork lever								
Fork levers, latching								
With metal lever and 2 plastic rollers 19 mm								
Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 122-0CT11**		1	1 unit	41K
 Rod actuator								
Rod actuators								
With aluminum rod, length 200 mm								
Snap-action contacts	1 NO + 1 NC	--	B	**3SE5 122-0CH80**		1	1 unit	41K
With plastic rod, length 200 mm								
Snap-action contacts	1 NO + 1 NC	--	B	**3SE5 122-0CH82**		1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators .

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

1) Popular versions.

Note:

If the device you require is not available as a complete unit, see "Modular System", page 12/40.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3SE5, metal enclosures
Enclosure width 56 mm

Modular system

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry 3 × (M20 × 1.5)

Version	Contacts	LEDs	DT	Modular system / Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Basic switches • Enclosure width 56 mm								
 Basic switch								
With 3 x M20 x 1.5 connecting thread								
Slow-action contacts	1 NO + 1 NC	--	➔ A	**3SE5 122-0BA00**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	➔ A	**3SE5 122-0CA00**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	➔ B	**3SE5 122-0KA00**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	➔ A	**3SE5 122-0LA00**		1	1 unit	41K
Slow-action contacts with make-before-break	1 NO + 2 NC	--	➔ A	**3SE5 122-0MA00**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	➔ A	**3SE5 122-0PA00**		1	1 unit	41K
 With increased corrosion protection								
With increased corrosion protection[1]								
Slow-action contacts	1 NO + 1 NC	--	➔ B	**3SE5 122-0BA00-1CA0**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	--	➔ B	**3SE5 122-0CA00-1CA0**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	➔ B	**3SE5 122-0KA00-1CA0**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	➔ B	**3SE5 122-0LA00-1CA0**		1	1 unit	41K
Slow-action contacts with make-before-break	1 NO + 2 NC	--	➔ B	**3SE5 122-0MA00-1CA0**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	--	➔ B	**3SE5 122-0PA00-1CA0**		1	1 unit	41K
 With 2 LEDs								
With 2 LEDs, yellow/green								
Slow-action contacts	1 NO + 2 NC	24 V DC	➔ B	**3SE5 122-1KA00**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	24 V DC	➔ B	**3SE5 122-1LA00**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	230 V AC	➔ B	**3SE5 122-3KA00**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	230 V AC	➔ B	**3SE5 122-3LA00**		1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators .

➔ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

[1] Use corresponding high-grade steel lever.

Note:

Selection aid see page 12/12.

Version	Diameter mm	DT	Modular system / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Operating mechanisms							
 Rounded plunger, roller plunger							
Plain plungers							
High-grade steel plungers	10	➔ A	**3SE5 000-0AB01**		1	1 unit	41K
Rounded plungers, type B acc. to EN 50041							
High-grade steel plungers, with 3 mm overtravel	10	➔ B	**3SE5 000-0AC02**		1	1 unit	41K
Roller plungers, type C acc. to EN 50041							
High-grade steel roller, with 3 mm overtravel	13	➔ B	**3SE5 000-0AD02**		1	1 unit	41K
 Roller lever							
Roller levers							
Metal lever, plastic roller	22	➔ A	**3SE5 000-0AE01**		1	1 unit	41K
Metal lever, high-grade steel roller	22	➔ B	**3SE5 000-0AE02**		1	1 unit	41K
High-grade steel lever, plastic roller	22	➔ B	**3SE5 000-0AE03**		1	1 unit	41K
High-grade steel lever, high-grade steel roller	22	➔ B	**3SE5 000-0AE04**		1	1 unit	41K
 Angular roller lever							
Angular roller levers							
Metal lever, plastic roller	22	➔ A	**3SE5 000-0AF01**		1	1 unit	41K
Metal lever, high-grade steel roller	22	➔ B	**3SE5 000-0AF02**		1	1 unit	41K
High-grade steel lever, plastic roller	22	➔ B	**3SE5 000-0AF03**		1	1 unit	41K
High-grade steel lever, high-grade steel roller	22	➔ B	**3SE5 000-0AF04**		1	1 unit	41K
 Spring rod							
Spring rods (for switches with snap-action contacts only)							
Plastic plunger and high-grade steel spring:	7						
• Length 142.5 mm (spring 50 mm, plunger 50 mm)		B	**3SE5 000-0AR01**		1	1 unit	41K
• Length 76 mm (spring 23.5 mm, plunger 10 mm)		B	**3SE5 000-0AR03**		1	1 unit	41K
• Length 242.5 mm (spring 150 mm, plunger 50 mm)		B	**3SE5 000-0AR04**		1	1 unit	41K
High-grade steel plunger and spring:	7						
• Length 142.5 mm (spring 50 mm, plunger 50 mm)		B	**3SE5 000-0AR02**		1	1 unit	41K

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3SE5, metal enclosures
Enclosure width 56 mm

Version	Diameter	DT	Modular system ◇ Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	mm						
Twist actuators							
 Twist actuator	**Twist actuators**, metal (without lever)						
	• For twist levers and rod actuators, switching right and/or left, adjustable	⊖ A	**3SE5 000-0AH00**		1	1 unit	41K
	• For fork levers, latching	⊖ B	**3SE5 000-0AT10**		1	1 unit	41K
	Levers for twist actuators						
 Twist lever	**Twist levers 27 mm, offset, type A acc. to EN 50041**						
	Metal lever, plastic roller	19	⊖ A	**3SE5 000-0AA01**	1	1 unit	41K
	Metal lever, high-grade steel roller	19	⊖ A	**3SE5 000-0AA02**	1	1 unit	41K
	Metal lever, roller with ball bearing	19	⊖ B	**3SE5 000-0AA03**	1	1 unit	41K
	Metal lever, 2 plastic rollers	19	⊖ B	**3SE5 000-0AA04**	1	1 unit	41K
	Metal lever, plastic roller	30	⊖ B	**3SE5 000-0AA05**	1	1 unit	41K
	Metal lever, plastic roller	50	⊖ B	**3SE5 000-0AA07**	1	1 unit	41K
	Metal lever, rubber roller	50	⊖ B	**3SE5 000-0AA08**	1	1 unit	41K
	High-grade steel lever, plastic roller	19	⊖ B	**3SE5 000-0AA11**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	⊖ B	**3SE5 000-0AA12**	1	1 unit	41K
	Twist levers 35 mm, offset						
	Metal lever, plastic roller	19	⊖ B	**3SE5 000-0AA15**	1	1 unit	41K
	Twist levers 30 mm, straight[1]						
	Metal lever, plastic roller	19	⊖ B	**3SE5 000-0AA24**	1	1 unit	41K
	Metal lever, plastic roller	30	⊖ B	**3SE5 000-0AA26**	1	1 unit	41K
 Twist lever, adjustable length	**Twist levers, adjustable length, with grid hole**						
	Metal lever, plastic roller	19	⊖ B	**3SE5 000-0AA60**	1	1 unit	41K
	Metal lever, high-grade steel roller	19	⊖ B	**3SE5 000-0AA61**	1	1 unit	41K
	Metal lever, plastic roller	50	⊖ B	**3SE5 000-0AA67**	1	1 unit	41K
	Metal lever, rubber roller	50	⊖ B	**3SE5 000-0AA68**	1	1 unit	41K
	High-grade steel lever, plastic roller	19	⊖ B	**3SE5 000-0AA62**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	⊖ B	**3SE5 000-0AA63**	1	1 unit	41K
	Twist levers, adjustable length						
	Metal lever, plastic roller	19	A	**3SE5 000-0AA50**	1	1 unit	41K
	Metal lever, high-grade steel roller	19	B	**3SE5 000-0AA51**	1	1 unit	41K
	Metal lever, plastic roller	30	B	**3SE5 000-0AA55**	1	1 unit	41K
	Metal lever, plastic roller	50	B	**3SE5 000-0AA57**	1	1 unit	41K
	Metal lever, rubber roller	50	B	**3SE5 000-0AA58**	1	1 unit	41K
	High-grade steel lever, plastic roller	19	B	**3SE5 000-0AA52**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	B	**3SE5 000-0AA53**	1	1 unit	41K
 Fork lever	**Fork levers** (for switches with snap-action contacts only)						
	2 metal levers, 2 plastic rollers	19	⊖ B	**3SE5 000-0AT01**	1	1 unit	41K
	2 metal levers, 2 high-grade steel rollers	19	⊖ B	**3SE5 000-0AT02**	1	1 unit	41K
	2 high-grade steel levers, 2 plastic rollers	19	⊖ B	**3SE5 000-0AT03**	1	1 unit	41K
	2 high-grade steel levers, 2 high-grade steel rollers	19	⊖ B	**3SE5 000-0AT04**	1	1 unit	41K
 Rod actuator	**Rod actuators, type D acc. to EN 50041**						
	Aluminum rod, length 200 mm	6	B	**3SE5 000-0AA80**	1	1 unit	41K
	Spring rod, length 200 mm	6	B	**3SE5 000-0AA81**	1	1 unit	41K
	Plastic rod, length 200 mm	6	B	**3SE5 000-0AA82**	1	1 unit	41K

⊖ Positively driven actuator, necessary in safety circuits.

[1] Can be clinch mounted (turned through 180°, rear of lever).

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Metal enclosures
Enclosure width 56 mm, XL

Selection and ordering data

Complete units

4 or 5 contacts · Degree of protection IP66/IP67 · Cable entry 3 × (M20 × 1.5)

Version	Contacts	LEDs	DT	Complete units / Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Complete units[1] • Enclosure width 56 mm, XL								
Plain plungers								
With high-grade steel plunger								
Snap-action contacts	2 × (1 NO + 1 NC)	--	⇒ B	**3SE5 162-0CB01**		1	1 unit	41K
Rounded plungers								
With high-grade steel plungers, with 3 mm overtravel								
Slow-action contacts	1 NO + 1 NC and	--	⇒ B	**3SE5 162-0EC02**		1	1 unit	41K
Slow-action contacts with make-before-break 2 mm travel difference	1 NO +2 NC							
Roller plungers								
With high-grade steel roller 13 mm, with 3 mm overtravel								
Slow-action contacts	2 × (1 NO + 1 NC)	--	⇒ B	**3SE5 162-0BD02**		1	1 unit	41K
Snap-action contacts	2 × (1 NO + 1 NC)	--	⇒ A	**3SE5 162-0CD02**		1	1 unit	41K
Roller levers								
With metal lever and plastic roller 22 mm								
Slow-action contacts	2 × (1 NO + 1 NC)	--	⇒ B	**3SE5 162-0BE01**		1	1 unit	41K
Snap-action contacts	2 × (1 NO + 1 NC)	--	⇒ A	**3SE5 162-0CE01**		1	1 unit	41K
With metal lever and high-grade steel roller 22 mm								
Snap-action contacts	2 × (1 NO + 1 NC)	--	⇒ B	**3SE5 162-0CE02**		1	1 unit	41K
Angular roller levers								
With metal lever and plastic roller 22 mm								
Snap-action contacts	2 × (1 NO + 1 NC)	--	⇒ B	**3SE5 162-0CF01**		1	1 unit	41K
Twist levers								
With metal lever 27 mm and plastic roller 19 mm								
Snap-action contacts	2 × (1 NO + 1 NC)	--	⇒ A	**3SE5 162-0CH01**		1	1 unit	41K


Plain plunger


Rounded plunger


Roller plunger


Roller lever


Angular roller lever


Twist lever

For online configurator see www.siemens.com/sirius/configurators .

⇒ Positive opening according to IEC 60947-5-1, Appendix K.

1) Popular versions.

Note:

If the device you require is not available as a complete unit, see "Modular System", page 12/43.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Modular system

4 or 6 contacts · Degree of protection IP66/IP67 · Cable entry 3 × (M20 × 1.5)

Version	Contacts	LEDs	DT	Modular system / Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Basic switches • Enclosure width 56 mm, XL								
 Basic switch								
With 3 x M20 x 1.5 connecting thread								
Slow-action contacts	2 × (1 NO + 1 NC)	--	➔ A	**3SE5 162-0BA00**		1	1 unit	41K
Snap-action contacts	2 × (1 NO + 1 NC)	--	➔ A	**3SE5 162-0CA00**		1	1 unit	41K
Slow-action contacts with make-before-break	2 × (1 NO + 2 NC)	--	➔ A	**3SE5 162-0DA00**		1	1 unit	41K
With increased corrosion protection[1]								
Slow-action contacts	2 × (1 NO + 1 NC)	--	➔ B	**3SE5 162-0BA00-1CA0**		1	1 unit	41K
Snap-action contacts	2 × (1 NO + 1 NC)	--	➔ B	**3SE5 162-0CA00-1CA0**		1	1 unit	41K
Slow-action contacts with make-before-break	2 × (1 NO + 2 NC)	--	➔ B	**3SE5 162-0DA00-1CA0**		1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators .

➔ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

1) Use corresponding high-grade steel lever.

Note:

Selection aid see page 12/12.

Version	Diameter mm	DT	Modular system / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Operating mechanisms							
 Plain plunger							
Plain plungers							
High-grade steel plungers	10	➔ A	**3SE5 000-0AB01**		1	1 unit	41K
 Rounded plunger							
Rounded plungers, type B acc. to EN 50041							
High-grade steel plungers, with 3 mm overtravel	10	➔ B	**3SE5 000-0AC02**		1	1 unit	41K
 Roller plunger							
Roller plungers, type C acc. to EN 50041							
High-grade steel roller, with 3 mm overtravel	13	➔ B	**3SE5 000-0AD02**		1	1 unit	41K
 Roller lever							
Roller levers							
Metal lever, plastic roller	22	➔ A	**3SE5 000-0AE01**		1	1 unit	41K
Metal lever, high-grade steel roller	22	➔ B	**3SE5 000-0AE02**		1	1 unit	41K
High-grade steel lever, plastic roller	22	➔ B	**3SE5 000-0AE03**		1	1 unit	41K
High-grade steel lever, high-grade steel roller	22	➔ B	**3SE5 000-0AE04**		1	1 unit	41K
 Angular roller lever							
Angular roller levers							
Metal lever, plastic roller	22	➔ A	**3SE5 000-0AF01**		1	1 unit	41K
Metal lever, high-grade steel roller	22	➔ B	**3SE5 000-0AF02**		1	1 unit	41K
High-grade steel lever, plastic roller	22	➔ B	**3SE5 000-0AF03**		1	1 unit	41K
High-grade steel lever, high-grade steel roller	22	➔ B	**3SE5 000-0AF04**		1	1 unit	41K
 Spring rod							
Spring rods (for switches with snap-action contacts only)							
Plastic plunger and high-grade steel spring:	7						
• Length 142.5 mm (spring 50 mm, plunger 50 mm)		B	**3SE5 000-0AR01**		1	1 unit	41K
• Length 76 mm (spring 23.5 mm, plunger 10 mm)		B	**3SE5 000-0AR03**		1	1 unit	41K
• Length 242.5 mm (spring 150 mm, plunger 50 mm)		B	**3SE5 000-0AR04**		1	1 unit	41K
High-grade steel plunger and spring:	7						
• Length 142.5 mm (spring 50 mm, plunger 50 mm)		B	**3SE5 000-0AR02**		1	1 unit	41K

➔ Positively driven actuator, necessary in safety circuits.

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Metal enclosures
Enclosure width 56 mm, XL

Version	Diameter	DT	Modular system	PU (UNIT, SET, M)	PS*	PG
	mm		Order No. / Price per PU			
Twist actuators						
 Twist actuator **Twist actuators**, metal (without lever)						
• For twist levers and rod actuators, switching right and/or left, adjustable		⊖ A	**3SE5 000-0AH00**	1	1 unit	41K
• For fork levers, latching		⊖ B	**3SE5 000-0AT10**	1	1 unit	41K
Levers for twist actuators						
 Twist lever **Twist levers 27 mm, offset, type A acc. to EN 50041**						
Metal lever, plastic roller	19	⊖ A	**3SE5 000-0AA01**	1	1 unit	41K
Metal lever, high-grade steel roller	19	⊖ A	**3SE5 000-0AA02**	1	1 unit	41K
Metal lever, roller with ball bearing	19	⊖ B	**3SE5 000-0AA03**	1	1 unit	41K
Metal lever, 2 plastic rollers	19	⊖ B	**3SE5 000-0AA04**	1	1 unit	41K
Metal lever, plastic roller	30	⊖ B	**3SE5 000-0AA05**	1	1 unit	41K
Metal lever, plastic roller	50	⊖ B	**3SE5 000-0AA07**	1	1 unit	41K
Metal lever, rubber roller	50	⊖ B	**3SE5 000-0AA08**	1	1 unit	41K
High-grade steel lever, plastic roller	19	⊖ B	**3SE5 000-0AA11**	1	1 unit	41K
High-grade steel lever, high-grade steel roller	19	⊖ B	**3SE5 000-0AA12**	1	1 unit	41K
Twist levers 35 mm, offset						
Metal lever, plastic roller	19	⊖ B	**3SE5 000-0AA15**	1	1 unit	41K
Twist levers 30 mm, straight[1]						
Metal lever, plastic roller	19	⊖ B	**3SE5 000-0AA24**	1	1 unit	41K
Metal lever, plastic roller	30	⊖ B	**3SE5 000-0AA26**	1	1 unit	41K
 Twist lever, adjustable length **Twist levers, adjustable length, with grid hole**						
Metal lever, plastic roller	19	⊖ B	**3SE5 000-0AA60**	1	1 unit	41K
Metal lever, high-grade steel roller	19	⊖ B	**3SE5 000-0AA61**	1	1 unit	41K
Metal lever, plastic roller	50	⊖ B	**3SE5 000-0AA67**	1	1 unit	41K
Metal lever, rubber roller	50	⊖ B	**3SE5 000-0AA68**	1	1 unit	41K
High-grade steel lever, plastic roller	19	⊖ B	**3SE5 000-0AA62**	1	1 unit	41K
High-grade steel lever, high-grade steel roller	19	⊖ B	**3SE5 000-0AA63**	1	1 unit	41K
Twist levers, adjustable length						
Metal lever, plastic roller	19	A	**3SE5 000-0AA50**	1	1 unit	41K
Metal lever, high-grade steel roller	19	B	**3SE5 000-0AA51**	1	1 unit	41K
Metal lever, plastic roller	30	B	**3SE5 000-0AA55**	1	1 unit	41K
Metal lever, plastic roller	50	B	**3SE5 000-0AA57**	1	1 unit	41K
Metal lever, rubber roller	50	B	**3SE5 000-0AA58**	1	1 unit	41K
High-grade steel lever, plastic roller	19	B	**3SE5 000-0AA52**	1	1 unit	41K
High-grade steel lever, high-grade steel roller	19	B	**3SE5 000-0AA53**	1	1 unit	41K
 Fork lever **Fork levers** (for switches with snap-action contacts only)						
2 metal levers, 2 plastic rollers	19	⊖ B	**3SE5 000-0AT01**	1	1 unit	41K
2 metal levers, 2 high-grade steel rollers	19	⊖ B	**3SE5 000-0AT02**	1	1 unit	41K
2 high-grade steel levers, 2 plastic rollers	19	⊖ B	**3SE5 000-0AT03**	1	1 unit	41K
2 high-grade steel levers, 2 high-grade steel rollers	19	⊖ B	**3SE5 000-0AT04**	1	1 unit	41K
 Rod actuator **Rod actuators, type D acc. to EN 50041**						
Aluminum rod, length 200 mm	6	B	**3SE5 000-0AA80**	1	1 unit	41K
Spring rod, length 200 mm	6	B	**3SE5 000-0AA81**	1	1 unit	41K
Plastic rod, length 200 mm	6	B	**3SE5 000-0AA82**	1	1 unit	41K
Plastic rod, length 330 mm	6	B	**3SE5 000-0AA83**	1	1 unit	41K

⊖ Positively driven actuator, necessary in safety circuits.

1) Can be clinch mounted (turned through 180°, rear of lever).

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3SE5, metal enclosures
Ambient temperature to –40 °C

Selection and ordering data

Modular system

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

Version	Contacts	LEDs	DT	Modular system / Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Basic switches • Enclosure width 31 mm (with rounded plunger[1])								
 Basic switch								
With plunger								
Snap-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 212-0CC05-1AJ0**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 212-0KC05-1AJ0**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 212-0LC05-1AJ0**		1	1 unit	41K

⚙ For online configurator see www.siemens.com/sirius/configurators .

⊖ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

1) For enclosures with widths of 31 mm, the basic switch is a complete unit with rounded plungers.

Note:
Selection aid see page 12/12.

Version	Diameter mm	DT	Modular system / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Operating mechanisms							
 Roller plunger							
Roller plungers, type C acc. to EN 50047							
Plastic rollers	10	⊖ B	**3SE5 000-0AD03-1AJ0**		1	1 unit	41K
 Roller lever							
Roller levers, type E acc. to EN 50047							
Metal lever, plastic roller	13	⊖ B	**3SE5 000-0AE10-1AJ0**		1	1 unit	41K
High-grade steel lever, plastic roller	13	⊖ B	**3SE5 000-0AE12-1AJ0**		1	1 unit	41K
 Angular roller lever							
Angular roller levers							
Metal lever, plastic roller	13	⊖ B	**3SE5 000-0AF10-1AJ0**		1	1 unit	41K
High-grade steel lever, plastic roller	13	⊖ B	**3SE5 000-0AF12-1AJ0**		1	1 unit	41K
Twist actuators							
 Twist actuator							
Twist actuators, plastic (without lever)							
Switching right and/or left, adjustable		⊖ B	**3SE5 000-0AK00-1AJ0**		1	1 unit	41K
Levers for twist actuators							
 Twist lever							
Twist lever straight, 21 mm, type A acc. to EN 50047							
Metal lever, plastic roller	19	⊖ B	**3SE5 000-0AA21-1AJ0**		1	1 unit	41K
High-grade steel lever, plastic roller	19	⊖ B	**3SE5 000-0AA31-1AJ0**		1	1 unit	41K
 Twist lever, adjustable length							
Twist levers, adjustable length, with grid hole							
Metal lever, plastic roller	19	⊖ B	**3SE5 000-0AA60-1AJ0**		1	1 unit	41K
High-grade steel lever, plastic roller	19	⊖ B	**3SE5 000-0AA62-1AJ0**		1	1 unit	41K

⊖ Positively driven actuator, necessary in safety circuits.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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3SE5, metal enclosures
Ambient temperature to –40 °C

Complete units

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

Version	Contacts	LEDs	DT	Complete units / Configurator / Order No.	PU (UNIT, SET, M)	PS*	PG
Complete units • Enclosure width 40 mm							
 Rounded plunger							
Rounded plungers, type B acc. to EN 50041							
With high-grade steel plungers, with 3 mm overtravel							
Snap-action contacts	1 NO + 1 NC	--	➔ B	**3SE5 112-0CC02-1AJ0**	1	1 unit	41K
 Twist lever, adjustable length							
Twist levers, adjustable length							
With high-grade steel lever with grid hole and plastic roller 19 mm							
Snap-action contacts	1 NO + 1 NC	--	➔ B	**3SE5 112-0CH62-1AJ0**	1	1 unit	41K

⚙ For online configurator see www.siemens.com/sirius/configurators .

➔ Positive opening according to IEC 60947-5-1, Appendix K or positively driven actuator, necessary in safety circuits.

Note:

If the device you require is not available as a complete unit, see "Modular System".

Modular system

2, 3 or 4 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

Version	Contacts	LEDs	DT	Modular system / Configurator / Order No.	PU (UNIT, SET, M)	PS*	PG
Basic switches • Enclosure width 40 mm							
 Basic switch							
With M20 × 1.5 connecting thread							
Snap-action contacts	1 NO + 1 NC	--	➔ B	**3SE5 112-0CA00-1AJ0**	1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	➔ B	**3SE5 112-0KA00-1AJ0**	1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	➔ B	**3SE5 112-0LA00-1AJ0**	1	1 unit	41K
Basic switches • Enclosure width 56 mm							
 Basic switch							
With 3 x M20 x 1.5 connecting thread							
Snap-action contacts	1 NO + 1 NC	--	➔ B	**3SE5 122-0CA00-1AJ0**	1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	➔ B	**3SE5 122-0KA00-1AJ0**	1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	--	➔ B	**3SE5 122-0LA00-1AJ0**	1	1 unit	41K
Basic switches • Enclosure width 56 mm, XL							
 Basic switch							
With 3 x M20 x 1.5 connecting thread							
Slow-action contacts	2 × (1 NO + 1 NC)	--	➔ B	**3SE5 162-0BA00-1AJ0**	1	1 unit	41K
Snap-action contacts	2 × (1 NO + 1 NC)	--	➔ B	**3SE5 162-0CA00-1AJ0**	1	1 unit	41K

⚙ For online configurator see www.siemens.com/sirius/configurators .

➔ Positive opening according to IEC 60947-5-1, Appendix K or positively driven actuator, necessary in safety circuits.

Note:

Selection aid see page 12/12.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3SE5, metal enclosures
Ambient temperature to –40 °C

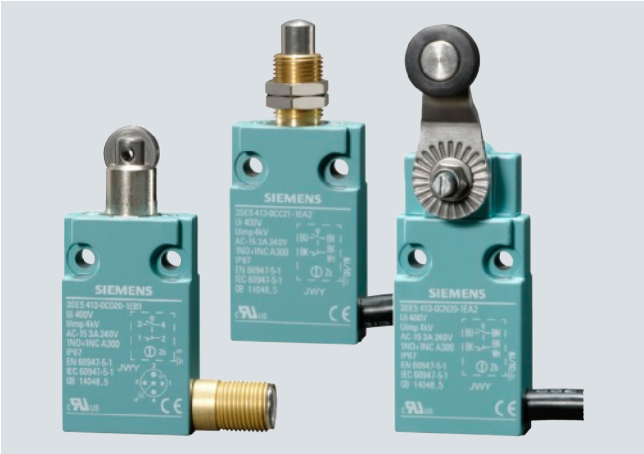
	Version	Diameter	DT	Modular system	PU (UNIT, SET, M)	PS*	PG
		mm		Order No. / Price per PU			
Operating mechanisms							
 Rounded plunger	**Rounded plungers, type B acc. to EN 50041**						
	High-grade steel plungers, with 3 mm overtravel	10	➔ B	**3SE5 000-0AC02-1AJ0**	1	1 unit	41K
 Roller plunger	**Roller plungers, type C acc. to EN 50041**						
	High-grade steel roller, with 3 mm overtravel	10	➔ B	**3SE5 000-0AD02-1AJ0**	1	1 unit	41K
 Roller lever	**Roller levers**						
	Metal lever, plastic roller	13	➔ B	**3SE5 000-0AE01-1AJ0**	1	1 unit	41K
	High-grade steel lever, plastic roller	13	➔ B	**3SE5 000-0AE03-1AJ0**	1	1 unit	41K
 Angular roller lever	**Angular roller levers**						
	Metal lever, plastic roller	13	➔ B	**3SE5 000-0AF01-1AJ0**	1	1 unit	41K
	High-grade steel lever, plastic roller	13	➔ B	**3SE5 000-0AF03-1AJ0**	1	1 unit	41K
Twist actuators							
 Twist actuator	**Twist actuators**, metal (without lever)						
	Switching right and/or left, adjustable		➔ B	**3SE5 000-0AH00-1AJ0**	1	1 unit	41K
	Levers for twist actuators						
 Twist lever	**Twist levers, type A acc. to EN 50041**						
	Metal lever, plastic roller	19	➔ B	**3SE5 000-0AA01-1AJ0**	1	1 unit	41K
	High-grade steel lever, plastic roller	19	➔ B	**3SE5 000-0AA11-1AJ0**	1	1 unit	41K
 Twist lever, adjustable length	**Twist levers, adjustable length, with grid hole**						
	Metal lever, plastic roller	19	➔ B	**3SE5 000-0AA60-1AJ0**	1	1 unit	41K
	High-grade steel lever, plastic roller	19	➔ B	**3SE5 000-0AA62-1AJ0**	1	1 unit	41K

➔ Positively driven actuator, necessary in safety circuits.

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3SE5, metal enclosures
Compact design

Overview



Compact design in width 30 mm

Particularly in harsh environments or on equipment with limited space, the small 3SE5 4 position switches in compact design with a depth of 16 mm and a weight of only 80 g (without cable) are ideal. Above all the versions with molded cable can be mounted in the most confined places.

3SE5 4 compact position switches are available in two different widths as complete units:

- The 3SE5 413 series complies with the EU standard and features a 30 mm wide enclosure with drilled holes at a distance of 20 mm.
- The 3SE5 423 series meets the requirements of the US market and features a 40 mm wide enclosure with drilled holes at a spacing of 25 mm.

Both the enclosure and the twist actuator are made of metal and comply with the high IP67 degree of protection. Following actuators are available:

- Rounded plungers
- Rounded plungers with central fixing
- Rounded plungers with external seal
- Roller plungers
- Roller plunger with central fixing
- Twist levers

The contact block is designed with snap-action contacts 1 NO + 1 NC. The NC contact complies with the requirements for positive opening acc. to IEC 60947-5-1.

Use in safety circuits up to Category 4 according to EN ISO 13849-1.

Connection:
- With molded cable, 2 m or 5 m long
- With M12 connector socket

Benefits

- Very compact yet with the same rating as the 3SE51 standard switches, for notable space savings in confined installation conditions
- Various actuator versions available
- Actuator heads rotatable in increments of 90°
- Time is saved when mounting the fully assembled unit
- With metal enclosure of degree of protection IP67, ideal for use in rough industrial environments
- Insensitive to electromagnetic interference

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Selection and ordering data

2 snap-action contacts 1 NO + 1 NC · Degree of protection IP67 · With connecting cable or M12 connector socket

	Operating mechanism	Enclosure width	DT	Configurator	PU (UNIT, SET, M)	PS*	PG
		mm		Order No. Price per PU			
Complete units • Enclosure width 30 or 40 mm							
	Rounded plungers						
 Rounded plunger	• Standard mounting						
	- With 2 m cable 5 x 0.75 mm²	30	⊖ A	**3SE5 413-0CC20-1EA2**	1	1 unit	41K
		40	⊖ A	**3SE5 423-0CC20-1EA2**	1	1 unit	41K
	- With 5 m cable 5 x 0.75 mm²	30	⊖ B	**3SE5 413-0CC20-1EA5**	1	1 unit	41K
	- With M12 connector socket	30	⊖ A	**3SE5 413-0CC20-1EB1**	1	1 unit	41K
		40	⊖ A	**3SE5 423-0CC20-1EB1**	1	1 unit	41K
 With central fixing	• With central fixing M12 x 1						
	- With 2 m cable 5 x 0.75 mm²	30	⊖ A	**3SE5 413-0CC21-1EA2**	1	1 unit	41K
		40	⊖ A	**3SE5 423-0CC21-1EA2**	1	1 unit	41K
 With external seal	• With external seal						
	- With 2 m cable 5 x 0.75 mm²	30	⊖ A	**3SE5 413-0CC22-1EA2**	1	1 unit	41K
		40	⊖ A	**3SE5 423-0CC22-1EA2**	1	1 unit	41K
	Roller plungers						
 Roller plunger	• Standard mounting						
	- With 2 m cable 5 x 0.75 mm²	30	⊖ A	**3SE5 413-0CD20-1EA2**	1	1 unit	41K
		40	⊖ A	**3SE5 423-0CD20-1EA2**	1	1 unit	41K
	- With 5 m cable 5 x 0.75 mm²	30	⊖ B	**3SE5 413-0CD20-1EA5**	1	1 unit	41K
	- With M12 connector socket	30	⊖ A	**3SE5 413-0CD20-1EB1**	1	1 unit	41K
		40	⊖ A	**3SE5 423-0CD20-1EB1**	1	1 unit	41K
 With plug	• With central fixing M12 x 1						
	- With 2 m cable 5 x 0.75 mm²	30	⊖ A	**3SE5 413-0CD21-1EA2**	1	1 unit	41K
		40	⊖ A	**3SE5 423-0CD21-1EA2**	1	1 unit	41K
	• Actuator head rotated 90°						
	- With 2 m cable 5 x 0.75 mm²	30	⊖ A	**3SE5 413-0CD23-1EA2**	1	1 unit	41K
 With plug, enclosure width 40 mm							
	Twist levers						
 Twist lever	• Standard mounting						
	- With 2 m cable 5 x 0.75 mm²	30	⊖ A	**3SE5 413-0CN20-1EA2**	1	1 unit	41K
		40	⊖ A	**3SE5 423-0CN20-1EA2**	1	1 unit	41K
	- With 5 m cable 5 x 0.75 mm²	30	⊖ A	**3SE5 413-0CN20-1EA5**	1	1 unit	41K
	- With M12 connector socket	30	⊖ A	**3SE5 413-0CN20-1EB1**	1	1 unit	41K
		40	⊖ A	**3SE5 423-0CN20-1EB1**	1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators .

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3SE5, open-type design

Overview



Open-type design

Their compact design makes these switches particularly suitable for use in confined conditions. The fixing dimensions and operating points are according to EN 50047.

The switches are equipped with two or three contacts in slow-action or snap-action versions. The stroke is 6 mm.

The empty enclosure can be equipped with all switch block versions (see page 12/52).

Selection and ordering data

2 or 3 contacts · Degree of protection IP20 (2 contacts), IP10 (3 contacts)

Version	Contacts	DT	Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Plastic enclosures • Enclosure width 30 mm							
With teflon plunger, Ø 6 mm							
 2 contacts							
Slow-action contacts	1 NO + 1 NC	⊖ A	**3SE5 250-0BC05**		1	1 unit	41K
Snap-action contacts	1 NO + 1 NC	⊖ ▶	**3SE5 250-0CC05**		1	1 unit	41K
 3 contacts							
Slow-action contacts	1 NO + 2 NC	⊖ B	**3SE5 250-0KC05**		1	1 unit	41K
Snap-action contacts	1 NO + 2 NC	⊖ ▶	**3SE5 250-0LC05**		1	1 unit	41K
Slow-action contacts with make-before-break	1 NO + 2 NC	⊖ A	**3SE5 250-0MC05**		1	1 unit	41K
Slow-action contacts	2 NO + 1 NC	⊖ A	**3SE5 250-0PC05**		1	1 unit	41K
 Empty enclosures							
Empty enclosures without contact block	--	⊖ B	**3SE5 250-0AC05**		1	1 unit	41K
Contact blocks with 2 contacts for open-type design[1)]							
 2 contacts							
• Slow-action contacts	1 NO + 1 NC	⊖ B	**3SE5 050-0BA00**		1	1 unit	41K
• Snap-action contacts	1 NO + 1 NC						
- Standard		⊖ B	**3SE5 050-0CA00**		1	1 unit	41K
- 2 × 2 mm switching interval		⊖ B	**3SE5 050-0GA00**		1	1 unit	41K
- Short stroke		⊖ B	**3SE5 050-0NA00**		1	1 unit	41K

⚙ For online configurator see www.siemens.com/sirius/configurators .

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

1) Contact blocks with 3 contacts see page 12/52.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

The quick-release devices and plug-in connections are used for fast installation and replacement of position switches.

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Quick-release devices for enclosure width 40 mm							
 3SY3 110  3SY3 027	**Adapter plates with screws**	B	**3SY3 110**		1	1 unit	41K
	Base plates with locking lever	B	**3SY3 027**		1	1 unit	41K
Plug-in connections for M20 × 1.5 connecting threads							
 3SY3 131  3SY3 136	**Connector sockets (6-pole + PE), for M20 × 1.5** For max. 250 V, 10 A With 0.75 mm² connecting cable, plastic, degree of protection IP65, ambient temperature –40 to +90 °C	C	**3SY3 131**		1	1 unit	41K
	Cable boxes (6-pole + PE)[1] With terminal compartment, can be pre-assembled, plastic, degree of protection IP65	A	**3SY3 136**		1	1 unit	41K
 3SY3 127  3SY3 134	**Connector sockets (4-pole), M12, for M20 × 1.5, fixed** For max 250 V, 4 A, U_{imp} = 2500 V With four 0.25 mm² connecting cables, plastic, degree of protection IP67, ambient temperature –40 to +85 °C	B	**3SY3 127**		1	1 unit	41K
	Connector sockets (5-pole), M12, for M20 × 1.5, fixed For max. 125 V, 4 A, U_{imp} = 1500 V With five 0.25 mm² connecting cables, plastic, degree of protection IP67, ambient temperature –40 to +85 °C	B	**3SY3 128**		1	1 unit	41K
	Connector sockets (8-pole), M12, for M20 × 1.5, fixed, metal version for max. 30 V, 2 A, U_{imp} = 800 V With eight 0.25 mm² connecting cables, metal, degree of protection IP67, ambient temperature –40 to +85 °C	C	**3SY3 134**		1	1 unit	41K
 3RK1 902-4CA00-4AA0	**M12 sockets, angled, 4-pole,** for AS-Interface, max 4 A with cabling box, max. 0.75 mm²	C	**3RK1 902-4CA00-4AA0**		1	1 unit	42D
121							
 3SX9 917  3SX9 918	**Adapters acc. to** ⓒ, Ⓤ **and** ⓡ For cable entry from M20 × 1.5 to NPT 1/2						
	• Metal	B	**3SX9 917**		1	1 unit	41K
	• Plastic	D	**3SX9 918**		1	1 unit	41K
 3SX9 926	**Cable glands M20 × 1.5** Plastic	A	**3SX9 926**		1	1 unit	41K

[1] For wiring, a crimping tool is necessary, max. conductor cross-section 1 mm².

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Accessories and spare parts

	Version	Color/ contacts		DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Optional accessories for 3SE52									
	**Protective caps, rubber**, for rounded plungers acc. to EN 50047, 3SE5 ...-..C05	Black		A	**3SE5 000-0AC30**		1	1 unit	41K
Spare parts for 3SE51, 3SE52									
 Enclosure width 31 mm	**Empty enclosures, plastic**	Turquoise							
	Enclosure width 31 mm			B	**3SE5 232-0AC05**		1	1 unit	41K
	• With increased corrosion protection			B	**3SE5 232-0AC05-1CA0**		1	1 unit	41K
	Enclosure width 50 mm			B	**3SE5 242-0AC05**		1	1 unit	41K
	• With increased corrosion protection			B	**3SE5 242-0AC05-1CA0**		1	1 unit	41K
 Enclosure width 40 mm	**Empty enclosures, metal**	Turquoise							
	Enclosure width 31 mm			B	**3SE5 212-0AC05**		1	1 unit	41K
	• With increased corrosion protection			B	**3SE5 212-0AC05-1CA0**		1	1 unit	41K
	Enclosure width 40 mm			B	**3SE5 112-0AA00**		1	1 unit	41K
	• With increased corrosion protection			B	**3SE5 112-0AA00-1CA0**		1	1 unit	41K
	Enclosure width 56 mm			B	**3SE5 122-0AA00**		1	1 unit	41K
	• With increased corrosion protection			B	**3SE5 122-0AA00-1CA0**		1	1 unit	41K
	Enclosure width 56 mm, XL[1]			B	**3SE5 162-0AA00**		1	1 unit	41K
 2 contacts	**Contact blocks with 2 contacts**[2]								
	• Slow-action contacts	1 NO + 1 NC	➔	B	**3SE5 000-0BA00**		1	1 unit	41K
	• Snap-action contacts	1 NO + 1 NC							
	- Standard		➔	B	**3SE5 000-0CA00**		1	1 unit	41K
	- Gold-plated contacts		➔	B	**3SE5 000-0CA00-1AC1**		1	1 unit	41K
	- 2 × 2 mm switching interval		➔	B	**3SE5 000-0GA00**		1	1 unit	41K
	- Short stroke		➔	B	**3SE5 000-0NA00**		1	1 unit	41K
 3 contacts	**Contact blocks with 3 contacts**								
	• Slow-action contacts	1 NO + 2 NC	➔	B	**3SE5 000-0KA00**		1	1 unit	41K
	• Snap-action contacts	1 NO + 2 NC	➔	B	**3SE5 000-0LA00**		1	1 unit	41K
	• Slow-action contacts with make-before-break	1 NO + 2 NC	➔	A	**3SE5 000-0MA00**		1	1 unit	41K
	• Slow-action contacts	2 NO + 1 NC		A	**3SE5 000-0PA00**		1	1 unit	41K
 2 contacts	**Contact blocks for enclosure XL**[1]								
	• Slow-action contacts	1 NO + 1 NC	➔	B	**3SE5 060-0BA00**		1	1 unit	41K
	• Snap-action contacts	1 NO + 1 NC	➔	B	**3SE5 060-0CA00**		1	1 unit	41K
	• Slow-action contacts with make-before-break	1 NO + 2 NC	➔	B	**3SE5 060-0MA00**		1	1 unit	41K

➔ Positive opening according to IEC 60947-5-1, Appendix K.

1) Equip XL enclosures only with contact combinations according to pages 12/11, 12/42 and 12/43.

2) Unsuitable for open-type position switches; see page 12/50.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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	Version	Rated voltage LED	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		V						
Spare parts for 3SE51, 3SE52								
 31 mm, turquoise with LED	**Covers for plastic enclosures, width 31 mm**							
	• Turquoise with LED	24 DC	B	**3SE5 230-1AA00**		1	1 unit	41K
		230 AC	B	**3SE5 230-3AA00**		1	1 unit	41K
	• Yellow	--	B	**3SE5 230-0AA00-1AG0**		1	1 unit	41K
	• Yellow with LED	24 DC	B	**3SE5 230-1AA00-1AG0**		1	1 unit	41K
		230 AC	B	**3SE5 230-3AA00-1AG0**		1	1 unit	41K
 40 mm, yellow with LED	**Covers for plastic enclosures, width 40 mm**							
	• Turquoise with LED	24 DC	B	**3SE5 130-1AA00**		1	1 unit	41K
		230 AC	B	**3SE5 130-3AA00**		1	1 unit	41K
	• Yellow	--	B	**3SE5 130-0AA00-1AG0**		1	1 unit	41K
	• Yellow with LED	24 DC	B	**3SE5 130-1AA00-1AG0**		1	1 unit	41K
		230 AC	B	**3SE5 130-3AA00-1AG0**		1	1 unit	41K
 50 mm, turquoise with LED	**Covers for plastic enclosures, width 50 mm**							
	• Turquoise with LED	24 DC	B	**3SE5 240-1AA00**		1	1 unit	41K
		230 AC	B	**3SE5 240-3AA00**		1	1 unit	41K
	• Yellow	--	B	**3SE5 240-0AA00-1AG0**		1	1 unit	41K
	• Yellow with LED	24 DC	B	**3SE5 240-1AA00-1AG0**		1	1 unit	41K
		230 AC	B	**3SE5 240-3AA00-1AG0**		1	1 unit	41K
 31 mm, turquoise with LED	**Covers for metal enclosures, width 31 mm**							
	• Turquoise with LED	24 DC	B	**3SE5 210-1AA00**		1	1 unit	41K
		230 AC	B	**3SE5 210-3AA00**		1	1 unit	41K
	• Yellow	--	B	**3SE5 210-0AA00-1AG0**		1	1 unit	41K
	• Yellow with LED	24 DC	B	**3SE5 210-1AA00-1AG0**		1	1 unit	41K
		230 AC	B	**3SE5 210-3AA00-1AG0**		1	1 unit	41K
 40 mm, yellow with LED	**Covers for metal enclosures, width 40 mm**							
	• Turquoise with LED	24 DC	B	**3SE5 110-1AA00**		1	1 unit	41K
		230 AC	B	**3SE5 110-3AA00**		1	1 unit	41K
	• Yellow	--	B	**3SE5 110-0AA00-1AG0**		1	1 unit	41K
	• Yellow with LED	24 DC	B	**3SE5 110-1AA00-1AG0**		1	1 unit	41K
		230 AC	B	**3SE5 110-3AA00-1AG0**		1	1 unit	41K
 56 mm, yellow with LED	**Covers for metal enclosures, width 56 mm**							
	• Turquoise with LED	24 DC	B	**3SE5 120-1AA00**		1	1 unit	41K
		230 AC	B	**3SE5 120-3AA00**		1	1 unit	41K
	• Yellow	--	B	**3SE5 120-0AA00-1AG0**		1	1 unit	41K
	• Yellow with LED	24 DC	B	**3SE5 120-1AA00-1AG0**		1	1 unit	41K
		230 AC	B	**3SE5 120-3AA00-1AG0**		1	1 unit	41K
	Covers for XL metal enclosures, width 56 mm							
	• Yellow	--	B	**3SE5 160-0AA00-1AG0**		1	1 unit	41K

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General data

Overview

Position switches with separate actuator are used where the position of doors, covers or protective grills must be monitored for safety reasons.

3SE5 position switches with separate actuator have the same enclosures as the standard switches (modular system).



Position switches with head for separate actuator

Design

Enclosure sizes

The 3SE5 switches are available in various enclosure sizes:

- Plastic enclosures according to EN 50047, 31 mm wide, IP65, 1 cable entry
- Metal enclosures according to EN 50047, 31 mm wide, IP66/IP67, 1 cable entry
- Plastic and metal enclosures according to EN 50041, 40 mm wide, IP66/IP67, 1 cable entry
- Plastic enclosures, 50 mm wide, IP66/IP67, 2 cable entries
- Metal enclosures, 56 mm wide, IP66/IP67, 3 cable entries

Also available is a switch in the 3SE2 series which has arisen in this form according to general market requirements:

- Molded-plastic enclosures outside of the standards, enclosure width 52 mm, IP67

Enclosure versions

Various basic versions can be selected for the enclosures of the 3SE5 series:

- Available with two- or three-pole contact blocks designed as slow-action contacts
- Optional LED status display
- With mounted four- or five-pole M12 connector socket (available for the wide enclosures as an accessory for self-assembly)
- With 6-pole connector socket + PE on the metal enclosures
- Similarly with a combination of connector socket and LED indicators
- Metal enclosures for explosion protection (ATEX) (see page 12/84)
- AS-Interface version with integrated ASIsafe electronics for all enclosure designs (see page 12/94)

For a description of the basic switches, see page 12/4.

Operation

The actuator head is included in the scope of supply. For actuation from four directions it can be adjusted through 4 × 90°. The switches can also be approached from above.

The twist actuators of the 3SE2 243 and 3SE2 257 switches with special enclosures cannot be changed. The switches can be approached from the two broad sides and from above.

The actuators are not included in the scope of supply of the position switch and must be ordered separately from various versions to suit the application (see page 12/63).

The actuator is encoded. Simple overruling by hand or auxiliary devices is impossible.

Radius actuators

The position switches with radius actuators are particularly suitable for rotatable protective devices. The movable actuation key allows even small radii to be approached. Damage to the switch and the actuator due to inaccurate approach is prevented.

Locking devices

A high-grade steel blocking insert for attaching up to eight padlocks is available for even more safety (see page 12/63).



Blocking insert with padlock

Dust protection

A rubber cap to protect the twist actuator from contamination is available for operation in dusty environments (see page 12/63).

Contact reliability

The new contact blocks ensure an extremely high contact stability. This applies even when the devices are switching low voltages and currents, e.g. 1 mA at 5 V DC.

Positive opening ➔

The NC contacts of the switch are forced open mechanically, positively-driven and reliably by the plunger. This is referred to as "positive opening".

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Benefits

The 3SE5 position switches with separate actuator differ from the previous series through the following new characteristics:

- All enclosure sizes with increased corrosion protection
- All enclosure sizes are optionally available with a LED signaling indicator.
- The three-pole contact block 1 NO + 2 NC is available for all enclosure sizes.
- The plastic enclosure has simple and fast wiring equipment which makes it possible to save from approx. 20 to 25 % of the time when connecting.
- The ASIsafe electric component is integrated for the versions with the AS-Interface connection (see page 12/94); an adapter is not required.

Application

Position switches with separate actuator are used where the position of doors, covers or protective grills must be monitored for safety reasons.

The position switch can only be operated with the matching coded actuator. Simple overruling by hand or auxiliary devices is impossible.

Devices are available with enclosure versions to suit the particular ambient conditions. Different control tasks can be performed with the best contact blocks suited for the particular purpose. Dimensions, fixing points of the enclosure are in accordance with EN 50041 or EN 50047 standards. The devices are suitable for use in any climate.

Standards

IEC 60947-5-1 or EN 60947-5-1.

The protective measure of "total insulation" by the molded-plastic enclosure is guaranteed by the use of molded-plastic screw-glands.

Safety position switches

For controls according to IEC 60204-1 or EN 60204-1 the devices can be used as a safety position switch. To secure position switches against changes in their position, keyed techniques must be employed on installation.

Safety circuits

IEC 60947-5-1 and EN 60947-5-1 require positive opening of the NC contacts, i.e. for the purposes of personal safety, the assured opening of NC contacts is expressly stipulated for the electrical equipment of machines in all safety circuits and marked according to the IEC standard 60947-5-1 with the symbol ➔.

Category 3 according to ISO 13849-1 (EN 954-1) can be attained with a position switch with a separate actuator if the corresponding failsafe evaluation units are selected and correctly installed, e.g. the 3TK28 safety relays or matching units from the ASIsafe, SIMATIC or SINUMERIK product ranges.

Category 4 can be achieved when using an additional position switch.

Technical specifications

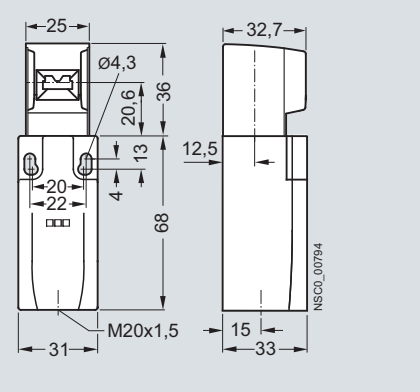
Type		3SE5 1..-..V.., 3SE5 2..-..V..		3SE2 257-.XX..		3SE2 243-.XX..	
General data							
Standards		IEC 60947-5-1, EN 60947-5-1					
Rated insulation voltage U_i	V	400		500			
Pollution degree acc. to IEC 60664-1		Class 3		Class 3			
Rated impulse withstand voltage U_{imp}	kV	6					
Rated operational voltage U_e	V	400 AC; over 300 V AC only equal potential		500 AC; over 380 V AC only equal potential			
Conventional thermal current I_{th}	A	6		10			
Rated operational current I_e		2-pole	3-pole	1-pole		3-pole	
• With alternating current 50/60 Hz		I_e/AC-15	I_e/AC-15	I_e/AC-12	I_e/AC-15	I_e/AC-12	I_e/AC-15
- At 24 V	A	6	6	10	10	10	10
- At 120 V	A	6	3	10	10	10	10
- At 240 V	A	3	1.5	10	6	10	4
- At 400 V	A	--	--	10	4	10	4
- At 500 V	A	--	--	10	3	10	3
• For direct current		I_e/DC-13	I_e/DC-13	I_e/DC-12	I_e/DC-13	I_e/DC-12	I_e/DC-13
- At 24 V	A	3	3	10	10	10	10
- At 125 V	A	0.55	0.55	--	--	--	--
- At 250 V	A	0.27	0.27	--	--	--	--
- At 110 V	A	--	--	4	1	4	1
- At 220 V	A	--	--	1	0.4	1	0.4
- At 440 V	A	--	--	0.5	0.2	0.5	0.2
Short-circuit protection[1]							
• With DIAZED fuse links, gG operational class	A	6		6			
• With fuse links, quick		--		10			
• With miniature circuit breaker, Char. C	A	1	2	--			
Mechanical endurance		1 $\times 10^6$ operating cycles					
Electrical endurance							
• With 3RH.1, 3RT contactors in size S00, S0		10 $\times 10^6$ operating cycles		> 1 $\times$ 10^6 operating cycles			
• For utilization category AC-15 when switching off I_e/AC-15 at 240 V		0.1 $\times 10^6$ operating cycles		0.5 $\times 10^6$ operating cycles			
Switching frequency With 3RH.1, 3RT contactors in size S00, S0		6000 operating cycles/h					
Minimum pull-out force for positive opening	N	20		10		30	

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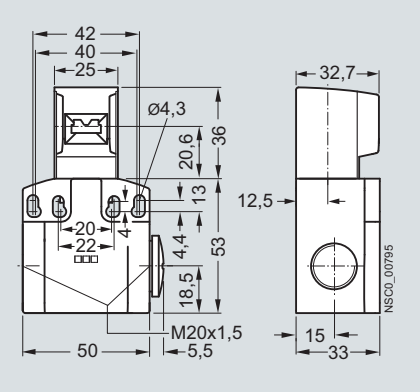
General data

3SE51, 3SE52 configuration

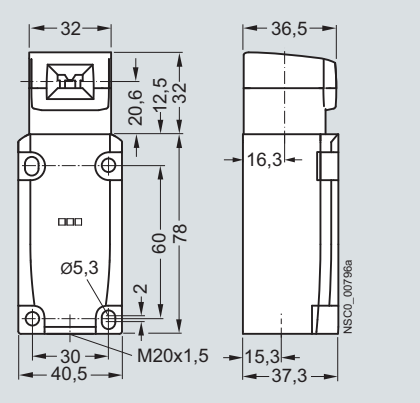
Enclosure width 31 mm
3SE5 23.-.QV40, 3SE5 23.-.RV40



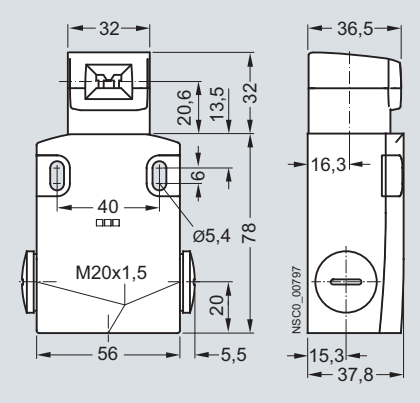
Enclosure width 50 mm
3SE5 24.-.QV40, 3SE5 24.-.RV40



Enclosure width 40 mm
3SE5 11.--.QV10, 3SE5 11.-.RV10

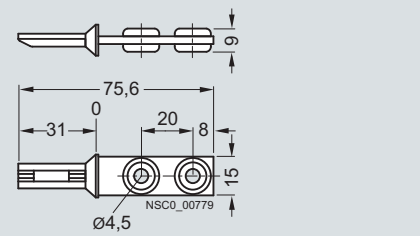


Enclosure width 56 mm
3SE5 12.-.QV10, 3SE5 12.-.RV10

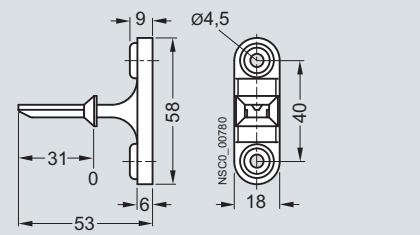


Actuators

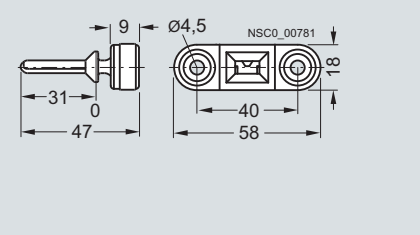
Standard actuator
3SE5 000-0AV01



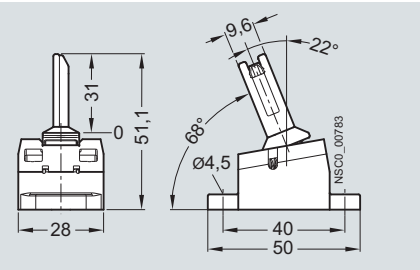
Actuator with vertical fixing
3SE5 000-0AV02



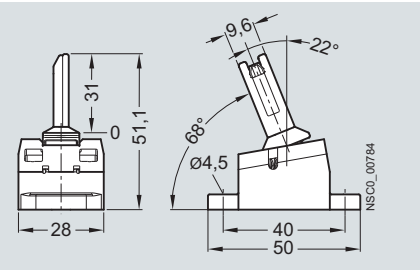
Actuator with horizontal fixing
3SE5 000-0AV03



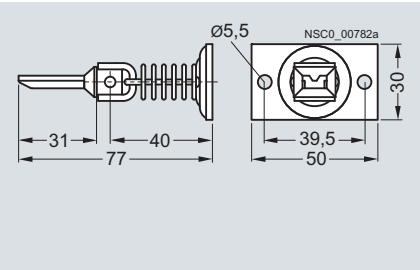
Radius actuator, approach from left
3SE5 000-0AV04



Radius actuator approach from right
3SE5 000-0AV06



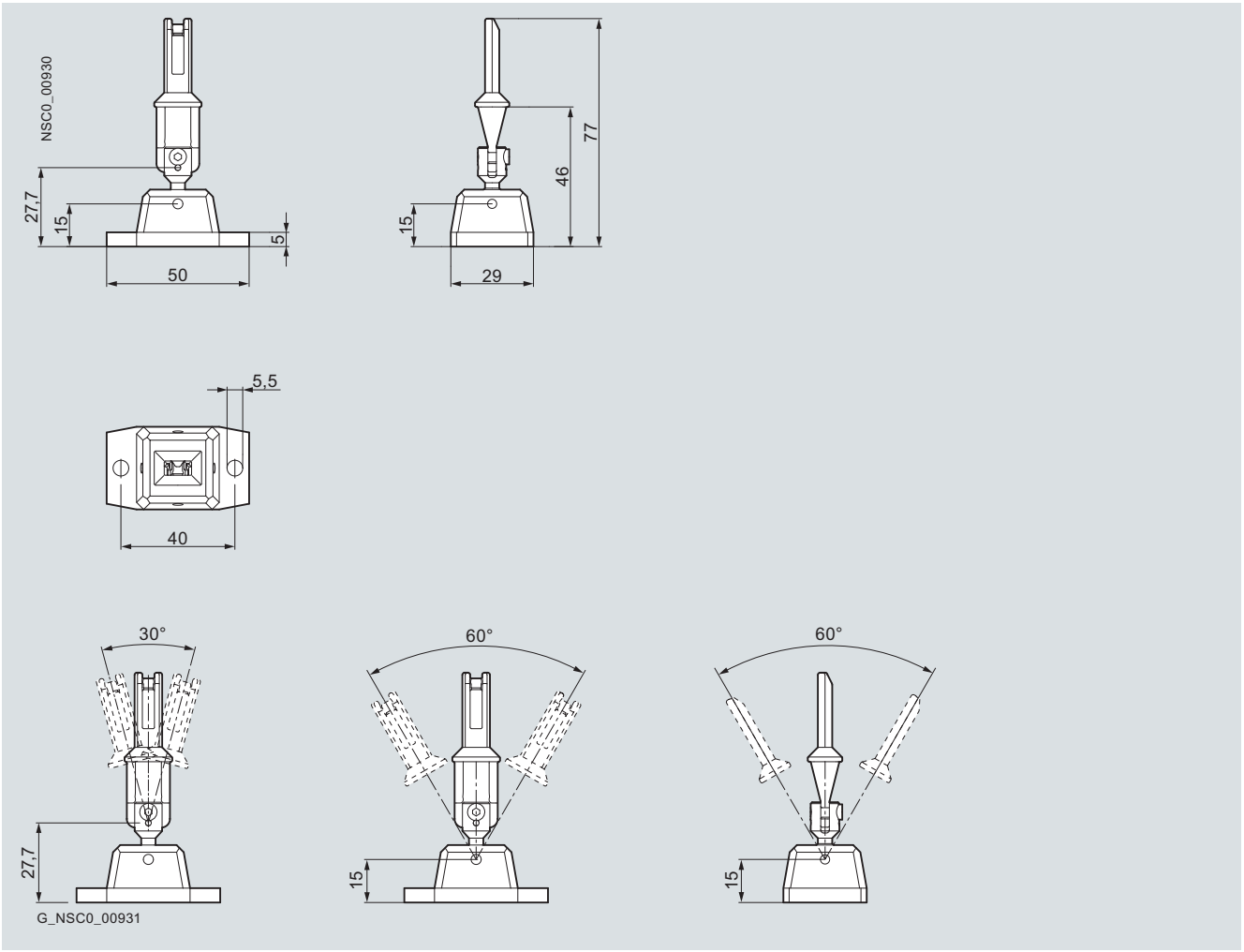
Universal radius actuator
3SE5 000-0AV05



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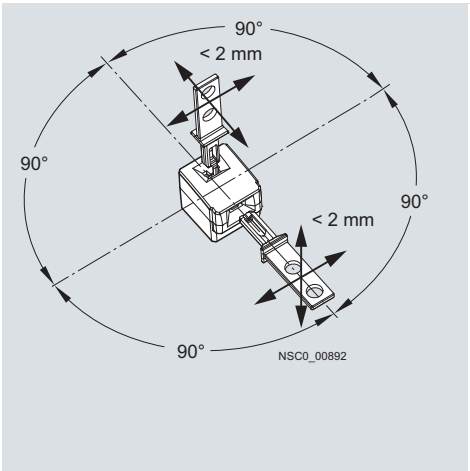
Universal radius actuator, heavy duty
3SE5 000-0AV07



Actuation and travel

Standard actuators

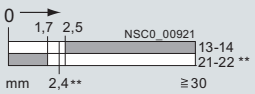
Axial and lateral actuation (4 × 90°)



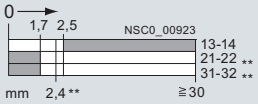
Lateral actuation (4 × 90°)

Slow-action contacts

1 NO + 1 NC, Ident. No. **11**



1 NO + 2 NC, Ident. No. **12**



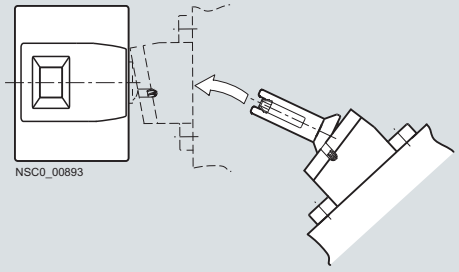
Contact closed
Contact open

Actuator in actuator head:
NC is closed

** Positive opening point

Radius actuators (all directions of approach)

Example: Direction of approach from the left



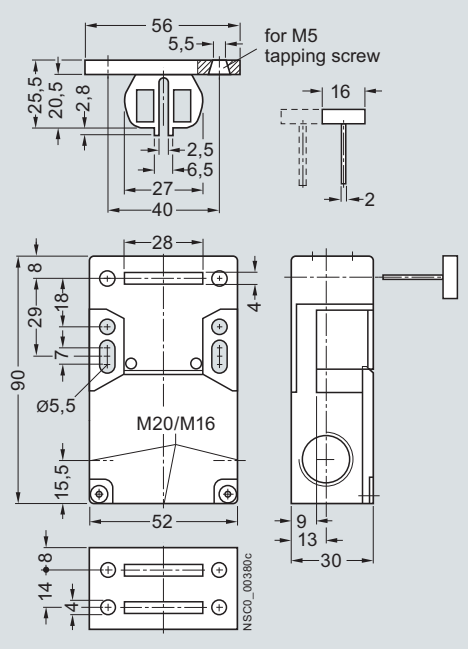
Circuit diagrams and connector assignment see page 12/11.

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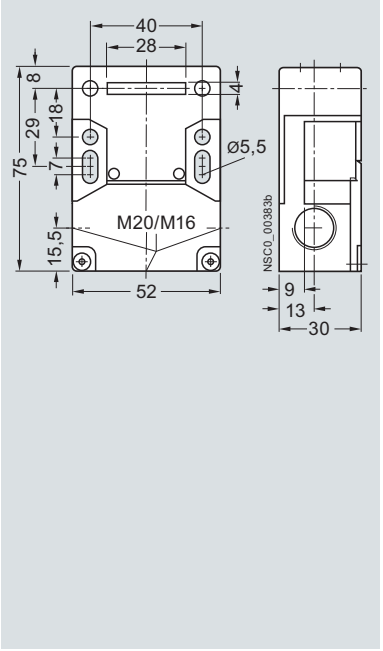
General data

3SE2 243, 3SE2 257 configuration

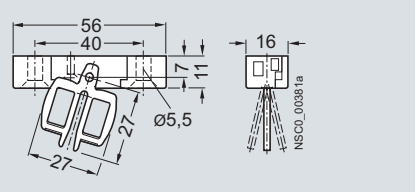
3SE2 243, lateral and front-end actuation, with 3SX3 218 standard actuator



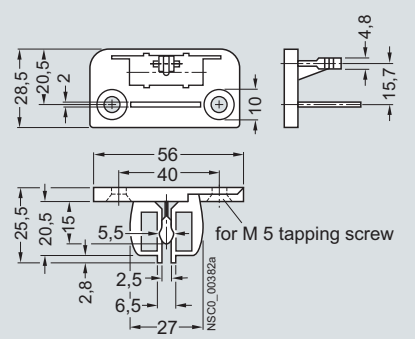
3SE2 257, lateral and front-end actuation



3SX3 228 universal radius actuator



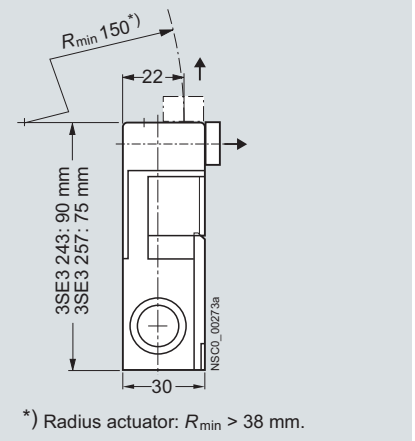
3SX3 217 actuator with ball locating



Actuation and travel

Standard and radius actuators

Axial and lateral actuation

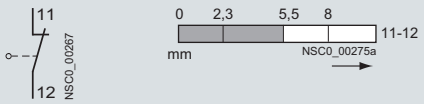


*) Radius actuator: R_{min} > 38 mm.

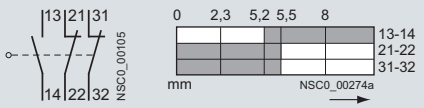
Lateral actuation

Slow-action contacts

1 NC, Ident. No. **01**



1 NO + 2 NC, Ident. No. **12**



Contact closed
Contact open

Actuator in actuator head:
NC is closed

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Selection and ordering data

Complete units

2 or 3 contacts · 5 directions of approach · Degree of protection IP65 (31 mm) or IP66/IP67 (50 mm) · Cable entry M20 × 1.5

	Version[1]	Contacts	LEDs	DT	Complete units / Configurator / Order No.	PU (UNIT, SET, M)	PS*	PG
Enclosure width 31 mm acc. to EN 50047								
 With separate actuator	**5 directions of approach**							
	Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 232-0RV40**	1	1 unit	41K
	Slow-action contacts	1 NO + 2 NC	--	⊖ ▶	**3SE5 232-0QV40**	1	1 unit	41K
	With increased minimum pull-out force 30 N							
	Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 232-0QV40-1AA1**	1	1 unit	41K
 With M12 socket	**With M12 connector socket, 4-pole** (250 V, 4 A)							
	Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 234-0RV40-1AC4**	1	1 unit	41K
	Slow-action contacts	2 NC	--	⊖ B	**3SE5 234-0QV40-1AE0**	1	1 unit	41K
 With 2 LEDs	**With 2 LEDs, yellow/green**							
	Slow-action contacts	1 NO + 1 NC	24 V DC	⊖ B	**3SE5 232-1RV40**	1	1 unit	41K
	Slow-action contacts	1 NO + 1 NC	230 V AC	⊖ B	**3SE5 232-3RV40**	1	1 unit	41K
	With M12 connector socket, 5-pole (125 V, 4 A) **and 2 LEDs**							
	Slow-action contacts	1 NO + 1 NC	24 V DC	⊖ B	**3SE5 234-1RV40-1AF3**	1	1 unit	41K
Enclosure width 50 mm								
 With separate actuator	**5 directions of approach**							
	Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 242-0QV40**	1	1 unit	41K
	With increased minimum pull-out force 30 N							
	Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 242-0RV40-1AA1**	1	1 unit	41K
 With 2 LEDs	**With 2 LEDs, yellow/green**							
	Slow-action contacts	1 NO + 2 NC	24 V DC	⊖ B	**3SE5 242-1QV40**	1	1 unit	41K
	Slow-action contacts	1 NO + 2 NC	230 V AC	⊖ B	**3SE5 242-3QV40**	1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators .

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

1) Supplied without actuator. Please order separately (see page 12/63).

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With Separate Actuator

3SE5, plastic enclosures
Enclosure width 40 mm acc. to EN 50041

Selection and ordering data

Complete units

2 or 3 contacts · 5 directions of approach · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

	Version[1]	Contacts	LEDs	DT	Complete units / Order No.	PU (UNIT, SET, M)	PS*	PG
Enclosure width 40 mm acc. to EN 50041								
 With separate actuator	**5 directions of approach**							
	Slow-action contacts	1 NO + 2 NC	--	➔ B	**3SE5 132-0QV20**	1	1 unit	41K
 With 2 LEDs	**With 2 LEDs, yellow/green**							
	Slow-action contacts	1 NO + 2 NC	24 V DC	➔ C	**3SE5 132-1QV20**	1	1 unit	41K
	Slow-action contacts	1 NO + 2 NC	230 V AC	➔ C	**3SE5 132-3QV20**	1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators .

➔ Positive opening according to IEC 60947-5-1, Appendix K.

1) Supplied without actuator. Please order separately (see page 12/63).

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

Complete units

2 or 3 contacts · 5 directions of approach · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

Version[1]	Contacts	LEDs	DT	Complete units / Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Enclosure width 31 mm acc. to EN 50047								
 With separate actuator								
5 directions of approach								
Slow-action contacts	1 NO + 1 NC	--	⊖ A	**3SE5 212-0RV40**		1	1 unit	41K
Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 212-0QV40**		1	1 unit	41K
 With 2 LEDs								
With 2 LEDs, yellow/green								
Slow-action contacts	1 NO + 1 NC	24 V DC	⊖ B	**3SE5 212-1RV40**		1	1 unit	41K
Slow-action contacts	1 NO + 1 NC	230 V AC	⊖ B	**3SE5 212-3RV40**		1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators .

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

1) Supplied without actuator. Please order separately (see page 12/63).

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With Separate Actuator

3SE5, metal enclosures
Enclosure width 40 mm acc. to EN 50041 / 56 mm

Selection and ordering data

Complete units

2 or 3 contacts · 5 directions of approach · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

	Version[1]	Contacts	LEDs	DT	Complete units / Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Enclosure width 40 mm acc. to EN 50041									
 With separate actuator	**5 directions of approach**								
	Slow-action contacts	1 NO + 2 NC	--	⊖ ▶	**3SE5 112-0QV10**		1	1 unit	41K
	With increased minimum pull-out force 30 N								
	Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 112-0QV10-1AA7**		1	1 unit	41K
 With M12 socket	**With M12 connector socket, 5-pole** (125 V, 4 A)								
	Slow-action contacts	1 NO + 1 NC	--	⊖ B	**3SE5 114-0RV10-1AC5**		1	1 unit	41K
	Slow-action contacts	2 NC	--	⊖ B	**3SE5 114-0QV10-1AE1**		1	1 unit	41K
	With connector socket, 6-pole + PE (250 V, 10 A)								
	Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 115-0QV10-1AD1**		1	1 unit	41K
 With 2 LEDs	**With 2 LEDs, yellow/green**								
	Slow-action contacts	1 NO + 2 NC	24 V DC	⊖ B	**3SE5 112-1QV10**		1	1 unit	41K
	Slow-action contacts	1 NO + 2 NC	230 V AC	⊖ B	**3SE5 112-3QV10**		1	1 unit	41K
	With M12 connector socket, 5-pole (125 V, 4 A) **and 2 LEDs**								
	Slow-action contacts	1 NO + 1 NC	24 V DC	⊖ B	**3SE5 114-1RV10-1AF3**		1	1 unit	41K
	With connector socket, 6-pole + PE (10 A), **and 2 LEDs**								
	Slow-action contacts	1 NO + 1 NC	24 V DC	⊖ B	**3SE5 115-1RV10-1AF2**		1	1 unit	41K
Enclosure width 56 mm									
 With separate actuator	**5 directions of approach**								
	Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 122-0QV10**		1	1 unit	41K
	With increased minimum pull-out force 30 N								
	Slow-action contacts	1 NO + 2 NC	--	⊖ B	**3SE5 122-0QV10-1AA7**		1	1 unit	41K
 With 2 LEDs	**With 2 LEDs, yellow/green**								
	Slow-action contacts	1 NO + 2 NC	24 V DC	⊖ B	**3SE5 122-1QV10**		1	1 unit	41K
	Slow-action contacts	1 NO + 2 NC	230 V AC	⊖ B	**3SE5 122-3QV10**		1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators .

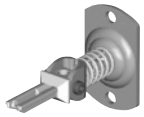
⊖ Positive opening according to IEC 60947-5-1, Appendix K.

1) Supplied without actuator. Please order separately (see page 12/63).

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Actuators for 3SE51, 3SE52							
 3SE5 000-0AV01	Standard actuators, length 75.6 mm	►	**3SE5 000-0AV01**		1	1 unit	41K
 3SE5 000-0AV02	With vertical fixing, length 53 mm	A	**3SE5 000-0AV02**		1	1 unit	41K
 3SE5 000-0AV03	With transverse fixing, length 47 mm	A	**3SE5 000-0AV03**		1	1 unit	41K
 3SE5 000-0AW11	With transverse fixing, plastic[1] Length 40 mm	B	**3SE5 000-0AW11**		1	1 unit	102
 3SE5 000-0AV06	Radius actuators, length 51 mm						
	• Direction of approach from the left	A	**3SE5 000-0AV04**		1	1 unit	41K
	• Direction of approach from the right	A	**3SE5 000-0AV06**		1	1 unit	41K
 3SE5 000-0AV05-1AA6	Universal radius actuators						
	• Length 77 mm	A	**3SE5 000-0AV05**		1	1 unit	41K
	• Length 77 mm, tab rotated 90°	A	**3SE5 000-0AV05-1AA6**		1	1 unit	41K
 3SE5 000-0AV07	Universal radius actuators, heavy-duty						
	• Length 67 mm	A	**3SE5 000-0AV07-1AK2**		1	1 unit	41K
	• Length 77 mm	A	**3SE5 000-0AV07**		1	1 unit	41K
Optional accessories for 3SE5							
 3SE5 000-0AV08-1AA2	**Protective caps** made of black rubber for the actuator head, to protect the actuator openings from contamination (Only for enclosure width 40 or 56 mm)	B	**3SE5 000-0AV08-1AA2**		1	1 unit	41K
 3SE5 000-0AV08-1AA3	**Blocking inserts**, high-grade steel, for actuator head, for up to 8 padlocks	C	**3SE5 000-0AV08-1AA3**		1	1 unit	41K
Connections for 3SE5, 3SE2							
 3SY3 127	**Connector sockets (4-pole), M12, fixed for M20 × 1.5** For max. 250 V, 4 A With 0.25 mm^2 connecting cable, plastic, degree of protection IP67, ambient temperature –40 to +85 °C	B	**3SY3 127**		1	1 unit	41K
	Connector sockets (5-pole), M12, fixed for M20 × 1.5 For max. 125 V, 4 A With 0.25 mm^2 connecting cable, plastic, degree of protection IP67, ambient temperature –40 to +85 °C	B	**3SY3 128**		1	1 unit	41K
 3SX9 926	**Cable glands M20 × 1.5** Plastic	A	**3SX9 926**		1	1 unit	41K

[1] Not suitable for safety switches with interlocking.

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Selection and ordering data

Complete units

1 or 3 contacts · 3 directions of approach · Degree of protection IP67

Version	Operation	DT	Complete units Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Molded-plastic enclosures in special width of 52 mm							
Lateral and front-end actuation[1]	6 mm stroke						
• With M20 × 1.5 connecting thread							
- Slow-action contacts 1 NO + 2 NC	Holding force 5 N	⊖ ▶	**3SE2 243-0XX40**		1	1 unit	41K
	Holding force 30 N	⊖ ▶	**3SE2 243-0XX**		1	1 unit	41K
	With automatic ejection	⊖ ▶	**3SE2 243-0XX30**		1	1 unit	41K
- Slow-action contacts 1 NC	Holding force 5 N	⊖ ▶	**3SE2 257-6XX40**		1	1 unit	41K
	Holding force 30 N	⊖ ▶	**3SE2 257-6XX**		1	1 unit	41K
	With automatic ejection	⊖ B	**3SE2 257-6XX30**		1	1 unit	41K
• With M16 × 1.5 connecting thread							
- Slow-action contacts 1 NO + 2 NC	Holding force 5 N	⊖ B	**3SE2 243-0XX48**		1	1 unit	41K
	Holding force 30 N	⊖ A	**3SE2 243-0XX18**		1	1 unit	41K
	With automatic ejection	⊖ C	**3SE2 243-0XX38**		1	1 unit	41K
- Slow-action contacts 1 NC	Holding force 5 N	⊖ B	**3SE2 257-6XX48**		1	1 unit	41K
	Holding force 30 N	⊖ C	**3SE2 257-6XX18**		1	1 unit	41K
	With automatic ejection	⊖ C	**3SE2 257-6XX38**		1	1 unit	41K
Accessories							
Actuators							
• Standard actuators (r_{min} = 150 mm), length 28 mm		A	**3SX3 218**		1	1 unit	41K
• Universal radius actuator (r_{min} = 45 mm), length 34 mm		A	**3SX3 228**		1	1 unit	41K
• Radius actuator, adjustable radius, length 34 mm		D	**3SX3 256**		1	1 unit	41K
• Ball locating, force adjustable up to 100 N by 2 screws, length 28 mm		A	**3SX3 217**		1	1 unit	41K
• Actuator, length 34 mm, with dust protection and slit cover		D	**3SX3 234**		1	1 unit	41K
Accessories							
• Slit cover (1 set = 3 units)		D	**3SX3 233**		1	3 units	41K


3SE 2 243


3SX3 218


3SX3 228


3SX3 256


3SX3 217


3SX3 234

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

[1] Supplied without actuator.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

The position switches with solenoid interlocking are exceptional safety-related devices which prevent an unforeseen or intentional opening of protective doors, protective grills or other covers as long as a dangerous situation is present (i.e. follow-on motion of the switched off machine).



Position switches with solenoid interlocking

The safety position switches with solenoid interlocking are comprised of a switch part with electromechanical interlock and a mechanical actuator which has to be ordered separately.

They are rugged protective devices that enable the greatest possible safety for man and machine.

The position switches with solenoid interlocking are offered in plastic or metal enclosures.

Dimensions (W × H × D):

- 3SE5 3: 54 mm × 185 mm × 43.5 mm

Operation

The actuator head is included in the scope of supply. For actuation from four directions it can be adjusted through 4 × 90°. The 3SE5 3 switches can also be approached from above.

The actuators are not included in the scope of supply of the position switch and must be ordered separately from various versions to suit the application (see page 12/71).

Actuation data:

- Maximum actuating speed v_{max} = 1.5 m/s
- Minimum actuating speed v_{min} = 0.4 mm/s
- Minimum force in the direction of actuation F_{min} = 30 N

The actuator is encoded. Simple overruling by hand or auxiliary devices is impossible.

Radius actuators

The position switches with radius actuators are particularly suitable for rotatable protective devices. The movable actuation key allows even small radii to be approached. Damage to the switch and the actuator due to inaccurate approach is prevented.

Locking devices

A high-grade steel locking device for attaching up to eight padlocks is available for even more safety (see page 12/71).

Dust protection

A rubber cap to protect the twist actuator from contamination is available for operation in dusty environments (see page 12/71).

Solenoid interlocking

There are two versions for interlocking the actuator:

- Spring-actuated lock (closed-circuit principle) with various release mechanisms
- Solenoid-locked (open-circuit principle)

The spring-actuated lock switch is equipped with an auxiliary release for emergency situations or setup mode. Available as options:

- Escape release or
- Emergency release

Contact blocks

The position switches with solenoid interlocking have one contact block each for:

- Monitoring the actuator or the position of the protective door
- Monitoring the position of the solenoid

The mechanical design of the switch corresponds to the requirements of the failsafe principle according to EN 1088.

Optical signaling equipment

The position switches with solenoid interlocking are available with an optional optical signaling device.

The signaling device indicates the switch position of the lock and the protective device optically by means of 2 LEDs on the front.

Protective device	Solenoid interlocking	Display	Meaning
Closed	Released		Actuator to be pulled
Closed	Locked		Actuator locked
Open	Released		Actuator pulled

Note:

The voltage of the LEDs at the monitored contacts must be the same as the operational voltage of the solenoid (same potential).

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General data

Benefits

The range of 3SE5 3 position switches offers:

- More safety through higher locking forces:
  - 1300 N with plastic enclosure
  - 2600 N with metal enclosure
- Various release mechanisms: Lock release, escape release and emergency release
- Two contact blocks each with three contacts as standard equipment, hence fewer versions needed
- Same dimensions for all enclosure versions: Plastic, metal or with integrated ASIsafe
- An extensive range of actuators
- An optional LED status display 24 V DC, 115 V AC or 230 V AC for all switch versions
- Devices with ASIsafe electronics integrated in the enclosure (see page 12/98).

Application

The position switches with solenoid interlocking are exceptional safety-related devices which prevent an unforeseen or intentional opening of protective doors, protective grills or other covers as long as a dangerous situation is present (i.e. follow-on motion of the switched off machine).

The safety position switches with solenoid interlocking have the following functions:

- Enabling the machine or process with closed and locked protective device
- Locking the machine or process with opened protective device
- Position monitoring of the protective device and tumbler

Standards

The switches comply with the standards IEC 60947-1 (Low-Voltage Switchgear and Controlgear, General) and IEC 60947-5-1 (Electromechanical Control Circuit Devices).

The mechanical design of the switch corresponds to the requirements of the failsafe principle according to EN 1088.

Approvals

The switches are approved for use with locking devices according to EN 1088 and EN 292, Parts 1 and 2.

3SE5 3 position switches with solenoid interlocking bear the VDE test mark for tested according to GS-ET19 (Test Principles of the German Trade Association for Locking Devices with Electromagnetic Interlocks).

Category 3 according to ISO 13849-1 (EN 954-1) can be attained with a position switch with solenoid interlocking if the corresponding failsafe evaluation units are selected and correctly installed, e.g. the 3TK28 safety relays or matching units from the ASIsafe, SIMATIC or SINUMERIK product ranges.

Category 4 can be achieved when using an additional position switch.

These switches are approved according to UL 508, UL 50 and UL 746-C.

Solenoid interlocking

The separate actuator operates in a similar way to the coding of a key and protects against manipulation. It transmits the locking force to the protective device and helps to monitor its position.

There are two versions of locking:

Spring-actuated lock (closed-circuit principle)

- In the standard version, the position switch locks by means of spring force and releases by means of electromagnetic force. In the case of voltage failure, it reliably prevents the protective device from opening when machine parts are still moving.
- The switch is equipped with an auxiliary release for emergency situations or setup mode.
- An auxiliary release which can be secured with a lock to prevent misuse is available as a version.



Auxiliary release



Auxiliary release with lock

The 3SE5 3 position switches are also available with an escape release or emergency release.

- Personnel working inside the hazard zone can use the escape release feature to manually release the interlocking without tools from the escape side (hazardous area side) so that they can exit the hazard area. An intentional act (in this case pulling the gray actuator) is required to release the locking mechanism and restore the normal operating state.
- The emergency release enables someone in an emergency situation to manually release the interlock without tools from the access side (outside the hazardous area). Releasing the lock and restoring the normal operating state must require effort which is comparable to repair activity, in this case disassembly of the red actuator and resetting the mechanical lock.



Escape release from the front



Emergency release from the back

Solenoid-locked (open-circuit principle)

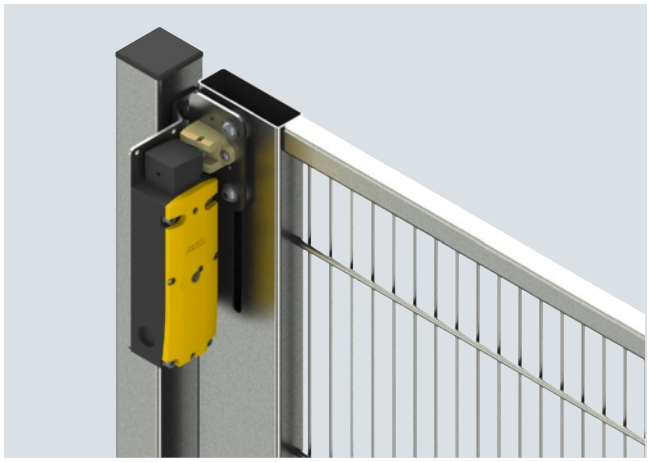
- The second version offers locking by means of electromagnetic force and release by means of spring force. This version has an advantage when it is necessary to quickly access the machine after a power failure occurs, or in the case of very short coasting times.

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Examples of door interlocking



X-Lock door interlocking from Axelent



Door interlocking from Brühl

For the addresses of the door interlock manufacturers
see Chapter 16, "Appendix" ➞ "External Partners".

Technical specifications

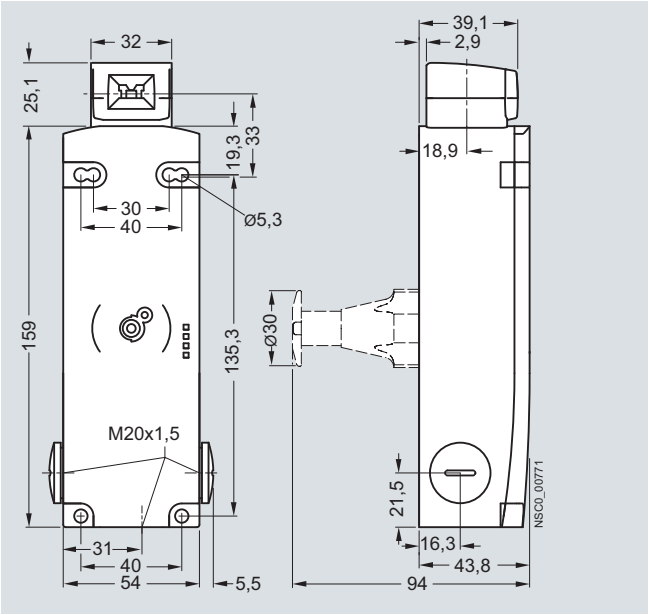
Type		3SE5 322	3SE5 312
General data			
Standards		IEC 60947-5-1, EN 60947-5-1	
Rated insulation voltage U_i	V	250	
Pollution degree acc. to IEC 60664-1		Class 3	
Rated impulse withstand voltage U_{imp}	kV	4	
Rated operational voltage U_e			
• DC	V	24	
• 50/60 Hz AC	V	230	
Conventional thermal current I_{th}	A	6	
Rated operational current I_e			
• With alternating current 50/60 Hz		I_e/AC-15 or B300	
- At 24 V	A	6	
- At 120 V	A	3	
- At 230 V	A	1.5	
• For direct current		I_e/DC-13 or Q300	
- At 24 V	A	3	
- At 125 V	A	0.55	
- At 250 V	A	0.27	
- At 60 V		--	
- At 110 V		--	
- At 220 V		--	
Solenoid			
• Locking force, max.	N	1300	2600
• Locking force acc. to GS-ET 19	N	1000	2000
• Power consumption at U_c	W	3.5	
Short-circuit protection[1)]			
• With DIAZED fuse links, gG operational class	A	6	
• With fuse links, quick		--	
• With miniature circuit breaker, Char. C	A	0.5	
Mechanical endurance		1×10^6 operating cycles	
Electrical endurance			
• With 3RH.1, 3RT contactors in size S00, S0		1×10^6 operating cycles	
• For utilization category AC-15 with interrupting of I_e / AC-15 at 230 V		1×10^5 operating cycles	
• With utilization category DC-12/DC-13		For direct current depending on the loading of the switch	
Switching frequency With 3RH.1, 3RT contactors in size S00, S0		6000 operating cycles/h	
Shock resistance acc. to IEC 60068-2-27		30 *g*/11 ms	

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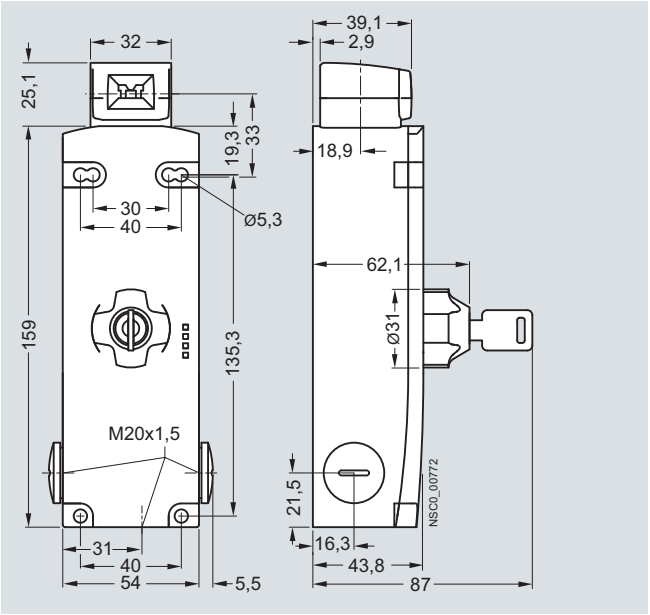
General data

3SE53 configuration

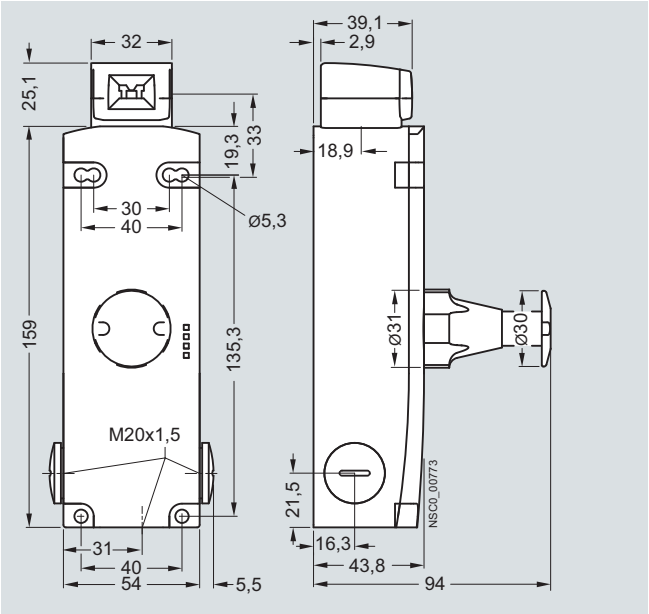
Spring-actuated lock, with auxiliary release
3SE5 322-.SD2., 3SE5 322-.SG2., 3SE5 322-.SJ2.,
3SE5 312-.SD1., 3SE5 312-.SG1., 3SE5 312-.SJ1.,



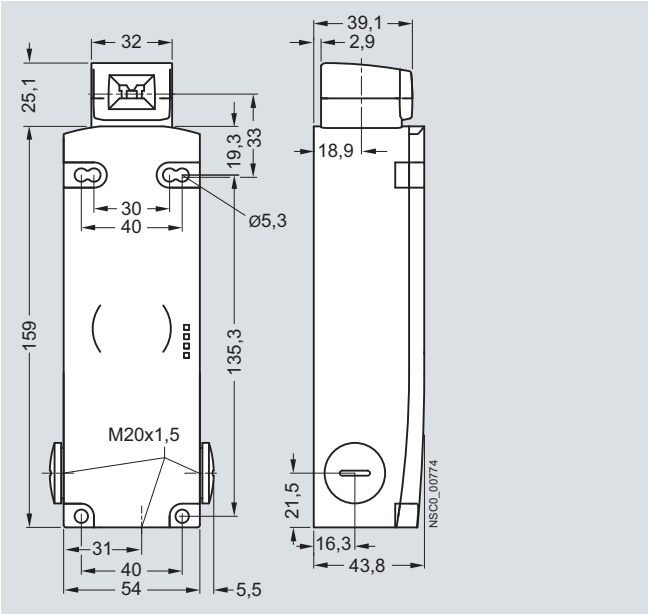
Spring-actuated lock, with auxiliary release with lock
3SE5 322-.SE2.,
3SE5 312-.SE1.



Spring-actuated lock, with escape release
3SE5 322-.SF2.,
3SE5 312-.SF1.



Solenoid lock
3SE5 322-.SB2.,
3SE5 312-.SB1.



Note:

The plastic enclosures have knock-out openings behind the connecting thread; they are delivered therefore without protective caps.

Actuators see page 12/56.

Actuation see page 12/57.

Circuit diagrams

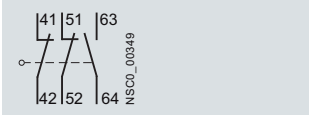
Monitoring the actuator

Slow-action contacts 1 NO + 2 NC



Monitoring the solenoid

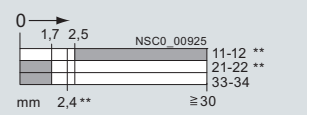
Slow-action contacts 1 NO + 2 NC



Operating travel

Monitoring the actuator

Slow-action contacts 1 NO + 2 NC



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Selection and ordering data

6 slow-action contacts · 5 directions of approach · Degree of protection IP66/IP67 · Cable entry 3 × M20 × 1.5
Locking force 1300 N (1000 N according to GS-ET 19)

Interlock[1]	LEDs	Solenoid, rated operational voltage V	DT	Complete units Position monitoring: Actuators: 1 NO + 2 NC Solenoid: 1 NO + 2 NC Configurator Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
1300 N locking force · Enclosure width 54 mm								
Spring-actuated locks								
 3SE5 312-0SD2.								
• With auxiliary release	--	24 DC	➔ ▶	**3SE5 322-0SD21**		1	1 unit	41K
	--	115 AC	➔ B	**3SE5 322-0SD22**		1	1 unit	41K
	--	230 AC	➔ B	**3SE5 322-0SD23**		1	1 unit	41K
	Yellow/Green	24 DC	➔ A	**3SE5 322-1SD21**		1	1 unit	41K
	Yellow/Green	115 AC	➔ B	**3SE5 322-2SD22**		1	1 unit	41K
	Yellow/Green	230 AC	➔ B	**3SE5 322-3SD23**		1	1 unit	41K
 3SE5 312-0SE2.								
• With auxiliary release with lock	--	24 DC	➔ B	**3SE5 322-0SE21**		1	1 unit	41K
	--	115 AC	➔ B	**3SE5 322-0SE22**		1	1 unit	41K
	--	230 AC	➔ B	**3SE5 322-0SE23**		1	1 unit	41K
	Yellow/Green	24 DC	➔ B	**3SE5 322-1SE21**		1	1 unit	41K
	Yellow/Green	115 AC	➔ B	**3SE5 322-2SE22**		1	1 unit	41K
	Yellow/Green	230 AC	➔ B	**3SE5 322-3SE23**		1	1 unit	41K
 3SE5 312-0SF2.								
• With escape release from the front	--	24 DC	➔ B	**3SE5 322-0SF21**		1	1 unit	41K
	--	115 AC	➔ B	**3SE5 322-0SF22**		1	1 unit	41K
	--	230 AC	➔ B	**3SE5 322-0SF23**		1	1 unit	41K
	Yellow/Green	24 DC	➔ B	**3SE5 322-1SF21**		1	1 unit	41K
	Yellow/Green	115 AC	➔ B	**3SE5 322-2SF22**		1	1 unit	41K
	Yellow/Green	230 AC	➔ B	**3SE5 322-3SF23**		1	1 unit	41K
• With escape release from the front and emergency release from the back	--	24 DC	➔ B	**3SE5 322-0SL21**		1	1 unit	41K
- For ambient temperature up to –40 °C		24 DC	➔ B	**3SE5 322-0SL21-1AJ0**		1	1 unit	41K
 3SE5 312-0SG2.								
• With escape release from the back and auxiliary release from the front	--	24 DC	➔ B	**3SE5 322-0SG21**		1	1 unit	41K
	--	115 AC	➔ B	**3SE5 322-0SG22**		1	1 unit	41K
	--	230 AC	➔ B	**3SE5 322-0SG23**		1	1 unit	41K
	Yellow/Green	24 DC	➔ B	**3SE5 322-1SG21**		1	1 unit	41K
	Yellow/Green	115 AC	➔ B	**3SE5 322-2SG22**		1	1 unit	41K
	Yellow/Green	230 AC	➔ B	**3SE5 322-3SG23**		1	1 unit	41K
• With escape release from the back and auxiliary release with lock from the front	--	24 DC	➔ B	**3SE5 322-0SH21**		1	1 unit	41K
 3SE5 312-0SJ2.								
• With emergency release from the back and auxiliary release from the front	--	24 DC	➔ B	**3SE5 322-0SJ21**		1	1 unit	41K
	--	115 AC	➔ B	**3SE5 322-0SJ22**		1	1 unit	41K
	--	230 AC	➔ B	**3SE5 322-0SJ23**		1	1 unit	41K
	Yellow/Green	24 DC	➔ B	**3SE5 322-1SJ21**		1	1 unit	41K
	Yellow/Green	115 AC	➔ B	**3SE5 322-2SJ22**		1	1 unit	41K
	Yellow/Green	230 AC	➔ B	**3SE5 322-3SJ23**		1	1 unit	41K
Solenoid locks	--	24 DC	➔ ▶	**3SE5 322-0SB21**		1	1 unit	41K
	--	115 AC	➔ B	**3SE5 322-0SB22**		1	1 unit	41K
	--	230 AC	➔ B	**3SE5 322-0SB23**		1	1 unit	41K
	Yellow/Green	24 DC	➔ A	**3SE5 322-1SB21**		1	1 unit	41K
	Yellow/Green	115 AC	➔ B	**3SE5 322-2SB22**		1	1 unit	41K
	Yellow/Green	230 AC	➔ B	**3SE5 322-3SB23**		1	1 unit	41K
 3SE5 312-0SB2.								

For online configurator see www.siemens.com/sirius/configurators .

➔ Positive opening according to IEC 60947-5-1, Appendix K.

[1] Supplied without actuator. Please order separately (see page 12/71).

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SIRIUS 3SE5, 3SE2 Mechanical Safety Switches

With Solenoid Interlocking

3SE5, metal enclosures
With locking force greater than 2000 N

Selection and ordering data

6 slow-action contacts · 5 directions of approach · Degree of protection IP66/IP67 · Cable entry 3 × M20 × 1.5
Locking force 2600 N (2000 N according to GS-ET 19)

	Interlock[1]	LEDs	Solenoid, rated operational voltage V	DT	Complete units Position monitoring: Actuators: 1 NO + 2 NC Solenoid: 1 NO + 2 NC Configurator Order No.	PU (UNIT, SET, M)	PS*	PG
2600 N locking force · Enclosure width 54 mm								
 3SE5 312-0SD1.	**Spring-actuated locks**							
	• With auxiliary release	--	24 DC	⊖ ▶	**3SE5 312-0SD11**	1	1 unit	41K
		--	115 AC	⊖ B	**3SE5 312-0SD12**	1	1 unit	41K
		--	230 AC	⊖ B	**3SE5 312-0SD13**	1	1 unit	41K
		Yellow/Green	24 DC	⊖ B	**3SE5 312-1SD11**	1	1 unit	41K
		Yellow/Green	115 AC	⊖ B	**3SE5 312-2SD12**	1	1 unit	41K
		Yellow/Green	230 AC	⊖ B	**3SE5 312-3SD13**	1	1 unit	41K
 3SE5 312-0SE1.	• With auxiliary release with lock	--	24 DC	⊖ B	**3SE5 312-0SE11**	1	1 unit	41K
		--	115 AC	⊖ B	**3SE5 312-0SE12**	1	1 unit	41K
		--	230 AC	⊖ B	**3SE5 312-0SE13**	1	1 unit	41K
			48 AC/DC	⊖ C	**3SE5 312-0SE14**	1	1 unit	41K
		Yellow/Green	24 DC	⊖ B	**3SE5 312-1SE11**	1	1 unit	41K
		Yellow/Green	115 AC	⊖ B	**3SE5 312-2SE12**	1	1 unit	41K
		Yellow/Green	230 AC	⊖ B	**3SE5 312-3SE13**	1	1 unit	41K
 3SE5 312-0SF1.	• With escape release from the front	--	24 DC	⊖ B	**3SE5 312-0SF11**	1	1 unit	41K
		--	115 AC	⊖ B	**3SE5 312-0SF12**	1	1 unit	41K
		--	230 AC	⊖ B	**3SE5 312-0SF13**	1	1 unit	41K
		Yellow/Green	24 DC	⊖ B	**3SE5 312-1SF11**	1	1 unit	41K
		Yellow/Green	115 AC	⊖ B	**3SE5 312-2SF12**	1	1 unit	41K
		Yellow/Green	230 AC	⊖ B	**3SE5 312-3SF13**	1	1 unit	41K
 3SE5 312-0SG1.	• With escape release from the back and auxiliary release from the front	--	24 DC	⊖ B	**3SE5 312-0SG11**	1	1 unit	41K
		--	115 AC	⊖ B	**3SE5 312-0SG12**	1	1 unit	41K
		--	230 AC	⊖ B	**3SE5 312-0SG13**	1	1 unit	41K
		Yellow/Green	24 DC	⊖ B	**3SE5 312-1SG11**	1	1 unit	41K
		Yellow/Green	115 AC	⊖ B	**3SE5 312-2SG12**	1	1 unit	41K
		Yellow/Green	230 AC	⊖ B	**3SE5 312-3SG13**	1	1 unit	41K
	• With escape release from the back and auxiliary release with lock from the front	--	24 DC	⊖ B	**3SE5 312-0SH11**	1	1 unit	41K
 3SE5 312-0SJ1.	• With emergency release from the back and auxiliary release from the front	--	24 DC	⊖ B	**3SE5 312-0SJ11**	1	1 unit	41K
		--	115 AC	⊖ B	**3SE5 312-0SJ12**	1	1 unit	41K
		--	230 AC	⊖ B	**3SE5 312-0SJ13**	1	1 unit	41K
		Yellow/Green	24 DC	⊖ B	**3SE5 312-1SJ11**	1	1 unit	41K
		Yellow/Green	115 AC	⊖ B	**3SE5 312-2SJ12**	1	1 unit	41K
		Yellow/Green	230 AC	⊖ B	**3SE5 312-3SJ13**	1	1 unit	41K
 3SE5 312-0SB1.	**Solenoid locks**	--	24 DC	⊖ ▶	**3SE5 312-0SB11**	1	1 unit	41K
		--	115 AC	⊖ B	**3SE5 312-0SB12**	1	1 unit	41K
		--	230 AC	⊖ B	**3SE5 312-0SB13**	1	1 unit	41K
		Yellow/Green	24 DC	⊖ B	**3SE5 312-1SB11**	1	1 unit	41K
		Yellow/Green	115 AC	⊖ B	**3SE5 312-2SB12**	1	1 unit	41K
		Yellow/Green	230 AC	⊖ B	**3SE5 312-3SB13**	1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators .

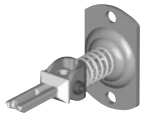
⊖ Positive opening according to IEC 60947-5-1, Appendix K.

1) Supplied without actuator. Please order separately (see page 12/71).

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Actuators for 3SE53							
 3SE5 000-0AV01	Standard actuators, length 75.6 mm	►	**3SE5 000-0AV01**		1	1 unit	41K
 3SE5 000-0AV02	With vertical fixing, length 53 mm	A	**3SE5 000-0AV02**		1	1 unit	41K
 3SE5 000-0AV03	With transverse fixing, length 47 mm	A	**3SE5 000-0AV03**		1	1 unit	41K
 3SE5 000-0AV04	Radius actuators, length 51 mm						
	• Direction of approach from the left	A	**3SE5 000-0AV04**		1	1 unit	41K
	• Direction of approach from the right	A	**3SE5 000-0AV06**		1	1 unit	41K
 3SE5 000-0AV05-1AA6	Universal radius actuators						
	• Length 77 mm	A	**3SE5 000-0AV05**		1	1 unit	41K
	• Length 77 mm, tab rotated 90°	A	**3SE5 000-0AV05-1AA6**		1	1 unit	41K
 3SE5 000-0AV07	Universal radius actuators, heavy-duty						
	• Length 67 mm	A	**3SE5 000-0AV07-1AK2**		1	1 unit	41K
	• Length 77 mm	A	**3SE5 000-0AV07**		1	1 unit	41K
Optional accessories for 3SE5							
 3SE5 000-0AV08-1AA2	**Protective caps** made of black rubber for the actuator head, to protect the actuator openings from contamination	B	**3SE5 000-0AV08-1AA2**		1	1 unit	41K
 3SE5 000-0AV08-1AA3	**Blocking inserts**, high-grade steel, for actuator head, for up to 8 padlocks	C	**3SE5 000-0AV08-1AA3**		1	1 unit	41K
Spare parts for 3SE53							
	Spare keys	B	**3SX5 100-1F**		1	1 unit	41K
Connection for 3SE5							
 3SY3 127	**Connector sockets (4-pole), M12, fixed for M20 × 1.5** For max. 250 V, 4 A With 0.25 mm^2 connecting cable, plastic, degree of protection IP67, ambient temperature –40 to +85 °C	B	**3SY3 127**		1	1 unit	41K
	Connector sockets (5-pole), M12, fixed for M20 × 1.5 For max. 125 V, 4 A With 0.25 mm^2 connecting cable, plastic, degree of protection IP67, ambient temperature –40 to +85 °C	B	**3SY3 128**		1	1 unit	41K
 3SX9 926	**Cable glands M20 × 1.5** Plastic	A	**3SX9 926**		1	1 unit	41K

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Hinge Switches

General data

Overview

3SE5 hinge switches have the same enclosures as the standard switches (modular system).



Hinge switches

Design

Enclosure sizes

The 3SE5 switches are available as complete units in two enclosure sizes:

- Plastic enclosures according to EN 50047, 31 mm wide, IP65, 1 cable entry
- Metal enclosures according to EN 50047, 31 mm wide, IP66/IP67, 1 cable entry
- Plastic and metal enclosures according to EN 50041, 40 mm wide, IP66/IP67, 1 cable entry

Enclosure versions

Various basic versions can be selected for the enclosures:

- Available with two or three-pole contact blocks designed as snap-action contacts
- Metal enclosures for explosion protection (ATEX) (see page 12/85)
- AS-Interface version with integrated ASIsafe electronics for all enclosure designs (see page 12/101)

For a description of the basic switches, see page 12/4.

Operating mechanism

The hinge switches are provided for mounting on hinges. The actuator head is included in the scope of supply. There are two versions:

- Operating mechanism with hollow shaft, inner diameter 8 mm, outer 12 mm
- Operating mechanism with solid shaft, diameter 10 mm

Benefits

The 3SE5 hinge switches differ from the previous series through the following new characteristics:

- All actuators can be turned around the axis in increments of 22.5° (see picture on page 12/5).
- The new three-pole contact block 1 NO + 2 NC is available for all enclosure sizes (see picture on page 12/5).
- The plastic enclosure with a width of 31 mm has simple and fast wiring equipment which makes it possible to save from approx. 20 to 25 % of the time when connecting (see picture on page 12/5).
- The ASIsafe electric component is integrated for the versions with the AS-Interface connection (see page 12/86); an additional adapter is not required.

Application

The hinge switches are used in those areas where the position of swiveling protective devices such as doors or flaps must be monitored. With these switches, the position of the doors and hinge switches is converted into electric signals. The switches allow shutdown and signaling without delay in the event of a small opening angle through the snap-action contacts with an operating angle of 10°.

Devices are available with enclosure versions to suit the particular ambient conditions. Different control tasks can be performed with the best contact blocks suited for the particular purpose. Dimensions and fixing points of the enclosures are in accordance with EN 50041 or EN 50047 standards.

The devices are suitable for use in any climate.

Standards

IEC 60947-5-1 or EN 60947-5-1.

The protective measure of "total insulation" by the molded-plastic enclosure is guaranteed by the use of molded-plastic screw-glands.

Safety position switches

For controls according to IEC 60204-1 or EN 60204-1 the devices can be used as a safety position switch. To secure position switches against changes in their position, keyed techniques must be employed on installation.

Safety circuits

IEC 60947-5-1 and EN 60947-5-1 require positive opening of the NC contacts, i.e. for the purposes of personal safety, the assured opening of NC contacts is expressly stipulated for the electrical equipment of machines in all safety circuits and marked according to IEC 60947-5-1 with the symbol ⊖.

Category 4 according to EN 954-1 can be attained with the 3SE5 hinge switches with ⊖ if the corresponding failsafe evaluation units are selected and correctly installed, e.g. the 3TK28 safety relays or matching devices from the ASIsafe, SIMATIC or SINUMERIK product ranges.

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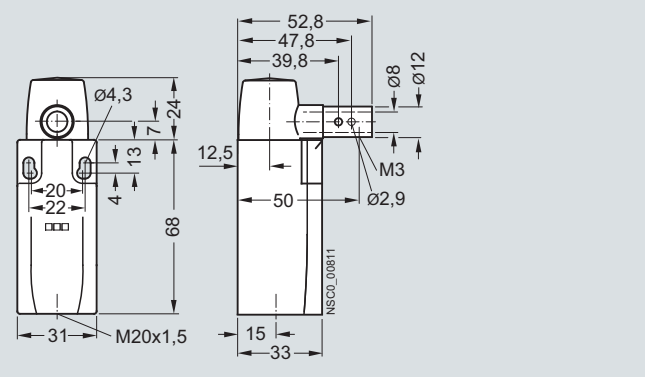
Technical specifications

The technical specifications are the same as for the standard switches (see page 12/7).

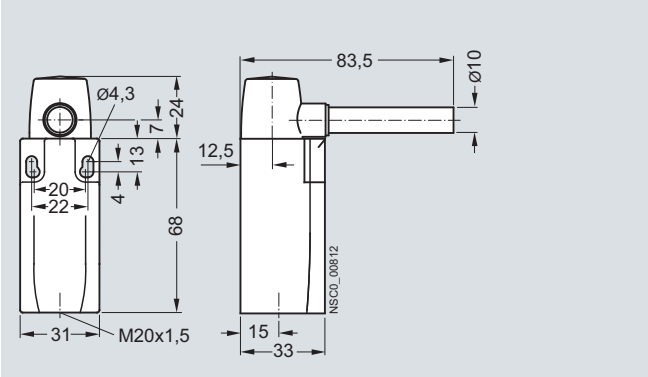
Configuration

Enclosure width 31 mm

With hollow shaft
3SE5 212-0.U21, 3SE5 232-0.U21

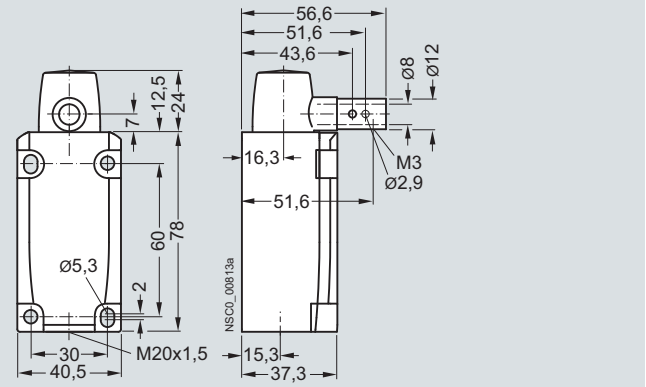


With solid shaft
3SE5 212-0.U22, 3SE5 232-0.U22

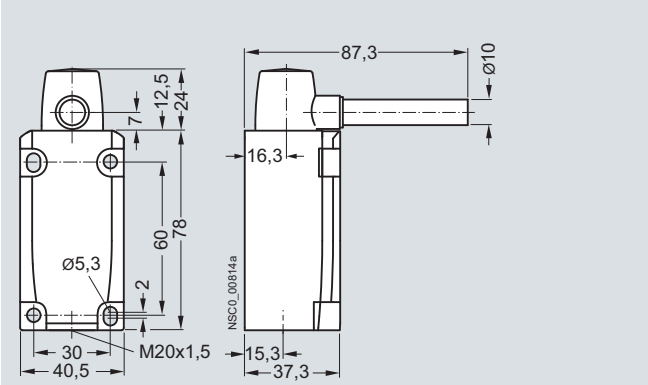


Enclosure width 40 mm

With hollow shaft
3SE5 112-0.U21, 3SE5 132-0.U21



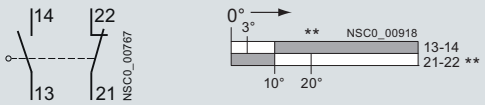
With solid shaft
3SE5 112-0.U22, 3SE5 132-0.U22



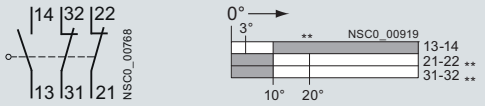
Operating travel of the shaft

Snap-action contacts

1 NO + 1 NC, Ident. No. **11**



1 NO + 2 NC, Ident. No. **12**



Contact closed
Contact open

** Positive opening point

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Hinge Switches

3SE5, plastic enclosures
Enclosure width 31 mm / 40 mm

Selection and ordering data

Complete units

2 or 3 contacts · Degree of protection IP65 (31 mm) or IP67/IP68 (40 mm) · Cable entry M20 × 1.5

	Version	Snap-action contacts	DT	Complete units / Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Plastic enclosures · Enclosure width 31 mm acc. to EN 50047								
 With hollow shaft	**With hollow shaft**							
	Operating angle 10°	1 NO + 1 NC	⊕ B	**3SE5 232-0HU21**		1	1 unit	41K
	Operating angle 10°	1 NO + 2 NC	⊕ B	**3SE5 232-0LU21**		1	1 unit	41K
 With solid shaft	**With solid shaft**							
	Operating angle 10°	1 NO + 1 NC	⊕ B	**3SE5 232-0HU22**		1	1 unit	41K
	Operating angle 10°	1 NO + 2 NC	⊕ B	**3SE5 232-0LU22**		1	1 unit	41K
Plastic enclosures · Enclosure width 40 mm acc. to EN 50041								
 With hollow shaft	**With hollow shaft**							
	Operating angle 10°	1 NO + 2 NC	⊕ B	**3SE5 132-0LU21**		1	1 unit	41K
 With solid shaft	**With solid shaft**							
	Operating angle 10°	1 NO + 2 NC	⊕ B	**3SE5 132-0LU22**		1	1 unit	41K

⚙ For online configurator see www.siemens.com/sirius/configurators .

⊕ Positive opening according to IEC 60947-5-1, Appendix K.

Spare parts

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Actuator heads							
 With hollow shaft	**With hollow shaft**						
	Operating angle 10°	B	**3SE5 000-0AU21**		1	1 unit	41K
 With solid shaft	**With solid shaft**						
	Operating angle 10°	B	**3SE5 000-0AU22**		1	1 unit	41K

Note:

The respective actuators are included in the scope of supply for the complete units.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

Complete units

3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

	Version	Snap-action contacts	DT	Complete units / Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Metal enclosures · Enclosure width 31 mm acc. to EN 50047								
 With hollow shaft	**With hollow shaft** Operating angle 10°	1 NO + 2 NC	⊕ B	**3SE5 212-0LU21**		1	1 unit	41K
 With solid shaft	**With solid shaft** Operating angle 10°	1 NO + 2 NC	⊕ B	**3SE5 212-0LU22**		1	1 unit	41K
Metal enclosures · Enclosure width 40 mm acc. to EN 50041								
 With hollow shaft	**With hollow shaft** Operating angle 10°	1 NO + 2 NC	⊕ B	**3SE5 112-0LU21**		1	1 unit	41K
 With solid shaft	**With solid shaft** Operating angle 10°	1 NO + 2 NC	⊕ B	**3SE5 112-0LU22**		1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators .

⊕ Positive opening according to IEC 60947-5-1, Appendix K.

Spare parts

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Actuator heads							
 With hollow shaft	**With hollow shaft** Operating angle 10°	B	**3SE5 000-0AU21**		1	1 unit	41K
 With solid shaft	**With solid shaft** Operating angle 10°	B	**3SE5 000-0AU22**		1	1 unit	41K

Note:

The respective actuators are included in the scope of supply for the complete units.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Hinge Switches

3SE2, plastic enclosures
With integrated hinge

Overview

The 3SE2 283 hinge switches are particularly suitable for use in doors and hinge switches of machines that must be closed to ensure the safety of operating personnel. Their thin profile and compact design allow them to be directly mounted on a hinged protective cover and the stable frame.

Benefits

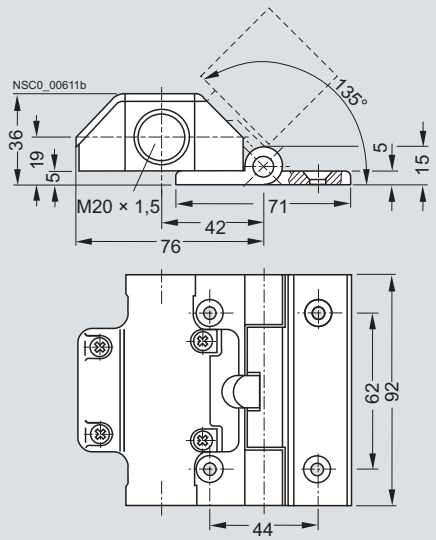
- Easy mounting through use of versions with integrated hinge
- Versions with small operating angle of 4°
- Protection against personal injury provided by positively driven NC contacts according to IEC 60947-5-1
- Simultaneous shutdown and reporting by 1 NO + 2 NC contacts

Technical specifications

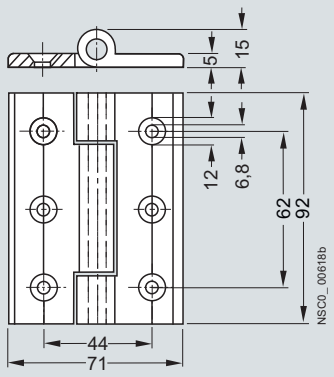
Type		3SE2 283
Rated insulation voltage U_i	V	250
Conventional thermal current I_{th}	A	2.5
Rated operational current I_e		
• At AC-15, 120 V	A	4.2
• At AC-15, 250 V	A	2
• At DC-13, 24 V	A	1
Min. make-break capacity		>5 V / 1 mA
Short-circuit protection		
• gG operational class	A	2
Mechanical endurance		> 1 × 10^6 operating cycles
Switching frequency		1200 operating cycles/hour
Positive opening		2 mm after opening point
Enclosure material		Plastic
Degree of protection		IP65
Ambient temperature	°C	–25 ... +65
Shock resistance		30 *g*/18 ms
Resistance to vibrations		20 *g* /10 ... 200 Hz
Cable entry		2 × (M20 × 1.5)
Screw terminals		0.5 ... 1.5 mm²/AWG 15

Configuration

3SE2 283-.GA.3 hinge switch with hinge



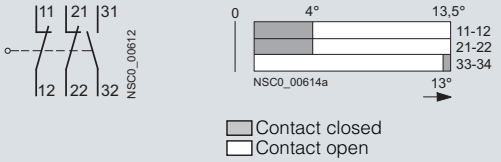
3SX3 225 additional hinge



Operating travel of the hinge

Slow-action contacts

1 NO + 2 NC, Ident. No. **12**



Slow-action contacts

3 NC, Ident. No. **03**



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Selection and ordering data

3 contacts · Degree of protection IP65 · Cable entry 2 × (M20 × 1.5)

Version	Slow-action contacts	DT	Complete units Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Plastic enclosures with integrated hinge							
 3SE2 283							
With integrated hinge (Delivery includes additional hinge and fixing accessories)							
• Aluminum hinge							
- Operating angle 4°	1 NO + 2 NC	➔ A	**3SE2 283-0GA43**		1	1 unit	41K
- Operating angle 4°	3 NC	➔ B	**3SE2 283-6GA43**		1	1 unit	41K
- Operating angle 8°	1 NO + 2 NC	➔ C	**3SE2 283-0GA53**		1	1 unit	41K
- Operating angle 8°	3 NC	➔ C	**3SE2 283-6GA53**		1	1 unit	41K
• High-grade steel hinge							
- Operating angle 4°	1 NO + 2 NC	➔ B	**3SE2 283-0GA44**		1	1 unit	41K
- Operating angle 4°	3 NC	➔ C	**3SE2 283-6GA44**		1	1 unit	41K

➔ Positive opening according to IEC 60947-5-1, Appendix K.

Accessories/spare parts

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories						
 3SX3 225						
Additional hinges (delivered with fixing accessories)						
• Made of aluminum	➔ D	**3SX3 225**		1	1 unit	41K
• Made of high-grade steel	➔ D	**3SX3 231**		1	1 unit	41K

➔ Positively driven actuator

12

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General data

Overview



Position switches and safety switches acc. to ATEX with grounding screw

Position switches in a metal enclosure including the safety switches with a separate actuator and the safety hinge switches are also available in versions for operation in areas with combustible dust.

These switches are not suitable for operation in areas with gas explosion hazard. An exception is the type of protection intrinsic safety i: Use as "simple electrical equipment" is possible (see Certificate No. 2849).

To achieve the maximum possible safety in these areas, the legislators of most countries have drawn up requirements in the form of laws, regulations and standards which these switches comply with to the letter.

These switches comply with Directive 94/9/EC II2D (ATEX 95) of the European Union and are approved for Zone 21/22.
See www.siemens.com/sirius/atex.

They have a grounding screw on the outside of the enclosure but are otherwise identical with the standard enclosures. The connection openings are closed with protective caps upon delivery.

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Selection and ordering data

Modular system

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

Version	Contacts	DT	Modular system / Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Basic switches • Enclosure width 31 mm acc. to EN 50047 (with rounded plunger[1])							
 Rounded plunger	**With M20 × 1.5 connecting thread**						
	Slow-action contacts	1 NO + 1 NC	⊖ B	**3SE5 212-0BC05-1DA0**	1	1 unit	41K
	Snap-action contacts	1 NO + 1 NC	⊖ B	**3SE5 212-0CC05-1DA0**	1	1 unit	41K
	Slow-action contacts	1 NO + 2 NC	⊖ B	**3SE5 212-0KC05-1DA0**	1	1 unit	41K
	Snap-action contacts	1 NO + 2 NC	⊖ B	**3SE5 212-0LC05-1DA0**	1	1 unit	41K
	Slow-action contacts with make-before-break	1 NO + 2 NC	⊖ B	**3SE5 212-0MC05-1DA0**	1	1 unit	41K
	Slow-action contacts	2 NO + 1 NC	⊖ B	**3SE5 212-0PC05-1DA0**	1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators .

⊖ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

1) On enclosure width 31 mm the basic switch is a complete unit with rounded plunger.

Note:

Selection aid see page 12/12.

Version	Diameter mm	DT	Modular system / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Operating mechanisms							
 Plain plunger	**Plain plunger**						
	High-grade steel plungers	10	⊖ A	**3SE5 000-0AB01**	1	1 unit	41K
 Roller plunger	**Roller plungers, type C acc. to EN 50047**						
	Plastic rollers	10	⊖ A	**3SE5 000-0AD03**	1	1 unit	41K
	High-grade steel rollers	10	⊖ B	**3SE5 000-0AD04**	1	1 unit	41K
 With central fixing	**Roller plungers with central fixing**						
	Plastic rollers	10	⊖ B	**3SE5 000-0AD10**	1	1 unit	41K
	High-grade steel rollers	10	⊖ B	**3SE5 000-0AD11**	1	1 unit	41K

⊖ Positively driven actuator

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SIRIUS 3SE5 Mechanical Position Switches for Explosion Protection

3SE5, metal enclosures
Enclosure width 31 mm acc. to EN 50047

	Version	Diameter	DT	Modular system	PU (UNIT, SET, M)	PS*	PG
		mm		Order No. / Price per PU			
Operating mechanisms							
 Roller lever	**Roller levers, type E acc. to EN 50047**						
	Metal lever, plastic roller	13	➔ A	**3SE5 000-0AE10**	1	1 unit	41K
	Metal lever, high-grade steel roller	13	➔ B	**3SE5 000-0AE11**	1	1 unit	41K
	High-grade steel lever, plastic roller	13	➔ B	**3SE5 000-0AE12**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	13	➔ B	**3SE5 000-0AE13**	1	1 unit	41K
 Angular roller lever	**Angular roller levers**						
	Metal lever, plastic roller	13	➔ A	**3SE5 000-0AF10**	1	1 unit	41K
	Metal lever, high-grade steel roller	13	➔ B	**3SE5 000-0AF11**	1	1 unit	41K
	High-grade steel lever, plastic roller	13	➔ A	**3SE5 000-0AF12**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	13	➔ B	**3SE5 000-0AF13**	1	1 unit	41K
 Spring rod	**Spring rod** (for switches with snap-action contacts only)						
	Plastic plunger and high-grade steel spring:						
	• Length 142.5 mm (spring 50 mm, plunger 50 mm)		B	**3SE5 000-0AR01**	1	1 unit	41K
	• Length 76 mm (spring 23.5 mm, plunger 10 mm)		B	**3SE5 000-0AR03**	1	1 unit	41K
	• Length 242.5 mm (spring 150 mm, plunger 50 mm)		B	**3SE5 000-0AR04**	1	1 unit	41K
	High-grade steel plunger and spring:						
	• Length 142.5 mm (spring 50 mm, plunger 50 mm)		B	**3SE5 000-0AR02**	1	1 unit	41K
Twist actuators							
 Twist actuator	**Twist actuators**, plastic (without lever)						
	Switching right and/or left, adjustable		➔ A	**3SE5 000-0AK00**	1	1 unit	41K
	Levers for twist actuators						
	Twist levers, straight, type A acc. to EN 50047						
	Metal lever 21 mm, plastic roller	19	➔ A	**3SE5 000-0AA21**	1	1 unit	41K
 Twist lever	Metal lever 21 mm, high-grade steel roller	19	➔ B	**3SE5 000-0AA22**	1	1 unit	41K
	Metal lever 21 mm, roller with ball bearing	19	➔ B	**3SE5 000-0AA23**	1	1 unit	41K
	Metal lever 21 mm, plastic roller	30	➔ B	**3SE5 000-0AA25**	1	1 unit	41K
	High-grade steel lever 21 mm, plastic roller	19	➔ B	**3SE5 000-0AA31**	1	1 unit	41K
	High-grade steel lever 21 mm, high-grade steel roller	19	➔ B	**3SE5 000-0AA32**	1	1 unit	41K
 Twist lever, adjustable length	**Twist levers 30 mm, straight**[1]						
	Metal lever, plastic roller	19	➔ B	**3SE5 000-0AA24**	1	1 unit	41K
	Metal lever, plastic roller	30	➔ B	**3SE5 000-0AA26**	1	1 unit	41K
	Twist levers, adjustable length, with grid hole						
	Metal lever, plastic roller	19	➔ B	**3SE5 000-0AA60**	1	1 unit	41K
	Metal lever, high-grade steel roller	19	➔ B	**3SE5 000-0AA61**	1	1 unit	41K
	Metal lever, plastic roller	50	➔ B	**3SE5 000-0AA67**	1	1 unit	41K
	Metal lever, rubber roller	50	➔ B	**3SE5 000-0AA68**	1	1 unit	41K
	High-grade steel lever, plastic roller	19	➔ B	**3SE5 000-0AA62**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	➔ B	**3SE5 000-0AA63**	1	1 unit	41K
 Rod actuator	**Twist levers, adjustable length**						
	Metal lever, plastic roller	19	A	**3SE5 000-0AA50**	1	1 unit	41K
	Metal lever, high-grade steel roller	19	B	**3SE5 000-0AA51**	1	1 unit	41K
	Metal lever, plastic roller	30	B	**3SE5 000-0AA55**	1	1 unit	41K
	Metal lever, plastic roller	50	B	**3SE5 000-0AA57**	1	1 unit	41K
	Metal lever, rubber roller	50	B	**3SE5 000-0AA58**	1	1 unit	41K
	High-grade steel lever, plastic roller	19	B	**3SE5 000-0AA52**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	B	**3SE5 000-0AA53**	1	1 unit	41K
	Rod actuators, type D acc. to EN 50041						
	Aluminum rod, length 200 mm	6	B	**3SE5 000-0AA80**	1	1 unit	41K
	Spring rod, length 200 mm	6	B	**3SE5 000-0AA81**	1	1 unit	41K
	Plastic rod, length 200 mm	6	B	**3SE5 000-0AA82**	1	1 unit	41K
	Plastic rod, length 330 mm	6	B	**3SE5 000-0AA83**	1	1 unit	41K

➔ Positively driven actuator, necessary in safety circuits.

[1] Can be clinch mounted (turned through 180°, rear of lever).

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

Complete units

2 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

Version	Snap-action contacts	DT	Complete units / Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Enclosure width 40 mm acc. to EN 50041							
With M20 × 1.5 connecting thread							
Snap-action contacts	1 NO + 1 NC						
 Rounded plunger							
• Rounded plungers, high-grade steel, with 3 mm overtravel		➔ B	**3SE5 112-0CC02-1DA0**		1	1 unit	41K
• Roller plungers, high-grade steel roller, with 3 mm overtravel		➔ B	**3SE5 112-0CD02-1DA0**		1	1 unit	41K
• Roller lever, high-grade steel lever, plastic roller		➔ B	**3SE5 112-0CE03-1DA0**		1	1 unit	41K
 Roller lever							
• Angular roller lever, high-grade steel lever, plastic roller		➔ B	**3SE5 112-0CF03-1DA0**		1	1 unit	41K
• Spring rod, length 142.5 mm Plastic plunger		B	**3SE5 112-0CR01-1DA0**		1	1 unit	41K
• Twist lever, high-grade steel lever, plastic roller		➔ B	**3SE5 112-0CH11-1DA0**		1	1 unit	41K
• Twist lever, adjustable length High-grade steel lever, plastic roller		B	**3SE5 112-0CH52-1DA0**		1	1 unit	41K
• Fork lever, high-grade steel lever, plastic roller		➔ B	**3SE5 112-0CT13-1DA0**		1	1 unit	41K
• Rod actuators, aluminum rod, length 200 mm		B	**3SE5 112-0CH80-1DA0**		1	1 unit	41K
• Rod actuators, plastic rod, length 200 mm		B	**3SE5 112-0CH82-1DA0**		1	1 unit	41K
Enclosure width 56 mm							
With 3 x M20 x 1.5 connecting thread							
Snap-action contacts	1 NO + 1 NC						
 Roller plunger							
• Rounded plunger, high-grade steel, with overtravel		➔ B	**3SE5 122-0CC02-1DA0**		1	1 unit	41K
• Roller plunger, high-grade steel roller		➔ B	**3SE5 122-0CD02-1DA0**		1	1 unit	41K
• Roller lever, high-grade steel lever, plastic roller		➔ B	**3SE5 122-0CE03-1DA0**		1	1 unit	41K
• Angular roller lever, high-grade steel lever, plastic roller		➔ B	**3SE5 122-0CF03-1DA0**		1	1 unit	41K
 Twist lever							
• Spring rod, length 142.5 mm Plastic plunger		B	**3SE5 122-0CR01-1DA0**		1	1 unit	41K
• Twist lever, high-grade steel lever, plastic roller		➔ B	**3SE5 122-0CH11-1DA0**		1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators .

➔ Positive opening according to IEC 60947-5-1, Appendix K

Note:

If the device you require is not available as a complete unit, see "Modular System", page 12/82.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3SE5, metal enclosures
Enclosure width 40 mm acc. to EN 50041 / 56 mm

Modular system

2 or 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

	Version	Contacts	DT	Modular system / Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Basic switches • Enclosure width 40 mm acc. to EN 50041								
 Basic switch	**With M20 × 1.5 connecting thread**							
	Slow-action contacts	1 NO + 1 NC	➔ B	**3SE5 112-0BA00-1DA0**		1	1 unit	41K
	Snap-action contacts	1 NO + 1 NC	➔ B	**3SE5 112-0CA00-1DA0**		1	1 unit	41K
	Slow-action contacts	1 NO + 2 NC	➔ B	**3SE5 112-0KA00-1DA0**		1	1 unit	41K
	Snap-action contacts	1 NO + 2 NC	➔ B	**3SE5 112-0LA00-1DA0**		1	1 unit	41K
	Slow-action contacts with make-before-break	1 NO + 2 NC	➔ B	**3SE5 112-0MA00-1DA0**		1	1 unit	41K
	Slow-action contacts	2 NO + 1 NC	➔ B	**3SE5 112-0PA00-1DA0**		1	1 unit	41K
Basic switches • Enclosure width 56 mm								
 Basic switch	**With 3 x M20 x 1.5 connecting thread**							
	Slow-action contacts	1 NO + 1 NC	➔ B	**3SE5 122-0BA00-1DA0**		1	1 unit	41K
	Snap-action contacts	1 NO + 1 NC	➔ B	**3SE5 122-0CA00-1DA0**		1	1 unit	41K
	Slow-action contacts	1 NO + 2 NC	➔ B	**3SE5 122-0KA00-1DA0**		1	1 unit	41K
	Snap-action contacts	1 NO + 2 NC	➔ B	**3SE5 122-0LA00-1DA0**		1	1 unit	41K
	Slow-action contacts with make-before-break	1 NO + 2 NC	➔ B	**3SE5 122-0MA00-1DA0**		1	1 unit	41K
	Slow-action contacts	2 NO + 1 NC	➔ B	**3SE5 122-0PA00-1DA0**		1	1 unit	41K
Basic switches • Enclosure width 56 mm, XL								
 Basic switch	**With 3 x M20 x 1.5 connecting thread**							
	Slow-action contacts	2 × (1 NO + 1 NC)	➔ B	**3SE5 162-0BA00-1DA0**		1	1 unit	41K
	Snap-action contacts	2 × (1 NO + 1 NC)	➔ B	**3SE5 162-0CA00-1DA0**		1	1 unit	41K
	Slow-action contacts with make-before-break	2 × (1 NO + 2 NC)	➔ B	**3SE5 162-0DA00-1DA0**		1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators .

➔ Positive opening according to IEC 60947-5-1, Appendix K, or positively driven actuator, necessary in safety circuits.

Note:

Selection aid see page 12/12.

	Version	Diameter mm	DT	Modular system / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Operating mechanisms								
 Rounded plunger	**Plain plungers**							
	High-grade steel plunger		➔ A	**3SE5 000-0AB01**		1	1 unit	41K
	Rounded plungers, type B, acc. to EN 50041							
	High-grade steel plunger, with 3 mm overtravel		➔ B	**3SE5 000-0AC02**		1	1 unit	41K
 Roller plunger	**Roller plungers, type C acc. to EN 50041**							
	High-grade steel roller, with 3 mm overtravel	13	➔ B	**3SE5 000-0AD02**		1	1 unit	41K
 Roller lever	**Roller levers**							
	Metal lever, plastic roller	22	➔ A	**3SE5 000-0AE01**		1	1 unit	41K
	Metal lever, high-grade steel roller	22	➔ B	**3SE5 000-0AE02**		1	1 unit	41K
	High-grade steel lever, plastic roller	22	➔ B	**3SE5 000-0AE03**		1	1 unit	41K
	High-grade steel lever, high-grade steel roller	22	➔ B	**3SE5 000-0AE04**		1	1 unit	41K
 Angular roller lever	**Angular roller levers**							
	Metal lever, plastic roller	22	➔ A	**3SE5 000-0AF01**		1	1 unit	41K
	Metal lever, high-grade steel roller	22	➔ B	**3SE5 000-0AF02**		1	1 unit	41K
	High-grade steel lever, plastic roller	22	➔ B	**3SE5 000-0AF03**		1	1 unit	41K
	High-grade steel lever, high-grade steel roller	22	➔ B	**3SE5 000-0AF04**		1	1 unit	41K

➔ Positively driven actuator, necessary in safety circuits.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 3SE5 Mechanical Position Switches for Explosion Protection

3SE5, metal enclosures
Enclosure width 40 mm acc. to EN 50041 / 56 mm

	Version	Diameter	DT	Modular system	PU (UNIT, SET, M)	PS*	PG
		mm		Order No. Price per PU			
Operating mechanisms							
 Spring rod	**Spring rods** (for switches with snap-action contacts only)						
	Plastic plunger and high-grade steel spring:						
	• Length 142.5 mm (spring 50 mm, plunger 50 mm)		B	**3SE5 000-0AR01**	1	1 unit	41K
	• Length 76 mm (spring 23.5 mm, plunger 10 mm)		B	**3SE5 000-0AR03**	1	1 unit	41K
	• Length 242.5 mm (spring 150 mm, plunger 50 mm)		B	**3SE5 000-0AR04**	1	1 unit	41K
	High-grade steel plunger and spring:						
	• Length 142.5 mm (spring 50 mm, plunger 50 mm)		B	**3SE5 000-0AR02**	1	1 unit	41K
Twist actuators							
 Twist actuator	**Twist actuators**, metal (without lever)						
	• For twist levers and rod actuators, switching right and/or left, adjustable						
	- For enclosure width 40 and 56 mm		➔ A	**3SE5 000-0AH00**	1	1 unit	41K
	• For fork levers, latching		➔ B	**3SE5 000-0AT10**	1	1 unit	41K
	Levers for twist actuators						
 Twist lever	**Twist levers 27 mm, offset, type A, acc. to EN 50041**						
	Metal lever, plastic roller	19	➔ A	**3SE5 000-0AA01**	1	1 unit	41K
	Metal lever, high-grade steel roller	19	➔ A	**3SE5 000-0AA02**	1	1 unit	41K
	Metal lever, roller with ball bearing	19	➔ B	**3SE5 000-0AA03**	1	1 unit	41K
	Metal lever, 2 plastic rollers	19	➔ B	**3SE5 000-0AA04**	1	1 unit	41K
	Metal lever, plastic roller	30	➔ B	**3SE5 000-0AA05**	1	1 unit	41K
	Metal lever, rubber roller	50	➔ B	**3SE5 000-0AA08**	1	1 unit	41K
	High-grade steel lever, plastic roller	19	➔ B	**3SE5 000-0AA11**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	➔ B	**3SE5 000-0AA12**	1	1 unit	41K
 Twist lever, adjustable length	**Twist levers 35 mm, offset**						
	Metal lever, plastic roller	19	➔ B	**3SE5 000-0AA15**	1	1 unit	41K
	Twist levers 30 mm, straight[1]						
	Metal lever, plastic roller	19	➔ B	**3SE5 000-0AA24**	1	1 unit	41K
	Metal lever, plastic roller	30	➔ B	**3SE5 000-0AA26**	1	1 unit	41K
	Twist levers, adjustable length, with grid hole						
	Metal lever, plastic roller	19	➔ B	**3SE5 000-0AA60**	1	1 unit	41K
	Metal lever, high-grade steel roller	19	➔ B	**3SE5 000-0AA61**	1	1 unit	41K
	Metal lever, rubber roller	50	➔ B	**3SE5 000-0AA68**	1	1 unit	41K
	High-grade steel lever, plastic roller	19	➔ B	**3SE5 000-0AA62**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	➔ B	**3SE5 000-0AA63**	1	1 unit	41K
 Fork lever	**Twist levers, adjustable length**						
	Metal lever, plastic roller	19	A	**3SE5 000-0AA50**	1	1 unit	41K
	Metal lever, high-grade steel roller	19	B	**3SE5 000-0AA51**	1	1 unit	41K
	Metal lever, plastic roller	30	B	**3SE5 000-0AA55**	1	1 unit	41K
	Metal lever, rubber roller	50	B	**3SE5 000-0AA58**	1	1 unit	41K
	High-grade steel lever, plastic roller	19	B	**3SE5 000-0AA52**	1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	B	**3SE5 000-0AA53**	1	1 unit	41K
 Rod actuator	**Fork levers** (for switches with snap-action contacts only)						
	2 metal levers, 2 plastic rollers	19	➔ B	**3SE5 000-0AT01**	1	1 unit	41K
	2 metal levers, 2 high-grade steel rollers	19	➔ B	**3SE5 000-0AT02**	1	1 unit	41K
	2 high-grade steel levers, 2 plastic rollers	19	➔ B	**3SE5 000-0AT03**	1	1 unit	41K
	2 high-grade steel levers, 2 high-grade steel rollers	19	➔ B	**3SE5 000-0AT04**	1	1 unit	41K
	Rod actuators, type D, acc. to EN 50041						
	Aluminum rod, length 200 mm	6	B	**3SE5 000-0AA80**	1	1 unit	41K
	Spring rod, length 200 mm	6	B	**3SE5 000-0AA81**	1	1 unit	41K
	Plastic rod, length 200 mm	6	B	**3SE5 000-0AA82**	1	1 unit	41K

➔ Positively driven actuator, necessary in safety circuits.

[1] Can be clinch mounted (turned through 180°, rear of lever).

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SIRIUS 3SE5 Mechanical Safety Switches for Explosion Protection

With Separate Actuator

3SE5, metal enclosures
Enclosure width 31 mm / 40 mm / 56 mm

Overview

Complete units

5 directions of approach · 3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

	Version[1]	Contacts	DT	Complete units / Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Enclosure width 31 mm acc. to EN 50047								
 With separate actuator	**With M20 × 1.5 connecting thread** Slow-action contacts	1 NO + 2 NC	⊖ B	**3SE5 212-0QV40-1DA0**		1	1 unit	41K
Enclosure width 40 mm acc. to EN 50041								
 With separate actuator	**With M20 × 1.5 connecting thread** Slow-action contacts	1 NO + 2 NC	⊖ B	**3SE5 112-0QV10-1DA0**		1	1 unit	41K
Enclosure width 56 mm								
 With separate actuator	**With 3 x M20 x 1.5 connecting thread** Slow-action contacts	1 NO + 2 NC	⊖ B	**3SE5 122-0QV10-1DA0**		1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators .

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

[1] Supplied without actuator. Please order separately (see page 12/63).

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Complete units

3 contacts · Degree of protection IP66/IP67 · Cable entry M20 × 1.5

	Version	Snap-action contacts	DT	Complete units / Configurator / Order No.	PU (UNIT, SET, M)	PS*	PG
Enclosure width 31 mm acc. to EN 50047							
 With hollow shaft	**With hollow shaft**, Ø 8/12 mm Operating angle 10°	1 NO + 2 NC	➔ B	**3SE5 212-0LU21-1DA0**	1	1 unit	41K
 With solid shaft	**With solid shaft**, Ø = 10 mm Operating angle 10°	1 NO + 2 NC	➔ B	**3SE5 212-0LU22-1DA0**	1	1 unit	41K
Enclosure width 40 mm acc. to EN 50041							
 With hollow shaft	**With hollow shaft**, Ø 8/12 mm Operating angle 10°	1 NO + 2 NC	➔ B	**3SE5 112-0LU21-1DA0**	1	1 unit	41K
 With solid shaft	**With solid shaft**, Ø = 10 mm Operating angle 10°	1 NO + 2 NC	➔ B	**3SE5 112-0LU22-1DA0**	1	1 unit	41K

⚙ For online configurator see www.siemens.com/sirius/configurators .

➔ Positive opening according to IEC 60947-5-1, Appendix K, or positive drive for use in safety circuits.

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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General data

Overview

The 3SF1 position switches with safety-oriented communication can be directly connected using the AS-Interface bus system. The safety functions no longer have to be conventionally wired up.

With the 3SF1 position switches the ASIsafe electronics are integrated in the switch enclosure.



Examples of selection options in the modular system

Modular system

The position switches of the 3SF1 1.4 and 3SF1 2.4 series are constructed from a modular system comprising different versions of the basic switch and an actuator which must be ordered separately. Thanks to the modular design of the switch the end user can select the right solution for his application from numerous versions and install it himself in a very short time.

Design

The 3SF1 switches are available in four different enclosure sizes:

- Plastic and metal enclosures according to EN 50047, 31 mm wide, with M12 connector socket
- Metal enclosures according to EN 50041, 40 mm wide, with M12 plug
- Plastic enclosures, 50 mm wide, with M12 plug and M12 socket
- Metal enclosures, 56 mm wide, with M12 plug and M12 socket

Display

The switches have a status display with three LEDs:

- LED 1 (yellow): F-IN1
- LED 2 (yellow): F-IN2
- LED 3 (green/red): AS-i/FAULT

Connection

Connection to the AS-Interface is by means of a 4-pole M12 connector socket (plastic version) connected to the yellow AS-Interface bus cable.

The wide enclosures (50 or 56 mm) also have an M12 socket for connecting a second position switch. Category 4 according to EN 954-1 is thus achieved.

Benefits

The new generation of 3SF1 position switches offers:

- ASIsafe Electronics integrated in the enclosure, with low power consumption < 60 mA
- An extensive range of actuators
- Status display with three LEDs

Application

With the standard position switches, mechanical positions of moved machine parts are converted into electrical signals. Through their modular and uniform design and large number of versions, the devices can meet practically all requirements in industry.

Devices are available with enclosure versions to suit the particular ambient conditions. Different control tasks can be performed with the best contact blocks suited for the particular purpose. And many different actuator versions are available to match the mechanical configuration of the moved machined parts. Dimensions, fixing points and characteristics are largely in accordance with the EN 50041 or EN 50047 standards.

The devices are suitable for use in any climate.

Standards

The switches comply with the standards IEC 60947-1 (Low-Voltage Switchgear and Controlgear, General) and IEC 60947-5-1 (Electromechanical Control Circuit Devices).

The mechanical design of the switch corresponds to the requirements of the failsafe principle according to EN 1088.

Approvals

AS-Interface according to EN 50295 and IEC 62026-2.

With a 3SF1 position switch it is possible to achieve category 2 according to ISO 13849-1 (EN 954-1) or SIL 1 according to IEC 61508.

Categories 3 or 4 according to ISO 13849-1 (EN 954-1) or SIL 2 or 3 according to IEC 61508 can be achieved by using a second 3SE5 position switch.

The 3SF1 position switches are approved according to UL 508, UL 50 and UL 746-C.

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Technical specifications

Type		3SF1 1.., 3SF1 2..
General data		
Standards		IEC 60947-5-1, EN 60947-5-1, EN 1088
According to AS-Interface specification		
• I/O configuration / ID configuration		7/B
• ID1 code/ID2 code (Hex)		F/F
• Power consumption, overall	mA	≤ 60
Inputs		
• Low signal range		Contact open
• High signal range		Contact closed, I_{in} dynamic (I_{peak} ≥ 5 mA)
Status display		Green/red dual LED
Rated impulse withstand voltage U_{imp}	kV	0.6
EMC resistance		
• IEC 60000-1-2	kV	4
• IEC 60000-4-3	V/m	10
• IEC 60000-4-4 (A/B)	kV	1 / 2
Mechanical endurance		
• Basic switches		15 ×10^6 operating cycles
• With separate actuator, 3SF1 ...-..V..		1 ×10^6 operating cycles
PFH value		
Probability of failure upon request of the safety function, with 1 actuation per hour and B10 = 5 × 10^6		
• Basic switches	1/h	4 ×10^{-9}
• With separate actuator, 3SF1 ...-..V..	1/h	2 ×10^{-9}
• Hinge switch, 3SF1 ...-..U..	1/h	2 ×10^{-9}
Shock resistance acc. to IEC 60068-2-27		30 *g*/11 ms

Type		3SF1 234	3SF1 134	3SF1 244	3SF1 214	3SF1 114	3SF1 124
Enclosure							
Enclosure							
• Material		Ultramid A3X2G7			Zinc diecasting GD Zn Al4 Cu1		
• Width	mm	31	40	50	31	40	56
• Dimensions acc. to EN		EN 50047	EN 50041	--	EN 50047	EN 50041	--
Degree of protection acc. to IEC 60529		IP65	IP66/IP67[1)]				
Ambient temperature							
• During operation	°C	–25 ... +60					
• Storage, transport	°C	–40 ... +80					
Mounting position		Any					

[1)] For twist actuators with spring rod and rod actuators: IP65/IP67.

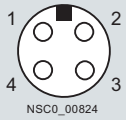
Connector assignment

M12 connector socket, 4-pole



1 ASi +
2 Not assigned
3 ASi –
4 Not assigned

M12 socket, 4-pole



1 Channel 2
2 Not assigned
3 Channel 2
4 Not assigned

LEDs

Status display (operating state)

LEDs	No voltage on AS-Interface chip	Communication OK	Communication failed	Slave has address "0"
ASi/Fault (GN/RD)				

Safe inputs

LEDs	Not actuated	Actuated
F-IN1 (YE)		
F-IN2 (YE)		

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Plastic enclosures
Enclosure width 31 mm acc. to EN 50047 / 50 mm

Selection and ordering data

Modular system

For the ASIsafe version of the position switch, the basic switch and actuator must be ordered separately.

1 or 2 contacts · 3 LEDs · Degree of protection IP65 (31 mm) or IP66/IP67 (50 mm) · M12 connector socket

Version	Contacts	LEDs	DT	**Modular system**	PU (UNIT, SET, M)	PS*	PG
				Configurator			
				Order No. Price per PU			
Basic switches (with rounded plunger[1]) · Enclosure width 31 mm acc. to EN 50047							
 ASIsafe basic switch							
With teflon plunger							
With M12 connector socket, 4-pole, channel 1 on NC contact, channel 2 on NC contact							
Slow-action contacts	2 NC	24 V DC	➔ B	**3SF1 234-1KC05-1BA1**	1	1 unit	42A
Snap-action contacts	2 NC	24 V DC	➔ B	**3SF1 234-1LC05-1BA1**	1	1 unit	42A
Basic switches (with rounded plunger[1]) · Enclosure width 50 mm							
 ASIsafe basic switch							
With teflon plunger							
With M12 connector socket, 4-pole, channel 1 on NC contact, channel 2 on M12 socket, right							
Slow-action contacts	1 NC	24 V DC	➔ B	**3SF1 244-1KC05-1BA2**	1	1 unit	42A
Snap-action contacts	1 NC	24 V DC	➔ B	**3SF1 244-1LC05-1BA2**	1	1 unit	42A

⚙ For online configurator see www.siemens.com/sirius/configurators .

➔ Positive opening according to IEC 60947-5-1, Appendix K, or positive drive for use in safety circuits.

1) For enclosures with widths of 31 mm and 50 mm, the basic switch is a complete unit with rounded plungers.

Note:

Selection aid see page 12/12.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Plastic enclosures
Enclosure width 31 mm acc. to EN 50047 / 50 mm

	Version	Roller diameter	DT	Modular system Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		mm						
Operating mechanisms								
 Roller plunger	**Roller plungers, type C acc. to EN 50047**							
	Plastic roller	10	⊕ A	**3SE5 000-0AD03**		1	1 unit	41K
	High-grade steel roller	10	⊕ B	**3SE5 000-0AD04**		1	1 unit	41K
 With central fixing	**Roller plungers with central fixing**							
	Plastic roller	10	⊕ B	**3SE5 000-0AD10**		1	1 unit	41K
	High-grade steel roller	10	⊕ B	**3SE5 000-0AD11**		1	1 unit	41K
 Roller lever	**Roller levers, type E acc. to EN 50047**							
	Metal lever, plastic roller	13	⊕ A	**3SE5 000-0AE10**		1	1 unit	41K
	Metal lever, high-grade steel roller	13	⊕ B	**3SE5 000-0AE11**		1	1 unit	41K
	High-grade steel lever, plastic roller	13	⊕ B	**3SE5 000-0AE12**		1	1 unit	41K
	High-grade steel lever, high-grade steel roller	13	⊕ B	**3SE5 000-0AE13**		1	1 unit	41K
 Angular roller lever	**Angular roller levers**							
	Metal lever, plastic roller	13	⊕ A	**3SE5 000-0AF10**		1	1 unit	41K
	Metal lever, high-grade steel roller	13	⊕ B	**3SE5 000-0AF11**		1	1 unit	41K
	High-grade steel lever, plastic roller	13	⊕ A	**3SE5 000-0AF12**		1	1 unit	41K
	High-grade steel lever, high-grade steel roller	13	⊕ B	**3SE5 000-0AF13**		1	1 unit	41K
Twist actuators with lever								
 Twist actuator	**Twist actuators**, plastic (without lever)							
	Switching right or left, adjustable		⊕ A	**3SE5 000-0AK00**		1	1 unit	41K
	Levers for twist actuators							
 Twist lever	**Twist levers, type A acc. to EN 50047**							
	Metal lever, plastic roller	19	⊕ A	**3SE5 000-0AA21**		1	1 unit	41K
	Metal lever, high-grade steel roller	19	⊕ B	**3SE5 000-0AA22**		1	1 unit	41K
	Metal lever, roller with ball bearing	19	⊕ B	**3SE5 000-0AA23**		1	1 unit	41K
	Metal lever, plastic roller	30	⊕ B	**3SE5 000-0AA25**		1	1 unit	41K
	High-grade steel lever, plastic roller	19	⊕ B	**3SE5 000-0AA31**		1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	⊕ B	**3SE5 000-0AA32**		1	1 unit	41K
 Twist lever, adjustable length	**Twist levers 30 mm, straight**[1]							
	Metal lever, plastic roller	19	⊕ B	**3SE5 000-0AA24**		1	1 unit	41K
	Metal lever, plastic roller	30	⊕ B	**3SE5 000-0AA26**		1	1 unit	41K
	Twist levers, adjustable length, with grid hole							
	Metal lever, plastic roller	19	⊕ B	**3SE5 000-0AA60**		1	1 unit	41K
	Metal lever, high-grade steel roller	19	⊕ B	**3SE5 000-0AA61**		1	1 unit	41K
	Metal lever, plastic roller	50	⊕ B	**3SE5 000-0AA67**		1	1 unit	41K
	Metal lever, rubber roller	50	⊕ B	**3SE5 000-0AA68**		1	1 unit	41K
	High-grade steel lever, plastic roller	19	⊕ B	**3SE5 000-0AA62**		1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	⊕ B	**3SE5 000-0AA63**		1	1 unit	41K

⊕ Positive drive, for use in safety circuits.

1) Can be clinch mounted (turned through 180°, rear of lever).

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Metal enclosures
Enclosure width 31 mm acc. to EN 50047

Selection and ordering data

Modular system

For the ASIsafe version of the position switch, the basic switch and actuator must be ordered separately.

2 contacts · 3 LEDs · Degree of protection IP66/IP67 · M12 connector socket

Version	Contacts	LEDs	DT	Modular system / Configurator / Order No.	PU (UNIT, SET, M)	PS*	PG
Basic switches (with rounded plunger[1]) · Enclosure width 31 mm acc. to EN 50047							
With plunger							
With M12 connector socket, 4-pole, channel 1 on NC contact, channel 2 on NC contact							
Slow-action contacts	2 NC	24 V DC	➔ B	**3SF1 214-1KC05-1BA1**	1	1 unit	42A
Snap-action contacts	2 NC	24 V DC	➔ B	**3SF1 214-1LC05-1BA1**	1	1 unit	42A



ASIsafe basic switch

⚙ For online configurator see www.siemens.com/sirius/configurators .

➔ Positive opening according to IEC 60947-5-1, Appendix K, or positive drive for use in safety circuits.

1) For enclosures with widths of 31 mm, the basic switch is a complete unit with rounded plungers.

Note:

Selection aid see page 12/12.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Metal enclosures
Enclosure width 31 mm acc. to EN 50047

	Version	Roller diameter	DT	Modular system ◇ Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		mm						
Operating mechanisms								
 Plain plunger	**Plain plunger**							
	High-grade steel plunger	10	➔ A	**3SE5 000-0AB01**		1	1 unit	41K
 Roller plunger	**Roller plungers, type C acc. to EN 50047**							
	Plastic roller	10	➔ A	**3SE5 000-0AD03**		1	1 unit	41K
	High-grade steel roller	10	➔ B	**3SE5 000-0AD04**		1	1 unit	41K
 With central fixing	**Roller plungers with central fixing**							
	Plastic roller	10	➔ B	**3SE5 000-0AD10**		1	1 unit	41K
	High-grade steel roller	10	➔ B	**3SE5 000-0AD11**		1	1 unit	41K
 Roller lever	**Roller levers, type E acc. to EN 50047**							
	Metal lever, plastic roller	13	➔ A	**3SE5 000-0AE10**		1	1 unit	41K
	Metal lever, high-grade steel roller	13	➔ B	**3SE5 000-0AE11**		1	1 unit	41K
	High-grade steel lever, plastic roller	13	➔ B	**3SE5 000-0AE12**		1	1 unit	41K
	High-grade steel lever, high-grade steel roller	13	➔ B	**3SE5 000-0AE13**		1	1 unit	41K
 Angular roller lever	**Angular roller levers**							
	Metal lever, plastic roller	13	➔ A	**3SE5 000-0AF10**		1	1 unit	41K
	Metal lever, high-grade steel roller	13	➔ B	**3SE5 000-0AF11**		1	1 unit	41K
	High-grade steel lever, plastic roller	13	➔ A	**3SE5 000-0AF12**		1	1 unit	41K
	High-grade steel lever, high-grade steel roller	13	➔ B	**3SE5 000-0AF13**		1	1 unit	41K
Twist actuators with lever								
 Twist actuator	**Twist actuators**, plastic (without lever)							
	Switching right or left, adjustable		➔ A	**3SE5 000-0AK00**		1	1 unit	41K
	Levers for twist actuators							
 Twist lever	**Twist levers, type A acc. to EN 50047**							
	Metal lever, plastic roller	19	➔ A	**3SE5 000-0AA21**		1	1 unit	41K
	Metal lever, high-grade steel roller	19	➔ B	**3SE5 000-0AA22**		1	1 unit	41K
	Metal lever, roller with ball bearing	19	➔ B	**3SE5 000-0AA23**		1	1 unit	41K
	Metal lever, plastic roller	30	➔ B	**3SE5 000-0AA25**		1	1 unit	41K
	High-grade steel lever, plastic roller	19	➔ B	**3SE5 000-0AA31**		1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	➔ B	**3SE5 000-0AA32**		1	1 unit	41K
 Twist lever, adjustable length	**Twist levers 30 mm, straight**[1]							
	Metal lever, plastic roller	19	➔ B	**3SE5 000-0AA24**		1	1 unit	41K
	Metal lever, plastic roller	30	➔ B	**3SE5 000-0AA26**		1	1 unit	41K
	Twist levers, adjustable length, with grid hole							
	Metal lever, plastic roller	19	➔ B	**3SE5 000-0AA60**		1	1 unit	41K
	Metal lever, high-grade steel roller	19	➔ B	**3SE5 000-0AA61**		1	1 unit	41K
	Metal lever, plastic roller	50	➔ B	**3SE5 000-0AA67**		1	1 unit	41K
	Metal lever, rubber roller	50	➔ B	**3SE5 000-0AA68**		1	1 unit	41K
	High-grade steel lever, plastic roller	19	➔ B	**3SE5 000-0AA62**		1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	➔ B	**3SE5 000-0AA63**		1	1 unit	41K

➔ Positive drive, for use in safety circuits.

1) Can be clinch mounted (turned through 180°, rear of lever).

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Metal enclosures
Enclosure width 40 mm acc. to EN 50041 / 56 mm

Selection and ordering data

Modular system

For the ASIsafe version of the position switch, the basic switch and actuator must be ordered separately.

1 or 2 contacts · 3 LEDs · Degree of protection IP66/IP67 · M12 connector socket

Version	Contacts	LEDs	DT	Modular system / Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Basic switches · Enclosure width 40 mm acc. to EN 50041								
 ASIsafe basic switch								
With M12 connector socket, 4-pole, channel 1 on NC contact, channel 2 on NC contact								
Slow-action contacts	2 NC	24 V DC	➔ B	**3SF1 114-1KA00-1BA1**		1	1 unit	42A
Snap-action contacts	2 NC	24 V DC	➔ B	**3SF1 114-1LA00-1BA1**		1	1 unit	42A
Basic switches · Enclosure width 56 mm								
 ASIsafe basic switch								
With M12 connector socket, 4-pole, channel 1 on NC contact, channel 2 on M12 socket, right								
Slow-action contacts	1 NC	24 V DC	➔ B	**3SF1 124-1KA00-1BA2**		1	1 unit	42A
Snap-action contacts	1 NC	24 V DC	➔ B	**3SF1 124-1LA00-1BA2**		1	1 unit	42A

⚙ For online configurator see www.siemens.com/sirius/configurators .

➔ Positive opening according to IEC 60947-5-1, Appendix K, or positive drive for use in safety circuits.

Note:

Selection aid see page 12/12.

Version	Roller diameter mm	DT	Modular system / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Operating mechanisms							
Plain plungers							
 Plain plunger							
High-grade steel plunger	10	➔ A	**3SE5 000-0AB01**		1	1 unit	41K
Rounded plungers, type B, acc. to EN 50041							
 Rounded plunger							
High-grade steel plunger, with 3 mm overtravel	12	➔ B	**3SE5 000-0AC02**		1	1 unit	41K
Roller plungers, type C acc. to EN 50041							
 Roller plunger							
High-grade steel roller, with 3 mm overtravel	13	➔ B	**3SE5 000-0AD02**		1	1 unit	41K

➔ Positive drive, for use in safety circuits.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Metal enclosures
Enclosure width 40 mm acc. to EN 50041 / 56 mm

	Version	Roller diameter	DT	Modular system ◇ Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		mm						
Operating mechanisms								
 Roller lever	**Roller levers**							
	Metal lever, plastic roller	22	⊖ A	**3SE5 000-0AE01**		1	1 unit	41K
	Metal lever, high-grade steel roller	22	⊖ B	**3SE5 000-0AE02**		1	1 unit	41K
	High-grade steel lever, plastic roller	22	⊖ B	**3SE5 000-0AE03**		1	1 unit	41K
	High-grade steel lever, high-grade steel roller	22	⊖ B	**3SE5 000-0AE04**		1	1 unit	41K
 Angular roller lever	**Angular roller levers**							
	Metal lever, plastic roller	22	⊖ A	**3SE5 000-0AF01**		1	1 unit	41K
	Metal lever, high-grade steel roller	22	⊖ B	**3SE5 000-0AF02**		1	1 unit	41K
	High-grade steel lever, plastic roller	22	⊖ B	**3SE5 000-0AF03**		1	1 unit	41K
	High-grade steel lever, high-grade steel roller	22	⊖ B	**3SE5 000-0AF04**		1	1 unit	41K
Twist actuators with lever								
 Twist actuator	**Twist actuators**, metal (without lever)							
	• For twist levers, switching right or left, adjustable							
	- For enclosure width 40 and 56 mm		⊖ A	**3SE5 000-0AH00**		1	1 unit	41K
	• For fork levers, latching		⊖ B	**3SE5 000-0AT10**		1	1 unit	41K
	Levers for twist actuators							
 Twist lever	**Twist levers 27 mm, offset, type A, acc. to EN 50041**							
	Metal lever, plastic roller	19	⊖ A	**3SE5 000-0AA01**		1	1 unit	41K
	Metal lever, high-grade steel roller	19	⊖ A	**3SE5 000-0AA02**		1	1 unit	41K
	Metal lever, roller with ball bearing	19	⊖ B	**3SE5 000-0AA03**		1	1 unit	41K
	Metal lever, 2 plastic rollers	19	⊖ B	**3SE5 000-0AA04**		1	1 unit	41K
 Twist lever, adjustable length	Metal lever, plastic roller	30	⊖ B	**3SE5 000-0AA05**		1	1 unit	41K
	Metal lever, plastic roller	50	⊖ B	**3SE5 000-0AA07**		1	1 unit	41K
	Metal lever, rubber roller	50	⊖ B	**3SE5 000-0AA08**		1	1 unit	41K
	High-grade steel lever, plastic roller	19	⊖ B	**3SE5 000-0AA11**		1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	⊖ B	**3SE5 000-0AA12**		1	1 unit	41K
	Twist levers 35 mm, offset							
	Metal lever, plastic roller	19	⊖ B	**3SE5 000-0AA15**		1	1 unit	41K
	Twist levers 30 mm, straight[1]							
	Metal lever, plastic roller	19	⊖ B	**3SE5 000-0AA24**		1	1 unit	41K
	Metal lever, plastic roller	30	⊖ B	**3SE5 000-0AA26**		1	1 unit	41K
 Fork lever	**Twist levers, adjustable length, with grid hole**							
	Metal lever, plastic roller	19	⊖ B	**3SE5 000-0AA60**		1	1 unit	41K
	Metal lever, high-grade steel roller	19	⊖ B	**3SE5 000-0AA61**		1	1 unit	41K
	Metal lever, plastic roller	50	⊖ B	**3SE5 000-0AA67**		1	1 unit	41K
	Metal lever, rubber roller	50	⊖ B	**3SE5 000-0AA68**		1	1 unit	41K
	High-grade steel lever, plastic roller	19	⊖ B	**3SE5 000-0AA62**		1	1 unit	41K
	High-grade steel lever, high-grade steel roller	19	⊖ B	**3SE5 000-0AA63**		1	1 unit	41K
	Fork levers (for switches with snap-action contacts only)							
	Metal lever, 2 plastic rollers	19	⊖ B	**3SE5 000-0AT01**		1	1 unit	41K
	Metal lever, 2 high-grade steel rollers	19	⊖ B	**3SE5 000-0AT02**		1	1 unit	41K
	High-grade steel lever, 2 plastic rollers	19	⊖ B	**3SE5 000-0AT03**		1	1 unit	41K
	High-grade steel lever, 2 high-grade steel rollers	19	⊖ B	**3SE5 000-0AT04**		1	1 unit	41K

⊖ Positive drive, for use in safety circuits.

1) Can be clinch mounted (turned through 180°, rear of lever).

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SIRIUS 3SF1 Mechanical Safety Switches for AS-Interface

With Separate Actuator

General data

Overview

The 3SF1 position switches with safety-oriented communication can be directly connected using the AS-Interface bus system. The safety functions no longer have to be conventionally wired up.

With the 3SF1 position switches the ASIsafe electronics are integrated in the switch enclosure.



3SF1 position switches with head for separate actuator and with integrated ASIsafe electronics

3SF1 position switches with separate actuator have the same enclosures as the standard switches.

Operation

The actuator head is included in the scope of supply. For actuation from four directions it can be adjusted through 4 × 90°. The switches can also be approached from above.

The actuator is not included in the scope of supply for the position switch and must be ordered separately, with a choice of variations depending on application.

The actuator is encoded. Simple overruling by hand or auxiliary devices is impossible.

A high-grade steel blocking insert for attaching up to eight padlocks is available for even more safety.

A rubber cap to protect the metal enclosure from contamination is available for operation in dusty environments.

Display

The switches have a status display with three LEDs:

- LED 1 (yellow): F-IN1
- LED 2 (yellow): F-IN2
- LED 3 (green/red): AS-i/FAULT

Connection

Connection to the AS-Interface is by means of a 4-pole M12 connector socket (plastic version) connected to the yellow AS-Interface bus cable.

The wide enclosures (50 or 56 mm) also have an M12 socket for connecting a second position switch. Category 4 according to EN 954-1 is thus achieved.

Benefits

The new generation of 3SF1 position switches with separate actuator offers:

- ASIsafe Electronics integrated in the enclosure, with low power consumption < 60 mA
- An extensive range of actuators
- Status display with three LEDs

Application

Position switches with separate actuator are used where the position of doors, covers or protective grills must be monitored for safety reasons.

The position switch can only be operated with the matching coded actuator. Simple overruling by hand or auxiliary devices is impossible.

Devices are available with enclosure versions to suit the particular ambient conditions. Different control tasks can be performed with the best contact blocks suited for the particular purpose. Dimensions, fixing points of the enclosure are in accordance with EN 50041 or EN 50047 standards.

The devices are suitable for use in any climate.

Standards

The switches comply with the standards IEC 60947-1 (Low-Voltage Switchgear and Controlgear, General) and IEC 60947-5-1 (Electromechanical Control Circuit Devices).

The mechanical design of the switch corresponds to the requirements of the failsafe principle according to EN 1088.

Approvals

AS-Interface according to EN 50295 and IEC 62026-2.

With a 3SF1 position switch it is possible to achieve category 3 according to ISO 13849-1 (EN 954-1) or SIL 2 according to IEC 61508.

Category 4 according to ISO 13849-1 (EN 954-1) or SIL 3 according to IEC 61508 can be achieved by using a second 3SE5 position switch.

The 3SF1 position switches are approved according to UL 508, UL 50 and UL 746-C.

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Overview

- Contacts: 1 or 2 slow-action contacts
- Status display with 3 LEDs 24 V DC;
  1: F–IN1, 2: F–IN2, 3: AS-i/FAULT
- Degree of protection IP65 (31 mm) or IP66/IP67 (50 mm)

Selection and ordering data

	Version[1]	Contacts	DT	Complete units ☐ / Configurator ⚙ Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Enclosure width 31 mm acc. to EN 50047								
	**5 directions of approach** With M12 connector socket, 4-pole; channel 1 on NC contact, channel 2 on NC contact Slow-action contacts	2 NC	➔ B	**3SF1 234-1QV40-1BA1**		1	1 unit	42A
Enclosure width 50 mm								
	**5 directions of approach** With M12 connector socket, 4-pole; channel 1 on NC, channel 2 on M12 socket, right Slow-action contacts	1 NC	➔ B	**3SF1 244-1QV40-1BA2**		1	1 unit	42A

⚙ For online configurator see www.siemens.com/sirius/configurators .

➔ Positive opening according to IEC 60947-5-1, Appendix K.

1) Supplied without actuator. Please order separately (see page 12/97).

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SIRIUS 3SF1 Mechanical Safety Switches for AS-Interface

With Separate Actuator

Metal enclosures
Enclosure width 31 mm / 40 mm / 56 mm

Overview

- Contacts: 1 or 2 slow-action contacts
- Status display with 3 LEDs 24 V DC;
  1: F–IN1, 2: F–IN2, 3: AS-i/FAULT
- Degree of protection IP66/IP67

Selection and ordering data

Version[1]	Contacts	DT	Complete units ☐ / Configurator ⚙ — Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Enclosure width 31 mm acc. to EN 50047							
 **5 directions of approach** With M12 connector socket, 4-pole; channel 1 on NC contact, channel 2 on NC contact							
Slow-action contacts	2 NC	➔ B	**3SF1 214-1QV40-1BA1**		1	1 unit	42A
Enclosure width 40 mm acc. to EN 50041							
 **5 directions of approach** With M12 connector socket, 4-pole; channel 1 on NC contact, channel 2 on NC contact							
Slow-action contacts	2 NC	➔ B	**3SF1 114-1QV10-1BA1**		1	1 unit	42A
Enclosure width 56 mm							
 **5 directions of approach** With M12 connector socket, 4-pole; channel 1 on NC, channel 2 on M12 socket, right							
Slow-action contacts	1 NC	➔ B	**3SF1 124-1QV10-1BA2**		1	1 unit	42A

⚙ For online configurator see www.siemens.com/sirius/configurators .

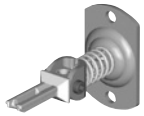
➔ Positive opening according to IEC 60947-5-1, Appendix K.

1) Supplied without actuator. Please order separately (see page 12/97).

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Actuators							
	Actuators						
 3SE5 000-0AV01	• Standard actuators, length 75.6 mm	►	**3SE5 000-0AV01**		1	1 unit	41K
 3SE5 000-0AV02	• With vertical fixing, length 53 mm	A	**3SE5 000-0AV02**		1	1 unit	41K
 3SE5 000-0AV03	• With transverse fixing, length 47 mm	A	**3SE5 000-0AV03**		1	1 unit	41K
 3SE5 000-0AW11	With transverse fixing, plastic[1] Length 40 mm	B	**3SE5 000-0AW11**		1	1 unit	102
 3SE5 000-0AV04	• Radius actuator, left, length 51 mm, direction of approach from the left	A	**3SE5 000-0AV04**		1	1 unit	41K
 3SE5 000-0AV6	• Radius actuator, length 51 mm, direction of approach from the right	A	**3SE5 000-0AV06**		1	1 unit	41K
 3SE5 000-0AV05-1AA6	• Universal radius actuators						
	- Length 77 mm	A	**3SE5 000-0AV05**		1	1 unit	41K
	- Length 77 mm, tab rotated 90°	A	**3SE5 000-0AV05-1AA6**		1	1 unit	41K
 3SE5 000-0AV07	• Universal radius actuators, heavy-duty						
	- Length 67 mm	A	**3SE5 000-0AV07-1AK2**		1	1 unit	41K
	- Length 77 mm	A	**3SE5 000-0AV07**		1	1 unit	41K
Optional accessories							
 3SE5 000-0AV08-1AA2	**Protective caps** made of black rubber for the actuator head, to protect the actuator openings from contamination (Only for enclosure width 40 or 56 mm)	B	**3SE5 000-0AV08-1AA2**		1	1 unit	41K
 3SE5 000-0AV08-1AA3	**Blocking inserts**, high-grade steel, for actuator head, for up to 8 padlocks	C	**3SE5 000-0AV08-1AA3**		1	1 unit	41K

[1] Not suitable for safety switches with interlocking.

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General data

Overview

The 3SF1 position switches with safety-oriented communication can be directly connected using the AS-Interface bus system. The safety functions no longer have to be conventionally wired up.

With the 3SF1 position switches the ASIsafe electronics are integrated in the switch enclosure.



3SF1 position switch with solenoid interlocking and with integrated ASIsafe electronics

Operation

The actuator head is included in the scope of supply. For actuation from four directions it can be adjusted through 4 × 90°. The switches can also be approached from above.

The actuator is not included in the scope of supply for the position switch and must be ordered separately, with a choice of variations depending on application.

The actuator is encoded. Simple overruling by hand or auxiliary devices is impossible.

A high-grade steel blocking insert for attaching up to eight padlocks is available for even more safety.

A rubber cap to protect the enclosure from contamination is available for operation in dusty environments.

Solenoid interlocking

There are two versions for interlocking the actuator:

- Spring-actuated lock (closed-circuit principle) with various release mechanisms
- Solenoid-locked (open-circuit principle)

For more explanations see page 12/66.

Display

The switches have a status display with four LEDs:

- LED 1 (green): AS-i
- LED 2 (red): FAULT
- LED 3 (yellow): F-IN1
- LED 4 (yellow): F-IN2

Connection

Connection to the AS-Interface is by means of a 4-pole M12 connector socket (plastic version) connected to the yellow AS-Interface bus cable (no additional supply of auxiliary power is required thanks to the low current consumption of the solenoid of max. 170 mA).

Benefits

The new generation of 3SF1 3 position switches with solenoid interlocking offers:

- More safety through higher locking forces:
  - 1300 N for the plastic version
  - 2600 N for the metal version
- Various release mechanisms: Lock release, escape release and emergency release
- ASIsafe Electronics integrated in the enclosure; connected through 4-pole M12 connector socket
- Current consumption of the solenoid max. 170 mA
- Two contact blocks as standard equipment, hence fewer versions needed
- Same dimensions for all enclosure versions: Plastic, metal
- An extensive range of actuators
- Status display with four LEDs

Application

The position switches with solenoid interlocking are exceptional safety-related devices which prevent an unforeseen or intentional opening of protective doors, protective grills or other covers as long as a dangerous situation is present (i.e. follow-on motion of the switched off machine).

The safety position switches with solenoid interlocking have the following functions:

- Enabling the machine or process with closed and locked protective device
- Locking the machine or process with opened protective device
- Position monitoring of the protective device and interlocking

Standards

The switches comply with the standards IEC 60947-1 (Low-Voltage Switchgear and Controlgear, General) and IEC 60947-5-1 (Electromechanical Control Circuit Devices).

The mechanical design of the switch corresponds to the requirements of the failsafe principle according to EN 1088.

Approvals

AS-Interface according to EN 50295 and IEC 62026-2.

The switches are approved for use with locking devices according to EN 1088 and EN 292, Parts 1 and 2.

The 3SF1 3 position switches with interlocking have a VDE test marking.

With a 3SF1 3 position switch with solenoid interlocking it is possible to achieve category 3 according to ISO 13849-1 (EN 954-1) or SIL 2 according to IEC 61508.

Category 4 according to ISO 13849-1 (EN 954-1) or SIL 3 according to IEC 61508 can be achieved by using a second 3SE5 position switch.

The 3SF1 position switches are approved according to UL 508, UL 50 and UL 746-C.

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Overview

5 directions of approach · Degree of protection IP66/IP67

- Slow-action contacts:
  - Version -1BA1: ASIsafe channel 1 on 1 NC contact from the actuator and channel 2 on 1 NC contact from the solenoid
  - Version -1BA3: ASIsafe channel 1 on the first NC contact from the actuator and channel 2 on the second NC contact from the actuator
  - Version -1BA4: ASIsafe channel 1 on 2 NC contacts from the actuator and channel 2 on 1 NC contact from the solenoid. A discrepancy between the two contacts of the actuator will be evaluated already in the switch.
- Solenoid: Rated operational voltage 24 V DC
- Locking force 1300 N (1000 N according to GS-ET 19)
- Status display with 4 LEDs 24 V DC;
  1: AS-i, 2: FAULT, 3: F–IN1, 4: F–IN2

Safety level

The new 3SF1 324-1S.21-1BA4 safety position switches are also recommended in the case of several protective door interlockings where reliable diagnostics and quick restart capability of equipment is required.

- A response is received from the magnet.
- No opening of the doors after the solenoid is unlocked.

With AS-i safety monitor or in DP/AS-i F-Link it is possible to achieve SIL 2 according to IEC 61508 or PL d according to ISO 13849-1.

Comparison of versions

Safety switch Type	Contacts Actuator / magnet	Achievable safety level	Diagnostics Feedback from the solenoid	Reclose condition after unlocking the solenoid (depending on the type of evaluation)
3SF1 324-1S.21-1BA1	1 NC/1 NC	SIL 1 / PL c	✓	Door does not have to be opened
	1 NC/1 NC	SIL 2 / PL d	✓	Door must be opened
3SF1 324-1S.21-1BA3	2 NC	SIL 2 / PL d	--	Door does not have to be opened
3SF1 324-1S.21-1BA4	2 NC/1 NC	SIL 2 / PL d	✓	Door does not have to be opened

Selection and ordering data

	Interlock[1]	Contacts Actuators/ Solenoids	DT	Complete units / Configurator Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
1300 N locking force · Enclosure width 54 mm								
 3SF1 324-1SD21-...	**Spring-actuated locks**							
	• With auxiliary release	1 NC/1 NC	⊖ B	**3SF1 324-1SD21-1BA1**		1	1 unit	42A
		2 NC/--	⊖ B	**3SF1 324-1SD21-1BA3**		1	1 unit	42A
		2 NC/1 NC	⊖ B	**3SF1 324-1SD21-1BA4**		1	1 unit	42A
	• With auxiliary release with lock	1 NC/1 NC	⊖ B	**3SF1 324-1SE21-1BA1**		1	1 unit	42A
 3SF1 324-1SF21-...	• With escape release from the front	1 NC/1 NC	⊖ B	**3SF1 324-1SF21-1BA1**		1	1 unit	42A
		2 NC/1 NC	⊖ B	**3SF1 324-1SF21-1BA4**		1	1 unit	42A
	• With escape release from the back and auxiliary release from the front	1 NC/1 NC	⊖ B	**3SF1 324-1SG21-1BA1**		1	1 unit	42A
		2 NC/1 NC	⊖ B	**3SF1 324-1SG21-1BA4**		1	1 unit	42A
	• With emergency release from the back and auxiliary release from the front	1 NC/1 NC	⊖ B	**3SF1 324-1SJ21-1BA1**		1	1 unit	42A
 3SF1 324-1SB21-...	**Solenoid locks**	1 NC/1 NC	⊖ B	**3SF1 324-1SB21-1BA1**		1	1 unit	42A
		2 NC/--	⊖ B	**3SF1 324-1SB21-1BA3**		1	1 unit	42A

For online configurator see www.siemens.com/sirius/configurators .

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

[1] Supplied without actuator. Please order separately.

For actuators and optional accessories see page 12/97.

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SIRIUS 3SF1 Mechanical Safety Switches for AS-Interface

With Solenoid Interlocking

Metal enclosures
With locking force greater than 2000 N

Overview

5 directions of approach · Degree of protection IP66/IP67

- Slow-action contacts:
  Version -1BA1: ASIsafe channel 1 on 1 NC contact from the actuator and channel 2 on 1 NC contact from the solenoid
- Solenoid: Rated operational voltage 24 V DC
- Locking force 2600 N (2000 N according to GS-ET 19)
- Status display with 4 LEDs 24 V DC;
  1: AS-i, 2: FAULT, 3: F–IN1, 4: F–IN2

Safety level

See page 12/99.

Selection and ordering data

Interlock[1]	Contacts Actuators/ Solenoids	DT	Complete units / Configurator — Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
2600 N locking force · Enclosure width 54 mm							
Spring-actuated locks							
 3SF1 314-1SD11-...							
• With auxiliary release	1 NC/1 NC	⇒ B	**3SF1 314-1SD11-1BA1**		1	1 unit	42A
• With auxiliary release with lock	1 NC/1 NC	⇒ B	**3SF1 314-1SE11-1BA1**		1	1 unit	42A
 3SF1 314-1SF11-...							
• With escape release from the front	1 NC/1 NC	⇒ B	**3SF1 314-1SF11-1BA1**		1	1 unit	42A
• With escape release from the back and auxiliary release from the front	1 NC/1 NC	⇒ B	**3SF1 314-1SG11-1BA1**		1	1 unit	42A
• With escape release from the back and auxiliary release with lock from the front	1 NC/1 NC	⇒ B	**3SF1 314-1SH11-1BA1**		1	1 unit	42A
• With emergency release from the back and auxiliary release from the front	1 NC/1 NC	⇒ B	**3SF1 314-1SJ11-1BA1**		1	1 unit	42A
Solenoid locks	1 NC/1 NC	⇒ B	**3SF1 314-1SB11-1BA1**		1	1 unit	42A
 3SF1 314-1SB11-...							

For online configurator see www.siemens.com/sirius/configurators .

⇒ Positive opening according to IEC 60947-5-1, Appendix K.

1) Supplied without actuator. Please order separately.

For actuators and optional accessories see page 12/97.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

The 3SF1 hinge switches with safety-oriented communication can be directly connected using the AS-Interface bus system. The safety functions no longer have to be conventionally wired up.

With the 3SF1 position switches the ASIsafe electronics are integrated in the switch enclosure.

The hinge switches are provided for mounting on hinges. There are two actuator versions here:
- Hollow shaft, inner diameter 8 mm, outer 12 mm
- Solid shaft, diameter 10 mm

For the ASIsafe version of the hinge switch, the basic switch and actuator head must be ordered separately. The basic switches correspond to the position switches of the standard version (only use versions with snap-action contacts).

The standards and approvals are the same as for the 3SF1 standard switches (see page 12/86).

Selection and ordering data

Modular system

1 or 2 contacts · 3 LEDs · Degree of protection IP65 (31 mm) or IP66/IP67 (50 mm) · M12 connector socket

	Version	Contacts	LEDs	DT	Modular system / Configurator / Order No.	PU (UNIT, SET, M)	PS*	PG	Price per PU
Basic switches · Enclosure width 31 mm acc. to EN 50047									
 ASIsafe basic switch	**With teflon plunger, with M12 connector socket**, 4-pole, channel 1 on NC contact, channel 2 on NC contact								
	Snap-action contacts	2 NC	24 V DC	➔ B	**3SF1 234-1LC05-1BA1**	1	1 unit	42A	
Basic switches · Enclosure width 50 mm									
 ASIsafe basic switch	**With teflon plunger, with M12 connector socket**, 4-pole, channel 1 on NC contact, channel 2 on M12 socket, right								
	Snap-action contacts	1 NC	24 V DC	➔ B	**3SF1 244-1LC05-1BA2**	1	1 unit	42A	
Actuator heads									
 Twist actuator with hollow shaft	**With hollow shaft**								
	Operating angle 10°			B	**3SE5 000-0AU21**	1	1 unit	41K	
 Twist actuator with solid shaft	**With solid shaft**								
	Operating angle 10°			B	**3SE5 000-0AU22**	1	1 unit	41K	

⚙ For online configurator see www.siemens.com/sirius/configurators .

➔ Positive opening according to IEC 60947-5-1, Appendix K.

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Hinge Switches

Metal enclosures
Enclosure width 31 mm / 40 mm / 56 mm

Overview

The 3SF1 hinge switches with safety-oriented communication can be directly connected using the AS-Interface bus system. The safety functions no longer have to be conventionally wired up.

With the 3SF1 position switches the ASIsafe electronics are integrated in the switch enclosure.

The hinge switches are provided for mounting on hinges. There are two actuator versions here:
- Hollow shaft, inner diameter 8 mm, outer 12 mm
- Solid shaft, diameter 10 mm

For the ASIsafe version of the hinge switch, the basic switch and actuator head must be ordered separately. The basic switches correspond to the position switches of the standard version (only use versions with snap-action contacts).

The standards and approvals are the same as for the 3SF1 standard switches (see page 12/86).

Selection and ordering data

Modular system

1 or 2 contacts · 3 LEDs · Degree of protection IP66/IP67 · M12 connector socket

	Version	Contacts	LEDs	DT	Modular system / Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Basic switches · Enclosure width 31 mm acc. to EN 50047									
 ASIsafe basic switch	**With plunger** With M12 connector socket, 4-pole, channel 1 on NC contact, channel 2 on NC contact								
	Snap-action contacts	2 NC	24 V DC	B	**3SF1 214-1LC05-1BA1**		1	1 unit	42A
Basic switches · Enclosure width 40 mm acc. to EN 50041									
 ASIsafe basic switch	**With M12 connector socket**, 4-pole, channel 1 on NC contact, channel 2 on NC contact								
	Snap-action contacts	2 NC	24 V DC	B	**3SF1 114-1LA00-1BA1**		1	1 unit	42A
Basic switches · Enclosure width 56 mm									
 ASIsafe basic switch	**With M12 connector socket**, 4-pole, channel 1 on NC contact, channel 2 on M12 socket, right								
	Snap-action contacts	1 NC	24 V DC	B	**3SF1 124-1LA00-1BA2**		1	1 unit	42A
Actuator heads									
 Twist actuator with hollow shaft	**Hollow shafts** Operating angle 10°			B	**3SE5 000-0AU21**		1	1 unit	41K
 Twist actuator with solid shaft	**Solid shafts** Operating angle 10°			B	**3SE5 000-0AU22**		1	1 unit	41K

For online configurator see www.siemens.com/sirius/configurators .

Positive opening according to IEC 60947-5-1, Appendix K.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

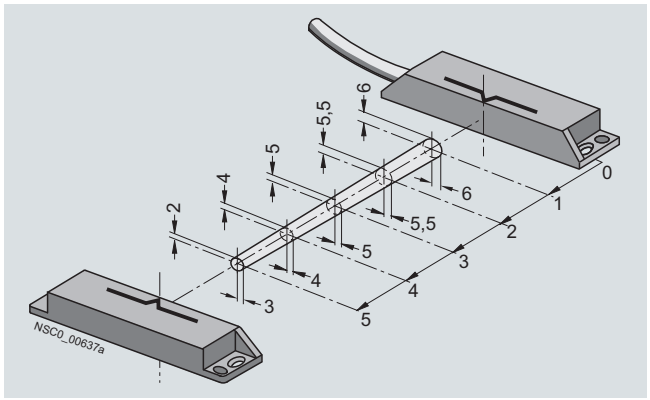
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3SE6 6, 3SE6 7 magnetically operated switches

Overview



Switching magnets and contact blocks



Enabling range (example)

A magnetically operated switch is comprised of a coded switching magnet and a contact block (sensor unit). Evaluation requires a safety relay or connection to a bus system.

3SE6 806 safety relays

Up to six protective devices (sensors) can be connected to the safety relay.

The device has six current-sourcing semiconductor outputs (Y1 ... Y6) which signal the state of the connected protective devices.

The 3SE6 806 safety relay has two floating enabling circuits (safe circuits) as NO contact circuits and one floating signaling circuit as a NC circuit. The number of enabling circuits can be increased by adding one or more 3TK28 30 expansion modules.

Application

SIRIUS 3SE6 magnetically operated switches are designed for mounting on movable protective guards (hoods, hinge switches, doors, etc.). Evaluation can be performed by means of a safety relay or through connection to a bus system.

The 3SE6 6 non-contact, magnetically operated safety switches stand out due to their enclosed design with degree of protection IP67. They are particularly suitable therefore for areas exposed to contamination, cleaning or disinfecting.

A magnetic monitoring system comprises one or more magnetically operated switches and an evaluation unit, e.g. a safety relay. When contact blocks 1 NO + 1 NC are used the 3SE6 806 safety relay provides a high degree of protection against manipulation and can be installed in safety circuits up to Category 3 according to ISO 13849-1 (EN 954-1).

Combination of monitoring units and magnetically operated switches

Monitoring units		**Magnetically operated switches (contact block + switching magnet)**					**Achievable category** (EN 954-1)/ **Performance level** (EN ISO 13849-1)
		1 NO + 1 NC			2 NC	1 NO + 2 NC	
		3SE6 605-1BA 3SE6 704-1BA	3SE6 605-2BA 3SE6 704-2BA	3SE6 605-3BA 3SE6 704-3BA	3SE6 604-2BA 3SE6 704-2BA	3SE6 606-3BA 3SE6 704-3BA	
Relay outputs							
SIRIUS safety relays, 6-fold	3SE6 806-2CD00	✓	✓	✓	--	✓	**Cat. 3**
SIRIUS safety relays	3TK28 20	--	--	--	✓	--	**Cat. 4/e**
	3TK28 26	✓	✓	✓	✓	✓	**Cat. 4/e**
Solid-state outputs							
SIRIUS safety relays	3TK28 40	--	--	--	✓	--	**Cat. 3/d**
	3TK28 41, 3TK28 42, 3TK28 45	--	--	--	✓	--	**Cat. 4/e**
SIRIUS safety relays with contactor relay	3TK28 50, 3TK28 51, 3TK28 52	--	--	--	✓	--	**Cat. 3/d**
	3TK28 53	--	--	--	✓	--	**Cat. 4/e**
ASIsafe compact safety modules	3RK1 205, 3RK1 405	--	--	--	✓	--	**Cat. 4**
SIMATIC S7-31xF-2 DP or SIMATIC ET 200M	SM 326 F, 24 DI, 24 V DC, SM 326 F, 8 DI, NAMUR	✓	✓	✓	✓	✓	**Cat. 4**
SIMATIC ET 200S PROFIsafe	4/8 F-DI / 3 F-DO, 24 V DC	✓	✓	✓	✓	✓	**Cat. 3**
	4/8 F DI, 24 V DC	✓	✓	✓	✓	✓	**Cat. 4**
SIMATIC ET 200eco	4/8 F DI, 24 V DC	✓	✓	✓	✓	✓	**Cat. 4**
SIMATIC ET 200pro	8/16 F-DI, 24 V DC, 4/8 F-DI / 4 F-DO 2 A, 24 V DC, F-Switch	✓	✓	✓	✓	✓	**Cat. 4**
Modular Safety System	3RK3	✓	✓	✓	✓	✓	**Cat. 4/e**

✓ Suitable magnetically operated switch

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Magnet

3SE6 6, 3SE6 7 magnetically operated switches

Selection and ordering data

	Version	Size	Contacts	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		mm							
Round sensor units									
	**Switching magnets (coded)**	M30		A	**3SE6 704-1BA**		1	1 unit	41K
	**Contact blocks**								
	• With cable, 3 m	M30	1 NO + 1 NC	A	**3SE6 605-1BA**		1	1 unit	41K
	• With M12 plug, 4-pole	M30	1 NO + 1 NC	C	**3SE6 605-1BA02**		1	1 unit	41K
Rectangular sensor units									
	**Switching magnets (coded)**	25 × 88		A	**3SE6 704-2BA**		1	1 unit	41K
	**Contact blocks**								
	• With cable, 3 m	25 × 88	1 NO + 1 NC	A	**3SE6 605-2BA**		1	1 unit	41K
			2 NC	A	**3SE6 604-2BA**		1	1 unit	41K
	• With M8 plug, 4-pole	25 × 88	1 NO + 1 NC	C	**3SE6 605-2BA01**		1	1 unit	41K
			2 NC	C	**3SE6 604-2BA01**		1	1 unit	41K
	**Switching magnets (coded)**			A	**3SE6 704-3BA**		1	1 unit	41K
	Contact blocks								
	• With cable, 3 m	25 × 33	1 NO + 1 NC	A	**3SE6 605-3BA**		1	1 unit	41K
	• With cable, 1 m	25 × 33	1 NO + 2 NC	B	**3SE6 606-3BA**		1	1 unit	41K
Accessories									
	**Spacers**	25 × 88		D	**3SX3 260**		1	1 unit	41K
	**Spacers**	25 × 33		D	**3SX3 261**		1	1 unit	41K

	Version	Number of sensors	Enabling/ signaling circuits	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Monitoring units									
	**Safety relays with relay output, 6-fold** Rated control supply voltage 24 V DC	6	2 NO / 1 NC	B	**3SE6 806-2CD00**		1	1 unit	41K

For more monitoring units see Chapters 2, 8, 9 and 11 as well as Catalog IK PI.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

Overview



Non-contact RFID safety switches
with maximum tamper resistance

3SE63 RFID contactless safety switches meet the highest safety requirements, SIL3 or Cat. 4, for monitoring the positions of movable protective devices.

An RFID safety switch consists of a coded RFID switch with an 8-pole M12 connector plug and an identical RFID actuator.

The switch is available in several versions:

- Family coded with M12 plug or with additional 18 N magnetic catch as an option
- Individually coded, programmable once, with M12 plug or with additional 18 N magnetic catch as an option
- Individually coded, programmable more than once (an unlimited number of times), with M12 plug or version with additional 18 N magnetic catch

The actuator is therefore available in two versions:

- Standard
- With 18 N magnetic catch

The magnetic catch keeps doors and hinge switches closed with permanent magnets.

Optional accessories

- Covers for sealing mounting holes, also suitable for tamper-proofing screw fixings
- Spacers (approx. 3 mm high) to facilitate cleaning under the installation surface when using pressure washers, for example

Mounting and maintenance

Reduction in the number of versions, because

- switches can be mounted on right or left sides
- the actuator can be mounted on all sides

Quick and easy mounting by thanks to universal mounting holes

- Standard gauge/holes for 3SE6 magnetically operated switch
- Fine adjustment thanks to slotted holes

Little adjustment or maintenance required

- Threshold indication by LED on the switch for quick and easy adjustment during installation and maintenance
- Molded switch allows it to be used as an end stop for small and medium-sized doors

Note:

Keep metal parts and cuttings away from the vicinity of the switch

Minimum distance between two switches 100 mm

Coding

Family coded

These safety switches are delivered ready to use, i.e. no programming is necessary.

Individually coded, programmable once

The assignment of safety switch and actuator thus created is irreversible.

The actuator is programmed simply by routine during startup, thus permanently preventing any form of tampering by means of a replacement actuator.

Individually coded, programmable several times

The procedure for programming a new actuator can be repeated an unlimited number of times. When a new actuator is programmed the previous code becomes invalid. A protected coding process allows new actuators to be programmed for service purposes.

After this, a ten-minute lockout provides enhanced tamper protection. The green LED flashes until the lockout time has ended and the new actuator has been detected. If the operational voltage is interrupted during this time, the ten-minute guard time is restarted.

Programming procedure for individual coding

1. Apply operational voltage to safety sensor

2. Move actuator into detecting range:
red LED lights up, yellow LED flashes (1 Hz)

3. After 10 s it changes to a shorter flashing frequency (3 Hz). In this state switch off operational voltage.

4. After the next time the operational voltage is switched on, the actuator is detected again to activate the programmed actuator code. The activated code is thus stored permanently.

Diagnostics

The RFID safety switch indicates its operating state including faults by means of the LED indicator in the switch and the short-circuit resistant diagnostic output. The signals can then be used for central displays or non-safety-related control tasks.

There are two diagnostics functions:

- Crossover monitoring
- Open-circuit monitoring
- External voltage monitoring
- Ambient temperature too high
- Wrong or defective actuator
- Switching interval threshold identification with LED indication

The signal combination "diagnostics output switched off" and "safety outputs still switched on" can be used to move the machine into a controlled stop position.

Any crossover or a fault that is not currently compromising the safe operation of a safety switch results in the disconnection of the safety channels after a 30 minute delay. However, the diagnostics output switches off instantaneously.

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3SE63 RFID safety switches

Mode of operation of the diagnostics LEDs

The safety switch indicates not only its operating state, but also faults by means of LEDs in three colors at the ends of the RFID switch.

- The green LED indicates readiness for operation when the control supply voltage is connected.
- The yellow LED indicates that there is an actuator in detecting range. If the actuator is in the switching interval threshold, this is indicated by flashing. This flashing can be used to identify a change in the distance between sensor and actuator at an early stage (e.g. as a result of the sagging of a protective door). The installation should be tested before the distance increases further, the safety outputs switch off and the machine stops.
- The red LED indicates the individual causes of the fault by means of defined flashing frequencies.

Benefits

- Maximum tamper resistance by means of individual coding of switches and actuators at the highest safety level
- Plastic enclosure with integrated connector
- 2 electronic short-circuit proof safety outputs, each 250 mA
- Integrated crossover, open circuit and external voltage monitoring, with series circuit as far as the control cabinet
- Safety and diagnostics signals can be connected in series
- Series connection of safety circuits in Cat. 4 / PL e / SIL 3
- LED status indication including switching interval threshold indication for quick and easy adjustment during installation and maintenance
- Short-circuit proof conventional diagnostics output
- Optional version with magnetic catch for interlocking hatches or small doors even when de-energized
- Highly rugged thanks to the use of tested enclosure materials, resistant to aggressive cleaning products, with a degree of protection of up to IP69K
- Fine adjustment thanks to slotted holes
- Little adjustment or maintenance required
- Molded switch allows it to be used as an end stop for small and medium-sized doors

Application

RFID contactless safety switches are designed for use in safety circuits, and are used to monitor the positions of movable protective devices. They monitor the positions of rotating, laterally sliding or removable protective devices using the coded electronic actuator.

Their high degree of protection (IP69K) and the use of cleaning product-resistant materials means that these switches are optimized for use under extreme environmental conditions.

Their electronic operating principle makes these switches ideal for metalworking machinery.

The switches have a larger switching interval and switching displacement than mechanical switches, improve the mounting tolerance of the protective door, and offer a wide range of diagnostics options.

The RFID switches can be connected to all standard evaluation units, e. g. a PLC, 3TK28 safety evaluation units (in which the built-in crossover monitoring function can be deactivated), or the 3RK3 modular safety system.

The following safety categories can be achieved in safety circuits:

- Category 4 according to EN ISO 13849-1 (EN 954-1)
- PL e according to EN ISO 13849-1
- SIL 3 according to IEC 61508

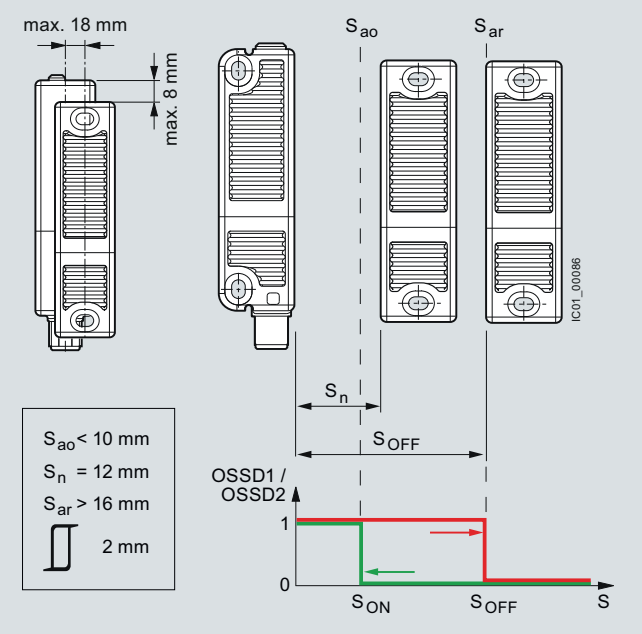
Technical specifications

Type		3SE6 3
General data		
Standards		IEC 60947-5-3, IEC 61508, EN ISO 13849-1
Enclosure material		Fiber-glass strengthened thermoplast, self-extinguishing
Degree of protection		IP69K
Ambient temperature		
• During operation	°C	-25 ... +70
• During storage, transport	°C	-25 ... +85
Shock resistance		30 *g*/11 ms
Vibration resistance		10 ... 55 Hz amplitude 1 mm
Electrical specifications		
Rated insulation voltage U_i	V	32
Pollution degree acc. to IEC 60664-1		3
Rated impulse withstand voltage U_{imp}	V	800
Rated conditional short-circuit current	A	100
Rated operational voltage U_e (PELV acc. to IEC 60204-1)	V DC	24 –15/+10 %
Protection class		II
Overvoltage category		III
Rated operational current I_e	A	0.6
Smallest operational current I_m	mA	0.5
No-load supply current I_0	mA	35

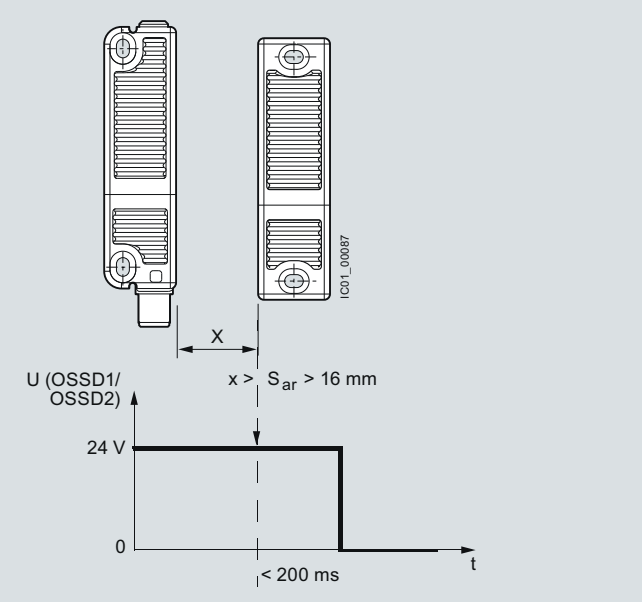
Type		3SE6 3
Inputs/outputs		
Safety inputs X1/X2		
• Input voltage	V DC	24 –15/+10 %
• Power consumption per input	mA	5
Safety outputs OSSD1/OSSD2		p operation
• Max. rated operational current I_e	A	0.25
• Rated operational current I_e/DC-12/DC-13 at U_e	A	0.25
• Voltage drop U_e	V	< 1
• Switching frequency	Hz	1
• Response time, max.	ms	100
• Risk time, max.	ms	200
• Recovery, max.	s	5
Diagnostics ouput		p operation
• Max. rated operational current $I_{e2\ max}$	A	0.05
• Rated operational current I_e/DC-12/DC-13 at U_e	A	0.05
• Voltage drop U_e	V	< 2
• Operational current	mA	150
• Conductor capacity, max.	nF	50

Directions of approach and switching interval

The side area permits a maximum height offset of the switch and actuator of ±8 mm (e.g. mounting tolerance or due to sagging of the protective door). The transverse offset also equals max. ±8 mm.

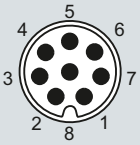


Switching interval: output signal with hysteresis



Switching interval: Output signal

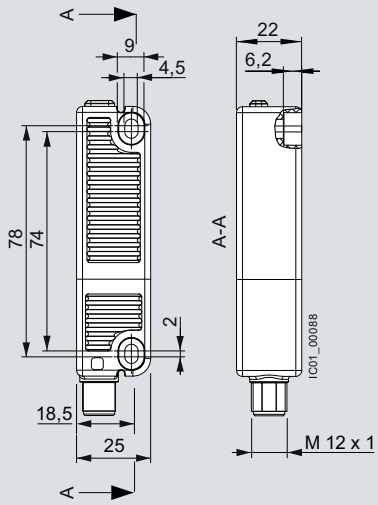
Connector assignment



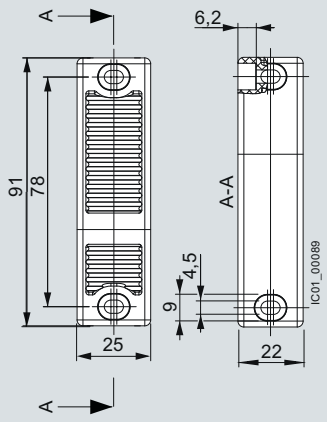
Pin 1: A1 rated operational voltage 24 V DC
Pin 2: X1 safety input 24 V DC
Pin 3: A2 grounding
Pin 4: OSSD1 safety output
Pin 5: OUT conventional diagnostics output
Pin 6: X2 safety input 24 V DC
Pin 7: OSSD2 safety output
Pin 8: Not used

Dimensional drawings

RFID switches
3SE6 315



RFID actuator
3SE6 310

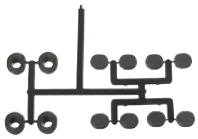


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3SE63 RFID safety switches

Selection and ordering data

With M12 connector, 8-pole

Version/coding	Latching / length	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Rectangular safety switches 91 mm x 25 mm							
 3SE6 315							
RFID safety switches							
• Family coded	None	A	**3SE6 315-0BB01**		1	1 unit	41K
	With 18 N magnetic catch	A	**3SE6 315-1BB01**		1	1 unit	41K
• Individually coded, programmable several times	None	A	**3SE6 315-0BB02**		1	1 unit	41K
	With 18 N magnetic catch	A	**3SE6 315-1BB02**		1	1 unit	41K
• Individually coded, programmable once	None	A	**3SE6 315-0BB03**		1	1 unit	41K
	With 18 N magnetic catch	A	**3SE6 315-1BB03**		1	1 unit	41K
 3SE6 310							
RFID actuators							
• Standard	None	A	**3SE6 310-0BC01**		1	1 unit	41K
	With 18 N magnetic catch	A	**3SE6 310-1BC01**		1	1 unit	41K
Optional accessories							
 3SX5 600-1G							
Covers and spacers One pack (1 unit) contains 8 covers and 4 spacers		A	**3SX5 600-1G**		1	1 unit	41K
 3SX5 601-2GA							
Connecting cables, 8-pole, with 1 straight M12 socket Rated voltage 30 V Rated current 2 A	Length 3 m	A	**3SX5 601-2GA03**		1	1 unit	41K
	Length 5 m	A	**3SX5 601-2GA05**		1	1 unit	41K
	Length 10 m	A	**3SX5 601-2GA10**		1	1 unit	41K

For monitoring units see Chapter 2, "Industrial Communication" → "AS-Interface" and Chapter 11, "Safety Technology" as well as Catalogs IK PI and ST 70.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Commanding and Signaling Devices

13



Price groups
PG 41J, 41K, 42A

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3SB2 pushbuttons and indicator lights, 16 mm
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13/11 Contact blocks and lampholders
Accessories and spare parts
13/13 Insert labels and insert caps
13/17 Name plates
13/18 Mounting parts and components

3SB3 pushbuttons and indicator lights, 22 mm
13/20 General data
Actuators and indicators, plastic, round, 22 mm
13/25 Complete units
13/31 Coordinate switches, complete
13/34 Actuators and indicators
Actuators and indicators, plastic, square, 26 mm × 26 mm
13/42 Complete units
13/44 Actuators and indicators
Actuators and indicators, metal, round, 22 mm
13/48 Complete units
13/53 Actuators and indicators
Components for actuators and indicators
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13/97 AS-Interface enclosures with standard fittings
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8WD4 signaling columns
13/107 General data
13/110 8WD42 signaling columns, 50 mm diameter
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8WD5 integrated signal lamps
13/116 8WD53 integrated signal lamps, 70 mm diameter

More information can be found on the Internet: see opening information, page 13

1) See Catalog IK PI.

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Introduction

Overview






	3SB2	3SB30, 3SB32	3SB31, 3SB33	3SB35, 3SB36
Pushbuttons and indicator lights				
Designs				
Nominal diameter	16 mm	22 mm	26 mm × 26 mm	22 mm
Version	Plastic, round	Plastic, round	Plastic, square	Metal, round
Actuators				
Pushbuttons and switches	✓[1)]	✓	✓	✓
Illuminated pushbuttons and switches	✓[1)]	✓	✓	✓
Mushroom pushbuttons	--	✓	--	✓
Push-pull buttons	--	✓	--	✓
EMERGENCY-STOP mushroom pushbuttons	✓	✓	✓	✓
Selector switches	✓	✓	✓	✓
Key-operated switches	✓	✓	✓	✓
Special actuators				
Coordinate switches	--	✓	--	--
Twin pushbuttons	--	✓	--	--
Potentiometer drives	--	✓	--	--
Indicators				
Indicator lights	✓	✓	✓	✓
Acoustic signaling devices	--	✓	--	--
Contact blocks				
Single-pole	✓	✓	✓	✓
Two-pole	✓	✓	✓	✓
Lampholders				
Wedge bases	✓	✓ (with solder connections)	✓ (with solder connections)	✓ (with solder connections)
BA 9s bases	--	✓	✓	✓
With integrated LED	--	✓	✓	✓
Connections				
Plug-in connection	✓	--	--	--
Screw terminals	--	✓	✓	✓
Spring-type terminals	--	✓	✓	✓
Solder pins	✓	✓	✓	✓
AS-Interface	--	✓	✓	✓

✓ Standard
-- Not available
❑ Optional
1) Only pushbuttons, no pushbutton switches.

13

AS-Interface solutions

Commanding and signaling devices of the SIRIUS 3SB3 series can be connected to the AS-Interface communication system quickly and easily with the help of various solutions.

For AS-Interface solutions see catalog IK PI "Industrial Communication SIMATIC NET".

AS-Interface EMERGENCY-STOP according to ISO 13850

Using a special F adapter, EMERGENCY-STOP devices according to ISO 13850 (former EN 418) can be directly connected through the standard AS-Interface with safety-oriented communication (see page 13/67).

AS-Interface enclosures

Enclosures with standard fittings are listed in this catalog. For customized enclosures, use the 3SB configurator to select the elements for equipping (see page 13/96).

AS-Interface front panel modules

The front panel module has one 4I/4O slave for connection of four 3SB3 commanding or signaling devices (see Catalog IK PI).

Note:

Safety characteristics see "Appendix" → "Standards and Approvals" → "Overview".

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	3SB38	3SB38 6	3SE7, 3SF2	3SE29
	Enclosures	**Two-hand operation consoles**	**Cable-operated switches**	**Foot switches**
Enclosures				
Plastic	✓	✓	--	✓
Metal	✓	✓	✓	✓
Actuators				
Pushbuttons and switches	✓	✓	✓	✓
Illuminated pushbuttons and switches	✓	✓	--	--
Mushroom pushbuttons	✓	✓	--	--
Push-pull buttons	✓	❑	--	--
EMERGENCY-STOP mushroom push-buttons	✓	✓	✓	--
Selector switches	✓	❑	--	--
Key-operated switches	✓	❑	--	--
Bowden wires	--	--	✓	--
Indicators				
Indicator lights	✓	❑	✓	--
Acoustic signaling devices	✓	❑	--	--
Contact blocks				
Single-pole	✓	✓	--	--
Two-pole	--	✓	✓	✓
Three-pole	--	--	✓	✓
Four-pole	--	--	✓	✓
Connections				
Screw terminals	✓	✓	✓	✓
Spring-type terminals	✓	❑	--	--
Molded cables	--	--	--	✓
Plug-in connection	❑	❑	❑	❑
AS-Interface	✓	❑	✓	--




	8WD42, 8WD44	8WD53
	Signaling columns	**Integrated signal lamps**
Enclosures		
Plastic	✓	✓
Metal	--	--
Lighting		
Incandescent lamps	✓	✓
LEDs	✓	✓
Flashlights	✓	✓
Connections		
Screw terminals	✓	✓
Spring-type terminals	✓	--
AS-Interface	✓	--

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General data

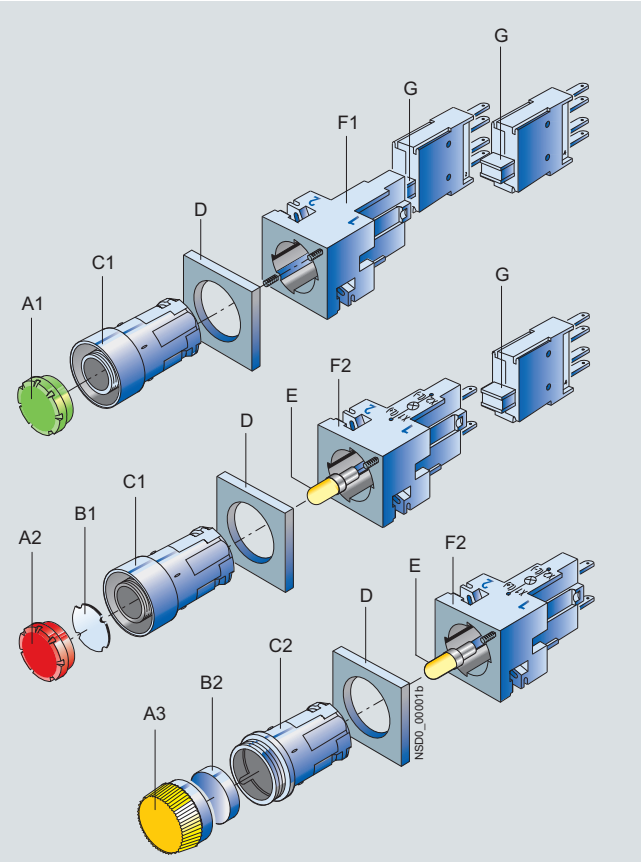
Overview

The 3SB2 pushbuttons and indicator lights are provided for front plate mounting and rear connection with flat connectors. For use on printed circuit boards, contact blocks and lampholders with solder pins are also available.

Standards

IEC 60947-1, EN 60947-1,
IEC 60947-5-1, EN 60947-5-1,
IEC 60947-5-5, EN 60947-5-5 for EMERGENCY-STOP mushroom pushbuttons.

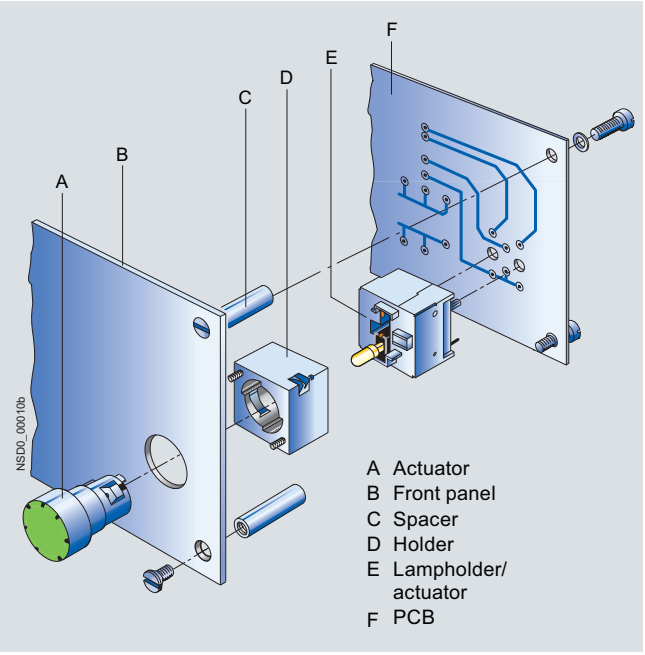
Version with flat connector



A1 Button, flat
A2 Illuminated button, flat
A3 Screw lens for indicator light
B1 Insert label, for labeling
B2 Insert cap, for labeling
C1 Collar with extruded front ring
C2 Collar for indicator light
D Frame for rectangular design
E Wedge base lamp, W2 x 4.6d
F1 Holders
F2 Lampholder with holder
G Contact blocks (1NO or 1NC) for snapping onto the holder or onto the lampholder

For PCB mounting

For use on printed circuit boards, special contact blocks and lampholders for soldering into the printed circuit board are available. For this purpose, the contact blocks and lampholders are fitted with 0.8 mm × 0.8 mm solder pins of length 3.5 mm.



Connection methods

Flat connectors

Solder pin connections

The terminals are indicated in the corresponding tables by the symbols shown on orange backgrounds.

Application

The devices are climate-proof and suitable for marine applications.

Safety EMERGENCY-STOP pushbuttons according to ISO 13850

For controls according to IEC 60204-1 or EN 60204-1, the mushroom pushbuttons of the 3SB2 series are suitable for use as safety EMERGENCY-STOP pushbuttons.

Safety circuits

IEC 60947-5-1 and EN 60947-5-1 require positive opening, i.e. for the purposes of personal safety, the assured opening of NC contacts is expressly stipulated for the electrical equipment of machines in all safety circuits and marked according to IEC 60947-5-1 with the symbol ➔.

Category 4 according to EN 954-1 can be attained with the EMERGENCY-STOP mushroom pushbuttons if the corresponding failsafe evaluation units are selected and correctly installed, e.g. the 3TK28 safety relays or matching units from the ASIsafe, SIMATIC or SINUMERIK product ranges.

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Technical specifications

Type		3SB2
Contact blocks and lampholders		
Standards		IEC 60947-5-1, EN 60947-5-1 IEC 60947-5-5, EN 60947-5-5
Rated insulation voltage U_i	V	250
Conventional thermal current I_{th}	A	10
Rated operational current I_e at rated operational voltage U_e		
• Alternating current AC-12		
- At U_e = 24 ... 230 V	A	10
• Alternating current AC-15		
- At U_e = 24 ... 230 V	A	4
• Direct current DC-12		
- At U_e = 24 V	A	6
- At U_e = 60 V	A	5
- At U_e = 110 V	A	2.5
- At U_e = 230 V	A	1
• Direct current DC-13		
- At U_e = 24 V	A	3
- At U_e = 60 V	A	1.5
- At U_e = 110 V	A	0.7
- At U_e = 230 V	A	0.3
Contact stability		
• Test voltage/test current		5 V/1 mA
Lamps		
• Bases		Wedge base W2 × 4.6 d
• Rated voltage	V	6, 12, 24, 30, 48, 60
• Rated power, max.	W	1
Short-circuit protection weld-free according to IEC 60947-5-1		
• DIAZED fuse links, utilization category gG		10 A TDz, 16 A Dz
• Miniature circuit breaker with C characteristic according to IEC 60898		10 A
Electrical endurance		
• For utilization category AC-15 with 3RT10 15 to 3RT10 26 contactors		10×10^6 operating cycles
Mechanical endurance		10×10^6 operating cycles
Degree of protection acc. to IEC 60529		
• Connection of contact blocks and lampholders behind the front panel		IP00
• Contact chambers of the contact blocks behind the front panel		IP40
Finger-safe according to IEC 61140 and BGV A3		With voltages > 50 V AC or 120 V DC, insulation sleeves must be fitted to the unassigned tab connections.
Data according to UL and CSA		
Rated voltage		
• Contact blocks	V	250 AC
• Indicator light (lamp with wedge base W2 × 4.6 d)	V	60; 1 W
Uninterrupted current	A	5
Switching capacity		B 300, R 300
Actuators and indicators		
Mechanical endurance		
• Pushbuttons		10×10^6 operating cycles
• Actuators, rotary or latching		3×10^5 operating cycles
• Illuminated pushbuttons		3×10^6 operating cycles
Climatic withstand capability		Climate-proof; suitable for marine applications
Ambient temperature		
• During operation, non-illuminated devices and complete with LED	°C	–25 ... +70
• During operation, devices with incandescent lamp	°C	–25 ... +60
• During storage, transport	°C	–40 ... +80
Degree of protection acc. to IEC 60529		
• Actuators and indicators		IP65
• Actuators and indicators with protective cap		IP67
Protective measures		
• For mounting in metal front plates and enclosures		The actuators and lens assemblies must not be included in the protective measures.
• For fitting into enclosures with total insulation		The protective measure "Total insulation" is retained.
Shock resistance acc. to IEC 60068-2-27		
• Shock amplitude		≤ 50 *g*
• Shock duration	ms	11
• Shock form		Half-sine

More technical information see Reference manual "Commanding and Signaling Devices".

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General data

Configuration

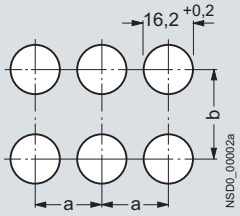
Design

Two design versions can be mounted:

- Round design: The 3SB2 pushbuttons and indicator lights are assembled with the modules – actuator, holder, contact block and lampholder. Depending on the specific application, various versions can be assembled. Complete units are offered for the most commonly used applications.
- Square design: With square, black frames the round units can be given a square look. The frames are inserted underneath the round actuators. Further mounting is the same as for the round version.

Mounting and fixing:

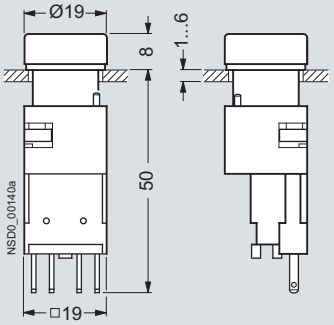
Mounting dimensions according to EN 50007
(not applicable to EMERGENCY-STOP mushroom pushbuttons)



Minimum clearance	a	b
Round version	19	19
Square version without inscription label	21	21
Round and square version with inscription label	21	32
For 2 selector switches with 3 switch positions, latching, side by side	21	21

For mounting, the actuator or the lens assembly is inserted from the front into the hole in the front plate. Four small nubs ensure a secure fitting in the hole. The holder is plugged on from the back and snaps automatically into place. The module is fixed to the holder with 2 screws so that it is immune to vibrations.

One or two contact blocks can be mounted on the holder. They are inserted into the holder with slide slots and held down with two snap brackets.



Pushbutton (flat) with holder and contact block

If a command point is fitted with an indicator light or illuminated pushbutton, a lamp socket with lampholder must be used instead of a holder. It is suitable for incandescent lamps or LEDs with bases of type W2 × 4.6d.

For PCB mounting

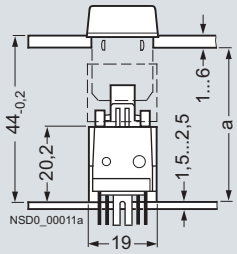
The command point comprises the actuator – e.g. 3SB2 pushbutton, illuminated pushbutton or indicator light –, which is mounted in the front plate, and a contact block and a lampholder which are soldered to the PCB. For this purpose, the contact blocks and lampholders are fitted with 0.8 mm × 0.8 mm solder pins of length 3.5 mm.

Mounting and fixing:

Mounting dimensions according to EN 50007.

The actuators are mounted in the same way as 3SB2 front plate mounting devices.

The contact blocks and lampholders are plugged into the printed circuit board by means of their solder pins and can be flow-soldered. After soldering, the devices must be flush with the board and perpendicular to it. The printed circuit board must be supported on spacing bolts so that it cannot sag or bend more than 0.1 mm.



Length **a** of spacing bolts:
a = $44_{-0.2}$ minus front plate thickness.

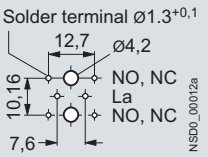
When using name plates, the length **a** is reduced by 0.8 mm.

Illuminated pushbutton with solder pin connection

To avoid bending the PCB when the control device is operated, sufficient spacing bolts must be provided as shown in the table below:

PCB thickness	Max. distance between spacing bolts
1.5 mm	80 mm
2.5 mm	150 mm
When using EMERGENCY-STOP pushbuttons	always 50 mm

These details are based on epoxy resin glass fiber mat.



Solder pin spacing

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Selection and ordering data

Version	Contact blocks	Color of handle	DT	Flat connectors Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
 Pushbutton with flat button								
Pushbuttons with flat button	1 NO	Black	▶	**3SB22 02-0AB01**		1	1 unit	41J
	1 NC	Black	B	**3SB22 03-0AB01**		1	1 unit	41J
	1 NC	Red	▶	**3SB22 03-0AC01**		1	1 unit	41J
	1 NO	Yellow	B	**3SB22 02-0AD01**		1	1 unit	41J
	1 NO	Green	▶	**3SB22 02-0AE01**		1	1 unit	41J
	1 NO	Blue	B	**3SB22 02-0AF01**		1	1 unit	41J
	1 NO	White	▶	**3SB22 02-0AG01**		1	1 unit	41J
	1 NO	Clear[1]	B	**3SB22 02-0AH01**		1	1 unit	41J
Illuminated pushbuttons with flat button Lampholder W2 x 4.6 d[2]	1 NC	Red	▶	**3SB22 07-0AC01**		1	1 unit	41J
	1 NO	Yellow[1]	B	**3SB22 06-0AD01**		1	1 unit	41J
	1 NO	Green	▶	**3SB22 06-0AE01**		1	1 unit	41J
	1 NO	Blue	B	**3SB22 06-0AF01**		1	1 unit	41J
	1 NO	Clear[1]	▶	**3SB22 06-0AH01**		1	1 unit	41J
Illuminated pushbuttons with flat button Lampholder W2 x 4.6 d with incandescent lamp 24 V	1 NC	Red	▶	**3SB22 27-0AC01**		1	1 unit	41J
	1 NO	Yellow[1]	B	**3SB22 26-0AD01**		1	1 unit	41J
	1 NO	Green	▶	**3SB22 26-0AE01**		1	1 unit	41J
	1 NO	Blue	B	**3SB22 26-0AF01**		1	1 unit	41J
	1 NO	Clear[1]	▶	**3SB22 26-0AH01**		1	1 unit	41J
 Illuminated pushbutton with raised button								
Pushbuttons with raised button	1 NO	Black	B	**3SB22 02-0LB01**		1	1 unit	41J
	1 NC	Red	B	**3SB22 03-0LC01**		1	1 unit	41J
	1 NO	Yellow	B	**3SB22 02-0LD01**		1	1 unit	41J
	1 NO	Blue	B	**3SB22 02-0LF01**		1	1 unit	41J
	1 NO	Clear[1]	B	**3SB22 02-0LH01**		1	1 unit	41J
Illuminated pushbuttons with raised button Lampholder W2 x 4.6 d[2]	1 NC	Red	B	**3SB22 07-0LC01**		1	1 unit	41J
	1 NO	Yellow[1]	B	**3SB22 06-0LD01**		1	1 unit	41J
	1 NO	Green	B	**3SB22 06-0LE01**		1	1 unit	41J
	1 NO	Blue	B	**3SB22 06-0LF01**		1	1 unit	41J
	1 NO	Clear[1]	B	**3SB22 06-0LH01**		1	1 unit	41J
Illuminated pushbuttons with raised button Lampholder W2 x 4.6 d with incandescent lamp 24 V	1 NC	Red	B	**3SB22 27-0LC01**		1	1 unit	41J
	1 NO	Yellow[1]	B	**3SB22 26-0LD01**		1	1 unit	41J
	1 NO	Green	B	**3SB22 26-0LE01**		1	1 unit	41J
	1 NO	Blue	B	**3SB22 26-0LF01**		1	1 unit	41J
	1 NO	Clear[1]	B	**3SB22 26-0LH01**		1	1 unit	41J
 EMERGENCY-STOP mushroom pushbutton								
EMERGENCY-STOP mushroom pushbuttons acc. to ISO 13850, latching[3] Latches automatically when pressed; unlatches by turning the mushroom head anticlockwise, with yellow name plate, with inscription "NOT-HALT"	1 NC ⊖[4]	Red	▶	**3SB22 03-1AC01**		1	1 unit	41J

1) Inscription is possible by inserting a label.

2) For wedge base lamps see "Accessories", page 13/18.

3) The mushroom pushbutton cannot be combined with 3SB29 02-0AB name plate or 3SB29 02-0AA single frame.

4) Positive opening according to IEC 60947-5-1, Appendix K.

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Complete units

Version	Contact blocks	Color of handle	DT	Flat connectors Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
 Selector switch **Selector switches, 2 switch positions** Switching sequence O-I, 62° operating angle, latching 	1 NO	Black	▶	**3SB22 02-2AB01**		1	1 unit	41J
	1 NO	Red	B	**3SB22 02-2AC01**		1	1 unit	41J
	1 NO	Green	B	**3SB22 02-2AE01**		1	1 unit	41J
	1 NO	White	B	**3SB22 02-2AG01**		1	1 unit	41J
Selector switches, 3 switch positions Switching sequence I-O-II, 2 × 62° operating angle, latching 	1 NO, 1 NO	Black	▶	**3SB22 10-2DB01**		1	1 unit	41J
	1 NO, 1 NO	Red	B	**3SB22 10-2DC01**		1	1 unit	41J
	1 NO, 1 NO	Green	B	**3SB22 10-2DE01**		1	1 unit	41J
	1 NO, 1 NO	White	B	**3SB22 10-2DG01**		1	1 unit	41J
Selector switches, 3 switch positions Switching sequence I-O-II, 2 × 50° operating angle, momentary contact type 	1 NO, 1 NO	Black	▶	**3SB22 10-2EB01**		1	1 unit	41J
	1 NO, 1 NO	Red	B	**3SB22 10-2EC01**		1	1 unit	41J
	1 NO, 1 NO	Green	B	**3SB22 10-2EE01**		1	1 unit	41J
	1 NO, 1 NO	White	B	**3SB22 10-2EG01**		1	1 unit	41J

Version	Contact blocks	Lock No.	Key removal position	DT	Flat connectors Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
 CES key-operated switch **CES key-operated switches, 2 switch positions** Switching sequence O-I, 62° operating angle, latching 	1 NO	SB2	O	▶	**3SB22 02-4LA01**		1	1 unit	41J
	1 NO	SB2	O + I	B	**3SB22 02-4LB01**		1	1 unit	41J
CES key-operated switches, 3 switch positions Switching sequence I-O-II, 2 × 62° operating angle, latching 	1 NO, 1 NO	SB2	O	B	**3SB22 10-4PA01**		1	1 unit	41J
	1 NO, 1 NO	SB2	I + O + II	B	**3SB22 10-4PB01**		1	1 unit	41J
CES key-operated switches, 3 switch positions Switching sequence I-O-II, 2 × 50° operating angle, momentary contact type 	1 NO, 1 NO	SB2	O	B	**3SB22 10-4QA01**		1	1 unit	41J

Version	Color of screw lens	DT	Flat connectors Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
 Indicator light **Indicator lights** Lampholder W2 x 4.6 d without lamp[1)]	Red	▶	**3SB22 04-6BC06**		1	1 unit	41J
	Yellow	B	**3SB22 04-6BD06**		1	1 unit	41J
	Green	▶	**3SB22 04-6BE06**		1	1 unit	41J
	White	▶	**3SB22 04-6BG06**		1	1 unit	41J
	Clear	B	**3SB22 04-6BH06**		1	1 unit	41J
Indicator lights Lampholder W2 x 4.6 d with incandescent lamp 24 V	Red	▶	**3SB22 24-6BC06**		1	1 unit	41J
	Yellow	B	**3SB22 24-6BD06**		1	1 unit	41J
	Green	▶	**3SB22 24-6BE06**		1	1 unit	41J
	White	▶	**3SB22 24-6BG06**		1	1 unit	41J
	Clear	B	**3SB22 24-6BH06**		1	1 unit	41J

[1)] Wedge base lamps see "Accessories", page 13/18.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

Pushbuttons

Version	Color of handle	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
 Pushbutton and illuminated pushbutton with flat button							
Pushbuttons with flat button	Black	▶	**3SB20 00-0AB01**		1	1 unit	41J
	Red	▶	**3SB20 00-0AC01**		1	1 unit	41J
	Yellow	B	**3SB20 00-0AD01**		1	1 unit	41J
	Green	▶	**3SB20 00-0AE01**		1	1 unit	41J
	Blue	▶	**3SB20 00-0AF01**		1	1 unit	41J
	White	▶	**3SB20 00-0AG01**		1	1 unit	41J
	Clear[1]	B	**3SB20 00-0AH01**		1	1 unit	41J
Illuminated pushbuttons with flat button	Red	▶	**3SB20 01-0AC01**		1	1 unit	41J
	Yellow[1]	B	**3SB20 01-0AD01**		1	1 unit	41J
	Green	▶	**3SB20 01-0AE01**		1	1 unit	41J
	Blue	B	**3SB20 01-0AF01**		1	1 unit	41J
	White	▶	**3SB20 00-0AG01**		1	1 unit	41J
	Clear[1]	B	**3SB20 00-0AH01**		1	1 unit	41J
 Pushbutton and illuminated pushbutton with raised button							
Pushbuttons with raised button	Black	B	**3SB20 00-0LB01**		1	1 unit	41J
	Red	B	**3SB20 00-0LC01**		1	1 unit	41J
	Yellow	B	**3SB20 00-0LD01**		1	1 unit	41J
	Blue	B	**3SB20 00-0LF01**		1	1 unit	41J
	White	B	**3SB20 00-0LG01**		1	1 unit	41J
	Clear[1]	B	**3SB20 00-0LH01**		1	1 unit	41J
Illuminated pushbuttons with raised button	Red	B	**3SB20 01-0LC01**		1	1 unit	41J
	Yellow[1]	B	**3SB20 01-0LD01**		1	1 unit	41J
	Green	▶	**3SB20 01-0LE01**		1	1 unit	41J
	Blue	B	**3SB20 01-0LF01**		1	1 unit	41J
	Clear[1]	B	**3SB20 00-0LH01**		1	1 unit	41J
 EMERGENCY-STOP mushroom pushbutton							
EMERGENCY-STOP mushroom pushbuttons acc. to ISO 13850, latching[2] Latches automatically when pressed; unlatches by turning the mushroom head anticlockwise	Red	▶	**3SB20 00-1AC01**		1	1 unit	41J

[1] Inscription is possible by inserting a label.

[2] The mushroom pushbutton cannot be combined with 3SB29 02-0AB name plate or 3SB29 02-0AA single frame.

Selector switches

Version	Color of handle	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
 Selector switch							
Selector switches with 2 switch positions Switching sequence O-I, 62° operating angle, latching 	Black	▶	**3SB20 00-2AB01**		1	1 unit	41J
	Red	B	**3SB20 00-2AC01**		1	1 unit	41J
	Green	B	**3SB20 00-2AE01**		1	1 unit	41J
	White	B	**3SB20 00-2AG01**		1	1 unit	41J
Selector switches with 2 switch positions Switching sequence O-I, 50° operating angle, momentary contact type (reset from the right) 	Black	C	**3SB20 00-2BB01**		1	1 unit	41J
	Red	B	**3SB20 00-2BC01**		1	1 unit	41J
	Green	B	**3SB20 00-2BE01**		1	1 unit	41J
Selector switches with 2 switch positions Switching sequence O-I, 90° operating angle, latching 	Black	B	**3SB20 00-2HB01**		1	1 unit	41J
	Red	B	**3SB20 00-2HC01**		1	1 unit	41J
	Green	B	**3SB20 00-2HE01**		1	1 unit	41J
	White	B	**3SB20 00-2HG01**		1	1 unit	41J
Selector switches with 3 switch positions Switching sequence I-O-II, 2 x 62° operating angle, latching 	Black	▶	**3SB20 00-2DB01**		1	1 unit	41J
	Red	B	**3SB20 00-2DC01**		1	1 unit	41J
	Green	B	**3SB20 00-2DE01**		1	1 unit	41J
	White	B	**3SB20 00-2DG01**		1	1 unit	41J
Selector switches with 3 switch positions Switching sequence I-O-II, 2 x 50° operating angle, momentary contact type 	Black	▶	**3SB20 00-2EB01**		1	1 unit	41J
	Red	B	**3SB20 00-2EC01**		1	1 unit	41J
	Green	B	**3SB20 00-2EE01**		1	1 unit	41J
	White	B	**3SB20 00-2EG01**		1	1 unit	41J
Selector switches with 3 switch positions Switching sequence I-O-II, 2 x 90° operating angle, latching 	Black	B	**3SB20 00-2JB01**		1	1 unit	41J

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Actuators and indicators

Version		Lock No.	Key removal position	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Key-operated switches									
 CES key-operated switch									
CES key-operated switches with 2 keys, 2 switch positions Switching sequence O-I, 62° operating angle, latching		SB2	O+I	B	**3SB20 00-4LB01**		1	1 unit	41J
			O	►	**3SB20 00-4LA01**		1	1 unit	41J
CES key-operated switches with 2 keys, 2 switch positions Switching sequence O-I, 50° operating angle, momentary contact		SB2	O	►	**3SB20 00-4MA01**		1	1 unit	41J
CES key-operated switches with 2 keys, 3 switch positions Switching sequence I-O-II, 2 x 62° operating angle, latching		SB2	I+O+II	B	**3SB20 00-4PB01**		1	1 unit	41J
			O	B	**3SB20 00-4PA01**		1	1 unit	41J
CES key-operated switches with 2 keys, 3 switch positions Switching sequence I-O-II, 2 x 50° operating angle, momentary contact		SB2	O	B	**3SB20 00-4QA01**		1	1 unit	41J

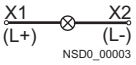
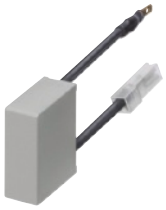
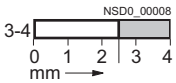
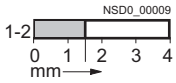
Version	Color of screw lens	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Indicator lights							
 Indicator light							
Indicator lights with concentric rings (inscription by inserting a cap is not possible)	Red	►	**3SB20 01-6BC06**		1	1 unit	41J
	Yellow	B	**3SB20 01-6BD06**		1	1 unit	41J
	Green	►	**3SB20 01-6BE06**		1	1 unit	41J
	Blue	B	**3SB20 01-6BF06**		1	1 unit	41J
	White	►	**3SB20 01-6BG06**		1	1 unit	41J
	Clear	B	**3SB20 01-6BH06**		1	1 unit	41J
Indicator lights, smooth for inscription by inserting a cap[1)]	Red	B	**3SB20 01-6CC06**		1	1 unit	41J
	Yellow	B	**3SB20 01-6CD06**		1	1 unit	41J
	Green	B	**3SB20 01-6CE06**		1	1 unit	41J
	Blue	B	**3SB20 01-6CF06**		1	1 unit	41J
	Clear	B	**3SB20 01-6CH06**		1	1 unit	41J

[1)] Insert caps, see "Accessories", page 13/15.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

Version	Diagram	Operating travel Contact closed Contact open	DT	Flat connectors Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Contact blocks and lampholders with flat connectors 2 × 2.8 – 0.8 mm according to IEC 60760								
Holders for fixing the actuator and the contact blocks								
 Holder Holders for 2 contact blocks Inscription with identification number 1-2				► **3SB29 08-0AA**		1	5 units	41J
Lampholders with holder for fixing the actuator and the contact blocks								
 Lampholder **Lampholders** W2 x 4.6 d without lamp				► **3SB23 04-2A**		1	1 unit	41J
Lampholders W2 x 4.6 d								
• With 6 V incandescent lamp			B	**3SB23 04-2F**		1	1 unit	41J
• With 24 V incandescent lamp			B	**3SB23 04-2H**		1	1 unit	41J
 Voltage reducer **Voltage reducers**[1] For connecting the 3SB29 08-1AE lamp (48 V) to 230 V AC			B	**3SB24 04-3D**		1	1 unit	41J
Contact blocks for fixing in the holder or lampholder								
 Contact block **Contact blocks with one contact**[2] 1 NO				► **3SB24 04-0B**		1	1 unit	41J
1 NC ⊖[3]				► **3SB24 04-0C**		1	1 unit	41J

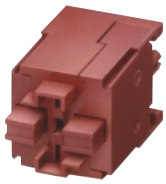
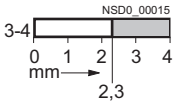
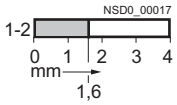
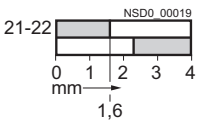
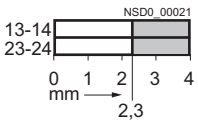
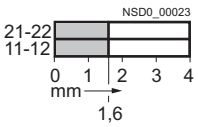
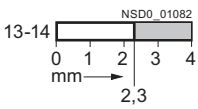
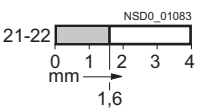
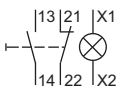
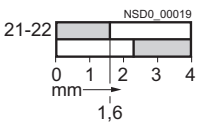
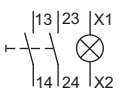
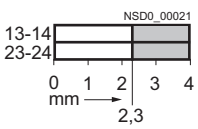
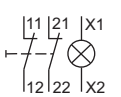
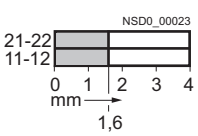
[1] Use fixpoint terminal according to IEC 60439-1.

[2] For plug-in and insulation sleeves see "Accessories", page 13/19.

[3] Positive opening according to IEC 60947-5-1, Appendix K.

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Contact blocks and lampholders

Version	Diagram	Operating travel Contact closed Contact open	DT	Solder pin connections Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Contact blocks and lampholders with solder pins								
 Holder	**Holders for contact block with solder pins** For fixing the actuators in the front panel		C	**3SB29 08-0AB**		1	5 units	41J
	Lampholders Wedge base W2 x 4.6 d[1]		B	**3SB24 55-2A**		1	1 unit	41J
	Contact blocks							
 Contact block with solder pins	1 NO			B	**3SB24 55-0B**		1	1 unit	41J
	1 NC ➔[2]			B	**3SB24 55-0C**		1	1 unit	41J
	1 NO + 1 NC ➔[2]			B	**3SB24 55-0J**		1	1 unit	41J
	1 NO + 1 NO			B	**3SB24 55-0E**		1	1 unit	41J
	1 NC + 1 NC ➔[2]			B	**3SB24 55-0F**		1	1 unit	41J
	Contact blocks and lampholders, wedge base W2 x 4.6 d[1]							
 Contact block and lampholder with solder pins	1 NO			B	**3SB24 55-1B**		1	1 unit	41J
	1 NC ➔[2]			B	**3SB24 55-1C**		1	1 unit	41J
	1 NO + 1 NC ➔[2]			B	**3SB24 55-1J**		1	1 unit	41J
	1 NO + 1 NO			B	**3SB24 55-1E**		1	1 unit	41J
	1 NC + 1 NC ➔[2]			B	**3SB24 55-1F**		1	1 unit	41J

[1] The lamp is not included in the scope of supply.

[2] Positive opening according to IEC 60947-5-1, Appendix K.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Clear pushbuttons, illuminated pushbuttons and indicator lights can be fitted with insert labels and caps for identification purposes.

The insert labels and insert caps are made of a milky-transparent plastic with black lettering; they can be fitted in any 90° angle.

Inscriptions

The inscriptions have upper case initial letters. Graphic symbols, including those not listed in the catalog, are according to ISO 7000 or IEC 60417.

For customized inscriptions see "Options".

Selection and ordering data

	Inscription/Symbol		Symbol No.	DT	**Insert labels** For pushbuttons and illuminated pushbuttons, flat Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
For self-inscription									
	Blank			B	**3SB29 01-4AA**		100	10 units	41J
With inscription									
	Ein			B	**3SB29 01-4AB**		100	10 units	41J
	Aus			B	**3SB29 01-4AC**		100	10 units	41J
	Auf			B	**3SB29 01-4AD**		100	10 units	41J
	Ab			B	**3SB29 01-4AE**		100	10 units	41J
	Vor			B	**3SB29 01-4AF**		100	10 units	41J
	Zurück			B	**3SB29 01-4AG**		100	10 units	41J
	Rechts			B	**3SB29 01-4AH**		100	10 units	41J
	Links			B	**3SB29 01-4AJ**		100	10 units	41J
	Halt			B	**3SB29 01-4AK**		100	10 units	41J
	Zu			B	**3SB29 01-4AL**		100	10 units	41J
	Langsam			B	**3SB29 01-4AN**		100	10 units	41J
	Störung			B	**3SB29 01-4AQ**		100	10 units	41J
	On			B	**3SB29 01-4EB**		100	10 units	41J
	Start			B	**3SB29 01-4EK**		100	10 units	41J
	Stop			B	**3SB29 01-4EL**		100	10 units	41J
	Reset			B	**3SB29 01-4EM**		100	10 units	41J
	Test			B	**3SB29 01-4EN**		100	10 units	41J
	0			B	**3SB29 01-4RA**		100	10 units	41J
	1			B	**3SB29 01-4RB**		100	10 units	41J
	2			B	**3SB29 01-4RC**		100	10 units	41J
	3			B	**3SB29 01-4RD**		100	10 units	41J
	4			B	**3SB29 01-4RE**		100	10 units	41J
	5			B	**3SB29 01-4RF**		100	10 units	41J
	6			B	**3SB29 01-4RG**		100	10 units	41J
	7			B	**3SB29 01-4RH**		100	10 units	41J
	8			B	**3SB29 01-4RJ**		100	10 units	41J
	9			B	**3SB29 01-4RK**		100	10 units	41J
Graphic ON/OFF symbols									
	O (Off)		5008 IEC	B	**3SB29 01-4MB**		100	10 units	41J
	I (On)		5007 IEC	B	**3SB29 01-4MC**		100	10 units	41J
	II (On)		--	B	**3SB29 01-4MD**		100	10 units	41J

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Insert labels and insert caps

Inscription/Symbol		Symbol No.	DT	**Insert labels** For pushbuttons and illuminated pushbuttons, flat Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Graphic equipment symbols								
Electric motor		0011 ISO	B	**3SB29 01-4PA**		100	10 units	41J
Horn		5014 IEC	B	**3SB29 01-4PB**		100	10 units	41J
Pump		0134 ISO	B	**3SB29 01-4PD**		100	10 units	41J
Coolant pump		0355 ISO	B	**3SB29 01-4PE**		100	10 units	41J
Graphic motion symbols								
Motion in direction of arrow (straight)		5022 IEC	B	**3SB29 01-4NA**		100	10 units	41J
Motion in direction of arrow (diagonal)		--	B	**3SB29 01-4NB**		100	10 units	41J
Clockwise rotation		0004 ISO	B	**3SB29 01-4NC**		100	10 units	41J
Anticlockwise rotation		--	B	**3SB29 01-4ND**		100	10 units	41J
Fast motion		0266 ISO	B	**3SB29 01-4NE**		100	10 units	41J
Increase (plus)		5005 IEC	B	**3SB29 01-4NG**		100	10 units	41J
Decrease (minus)		5006 IEC	B	**3SB29 01-4MC**		100	10 units	41J
Graphic control symbols								
Clamp		--	B	**3SB29 01-4QB**		100	10 units	41J
Release		--	B	**3SB29 01-4QC**		100	10 units	41J
Brake off		0021 ISO	B	**3SB29 01-4QE**		100	10 units	41J
Lock		0022 ISO	B	**3SB29 01-4QF**		100	10 units	41J
Unlock		0023 ISO	B	**3SB29 01-4QG**		100	10 units	41J
On/Off, momentary contact		5011 IEC	B	**3SB29 01-4QJ**		100	10 units	41J
Manual operation		0096 ISO	B	**3SB29 01-4QK**		100	10 units	41J
Automatic sequence		0017 ISO	B	**3SB29 01-4QL**		100	10 units	41J
Customized inscriptions								
Any inscription				**3SB29 01-4AZ**				
1 line of text with up to 6 characters of 3 mm in height. Please add the appropriate order code to the Order No. and specify the line of text required.			B	**K0Y**		1	1 unit	41J
			B	**K1Y** or **K2Y**		1	1 unit	41J
			B	**K5Y**		1	1 unit	41J
Other graphic symbols			B	**3SB29 01-4AZ**		1	1 unit	41J
Please add the order code **"K3Y"** to the Order No. and specify the serial number and the applied standard (ISO 7000 or IEC 60417).				**K3Y**				
Any inscription or symbol			B	**3SB29 01-4AZ**		1	1 unit	41J
Please add the order code **"K9Y"** to the Order No. and specify the inscription or the symbol required.				**K9Y**				

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Inscription/Symbol		Symbol No.	DT	**Insert caps** For pushbuttons and illuminated pushbuttons, raised Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
For self-inscription								
Blank			B	**3SB29 01-5AA**		100	10 units	41J
With inscription								
Ein			B	**3SB29 01-5AB**		100	10 units	41J
On			B	**3SB29 01-5EB**		100	10 units	41J
Aus			B	**3SB29 01-5AC**		100	10 units	41J
Auf			B	**3SB29 01-5AD**		100	10 units	41J
Zu			B	**3SB29 01-5AL**		100	10 units	41J
0			C	**3SB29 01-5RA**		100	10 units	41J
1			B	**3SB29 01-5RB**		100	10 units	41J
2			B	**3SB29 01-5RC**		100	10 units	41J
3			B	**3SB29 01-5RD**		100	10 units	41J
4			B	**3SB29 01-5RE**		100	10 units	41J
5			B	**3SB29 01-5RF**		100	10 units	41J
6			B	**3SB29 01-5RG**		100	10 units	41J
7			B	**3SB29 01-5RH**		100	10 units	41J
8			B	**3SB29 01-5RJ**		100	10 units	41J
9			B	**3SB29 01-5RK**		100	10 units	41J
Graphic ON/OFF symbols								
O (Off)		5008 IEC	B	**3SB29 01-5MB**		100	10 units	41J
I (On)		5007 IEC	B	**3SB29 01-5MC**		100	10 units	41J
II (On)		--	B	**3SB29 01-5MD**		100	10 units	41J
Graphic motion symbols								
Motion in direction of arrow		5022 IEC	B	**3SB29 01-5NA**		100	10 units	41J
Motion in direction of arrow		--	B	**3SB29 01-5NB**		100	10 units	41J
Increase (plus)		5005 IEC	B	**3SB29 01-5NG**		100	10 units	41J
Decrease (minus)		5006 IEC	B	**3SB29 01-5MC**		100	10 units	41J
Graphic control symbols								
Clamp		--	B	**3SB29 01-5QB**		100	10 units	41J
Release		--	B	**3SB29 01-5QC**		100	10 units	41J
Customized inscriptions								
Any inscription				**3SB29 01-5AZ**				
1 line of text with up to 6 characters of 3 mm in height. Please add the appropriate order code to the Order No. and specify the line of text required.			B	**K0Y**		1	1 unit	41J
			B	**K1Y** or **K2Y**		1	1 unit	41J
			B	**K5Y**		1	1 unit	41J
Other graphic symbols			B	**3SB29 01-5AZ**		1	1 unit	41J
Please add the order code **"K3Y"** to the Order No. and specify the serial number and the applied standard (ISO 7000 or IEC 60417).				**K3Y**				
Any inscription or symbol			B	**3SB29 01-5AZ**		1	1 unit	41J
Please add the order code **"K9Y"** to the Order No. and specify the inscription or the symbol required.				**K9Y**				

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Insert labels and insert caps

	Inscription/Symbol	Symbol No.	DT	Insert caps For indicator lights Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
For self-inscription								
	Blank		B	**3SB29 01-7AA**		100	10 units	41J
With inscription								
	Betrieb		B	**3SB29 01-7AP**		100	1 unit	41J
	Störung		B	**3SB29 01-7AQ**		100	10 units	41J
Graphic symbols								
	Pump	0134 ISO	B	**3SB29 01-7PD**		100	10 units	41J
	Manual operation	0096 ISO	B	**3SB29 01-7QK**		100	10 units	41J
Customized inscriptions								
	**Any inscription**			**3SB29 01-7AZ**				
	1 line of text with up to 6 characters of 3 mm in height. Please add the appropriate order code to the Order No. and specify the line of text required.		B	**K0Y**		1	1 unit	41J
			B	**K1Y** or **K2Y**		1	1 unit	41J
			B	**K5Y**		1	1 unit	41J
	Other graphic symbols		B	**3SB29 01-7AZ**		1	1 unit	41J
	Please add the order code **"K3Y"** to the Order No. and specify the serial number and the applied standard (ISO 7000 or IEC 60417).			**K3Y**				
	Any inscription or symbol		B	**3SB29 01-7AZ**		1	1 unit	41J
	Please add the order code **"K9Y"** to the Order No. and specify the inscription or the symbol required.			**K9Y**				

Options

Customized inscriptions

Labels and caps can be inscribed with text and symbols not listed in the ordering data. Append the following codes to the Order No.:

- Text line in upper/lower case, always upper case for beginning of line (e.g. "Lift"): **K0Y**
- Text line in upper case (e.g. "LIFT"): **K1Y**
- Text line in lower case (e.g. "lift"): **K2Y**
- Text line in upper/lower case, all words begin with upper case letters (e.g. "Lift"): **K5Y**
- Symbol with number according to ISO 7000 or IEC 60417: **K3Y**
- Any inscription or symbols according to order form supplement: **K9Y**

When ordering, specify the required inscription in plain text in addition to the order number and order code. In the case of special inscriptions with words in languages other than German, give the exact spelling and specify the language.

One line with up to 6 characters with 3 mm letter height is possible for the inscription (see ordering example 1).

Symbols can also be ordered with numbers according to ISO 7000 or IEC 60417 (see ordering examples 2 and 3).

For special symbols (order code K9Y), a CAD drawing in DXF format can be submitted.

Ordering example 1

3SB29 01–4AZ
K1Y
Z = pump

Ordering example 2

3SB29 01–4AZ
K3Y
Z = 5008 IEC

Ordering example 3

3SB29 01–4AZ
K3Y
Z = 1118 ISO

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

The name plates consist of a black plastic label holder and an inscription label (silver with black print) for sticking in place.

Note mounting dimensions!

Inscriptions

The inscriptions (also special inscriptions) are lower case with upper case initial letters. Graphic symbols, including those not listed in the catalog, are according to ISO 7000 or IEC 60417.

Selection and ordering data

Inscription/Symbol	Symbol No.	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Inscription labels, self-adhesive, 9.5 mm × 18.5 mm							
 Blank		►	**3SB29 01-2AA**		100	10 units	41J
Ein		B	**3SB29 01-2AB**		100	10 units	41J
Aus		B	**3SB29 01-2AC**		100	10 units	41J
Auf		B	**3SB29 01-2AD**		100	10 units	41J
Zu		B	**3SB29 01-2AL**		100	10 units	41J
Vor		B	**3SB29 01-2AF**		100	10 units	41J
Zurück		B	**3SB29 01-2AG**		100	10 units	41J
Schnell		B	**3SB29 01-2AM**		100	10 units	41J
Langsam		B	**3SB29 01-2AN**		100	10 units	41J
Betrieb		B	**3SB29 01-2AP**		100	10 units	41J
Störung		B	**3SB29 01-2AQ**		100	10 units	41J
Einrichten		B	**3SB29 01-2AR**		100	10 units	41J
On		B	**3SB29 01-2EB**		100	10 units	41J
Off		B	**3SB29 01-2EC**		100	10 units	41J
Start		B	**3SB29 01-2EL**		100	10 units	41J
Reset		B	**3SB29 01-2EM**		100	10 units	41J
Fault		B	**3SB29 01-2EW**		100	10 units	41J
Hand Auto		B	**3SB29 01-2BA**		100	10 units	41J
Manual 0 Auto		B	**3SB29 01-2BE**		100	10 units	41J
Man 0 Auto		B	**3SB29 01-2ET**		100	10 units	41J
Graphic symbols							
O (Off)	5008 IEC	B	**3SB29 01-2MB**		100	10 units	41J
I (On)	5007 IEC	B	**3SB29 01-2MC**		100	10 units	41J
O I (horizontal)	--	B	**3SB29 01-2MF**		100	10 units	41J
Motion in direction of arrow	5002 IEC	B	**3SB29 01-2NA**		100	10 units	41J
Customized inscriptions or symbols			**3SB29 01-2XZ**				
(see Options)		B	**K0Y**		1	1 unit	41J
		B	**K1Y, K2Y** or **K3Y**		1	1 unit	41J
		B	**K5Y**		1	1 unit	41J
		B	**K9Y**		1	1 unit	41J
Label holders							
 **Label holders for inscription labels** The label holders must not be used with the 3SB2...-1AC01 EMERGENCY-STOP mushroom pushbutton.		B	**3SB29 02-0AB**		100	10 units	41J

Options

Customized inscriptions

The labels can be inscribed with text and symbols not listed in the ordering data. Append the following codes to the Order No.:

- Text line(s) in upper/lower case, upper case always for beginning of line (e.g. "Lift off"): **K0Y**
- Text line(s) in upper case (e.g. "LIFT OFF"): **K1Y**
- Text line(s) in lower case (e.g. "lift off"): **K2Y**
- Text line(s) in upper/lower case, all words begin with upper case letters (e.g. "Lift Off"): **K5Y**
- Symbol with number according to ISO 7000 or IEC 60417: **K3Y**
- Any inscription or symbols according to order form supplement: **K9Y**

When ordering, specify the required inscription in plain text in addition to the order number and order code. In the case of special inscriptions with words in languages other than German, give the exact spelling and specify the language.

Two lines of 11 characters are permitted with 4 mm letter height (1 line) or 3 mm (2-line).

Symbols can also be ordered with numbers according to ISO 7000 or IEC 60417 (see ordering example).

For special symbols (order code K9Y), a CAD drawing in DXF format can be submitted.

Ordering example

3SB29 01–2XZ
K3Y
Z = 1118 ISO

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Mounting parts and components

Selection and ordering data

	Version	Lamp voltage	Color	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		V							
Buttons and lenses[1]									
 3SB29 10-0AF	**Buttons, flat** For pushbuttons		Black	B	**3SB29 10-0AB**		100	10 units	41J
			Red	B	**3SB29 10-0AC**		100	10 units	41J
			Yellow	B	**3SB29 10-0AD**		100	10 units	41J
			Green	B	**3SB29 10-0AE**		100	10 units	41J
			Blue	B	**3SB29 10-0AF**		100	10 units	41J
			White	B	**3SB29 10-0AG**		100	10 units	41J
			Clear	B	**3SB29 10-0AH**		100	10 units	41J
 3SB29 10-0CF	**Buttons, flat** For illuminated pushbuttons		Red	B	**3SB29 10-0CC**		100	10 units	41J
			Yellow	B	**3SB29 10-0CD**		100	10 units	41J
			Green	B	**3SB29 10-0CE**		100	10 units	41J
			Blue	B	**3SB29 10-0CF**		100	10 units	41J
			White	B	**3SB29 10-0AG**		100	10 units	41J
			Clear	B	**3SB29 10-0AH**		100	10 units	41J
 3SB29 10-0BD	**Buttons, raised** For pushbuttons		Black	B	**3SB29 10-0BB**		1	10 units	41J
			Red	B	**3SB29 10-0BC**		1	10 units	41J
			Yellow	B	**3SB29 10-0BD**		1	10 units	41J
			Clear	B	**3SB29 10-0BH**		1	10 units	41J
 3SB29 10-0DD	**Buttons, raised** For illuminated pushbuttons		Red	B	**3SB29 10-0DC**		1	10 units	41J
			Yellow	B	**3SB29 10-0DD**		1	10 units	41J
			Clear	B	**3SB29 10-0BH**		1	10 units	41J
 3SB29 10-1AD	**Screw lenses** With concentric rings		Red	B	**3SB29 10-1AC**		100	10 units	41J
			Yellow	B	**3SB29 10-1AD**		100	10 units	41J
			Green	B	**3SB29 10-1AE**		100	10 units	41J
			Blue	B	**3SB29 10-1AF**		100	10 units	41J
			White	B	**3SB29 10-1AG**		100	10 units	41J
			Clear	B	**3SB29 10-1AH**		100	10 units	41J
 3SB29 10-1BE	**Screw lenses** Smooth, for inscription with insert cap		Red	B	**3SB29 10-1BC**		100	10 units	41J
			Yellow	B	**3SB29 10-1BD**		100	10 units	41J
			Green	B	**3SB29 10-1BE**		100	10 units	41J
			Blue	B	**3SB29 10-1BF**		100	10 units	41J
			Clear	B	**3SB29 10-1BH**		100	10 units	41J
Key for actuators									
 3SB29 08-2AJ	**Keys** For CES key-operated switch, lock No. SB2			B	**3SB29 08-2AJ**		1	1 unit	41J
Lamps, wedge bases[2]									
 3SB29 08-1AE	**Incandescent lamps** Wedge base W2 × 4.6 d, 1.0 W	AC/DC	Clear						
		6		C	**3SB29 08-1AA**		100	10 units	41J
		12		B	**3SB29 08-1AB**		100	10 units	41J
		24		▶	**3SB29 08-1AC**		100	10 units	41J
		30		A	**3SB29 08-1AD**		100	10 units	41J
		48		B	**3SB29 08-1AE**		1	10 units	41J
		60		B	**3SB29 08-1AF**		1	10 units	41J
 3SB39 01-1SB	**LED lamps, super-bright** Wedge base W2 × 4.6 d	24 AC/DC	Red	B	**3SB39 01-1SB**		1	10 units	41J
			Yellow	B	**3SB39 01-1RB**		1	10 units	41J
			Green	B	**3SB39 01-1TB**		1	10 units	41J
			White	B	**3SB39 01-1UB**		1	10 units	41J
			Blue	B	**3SB29 08-1BD**		1	10 units	41J
 3SB29 08-1BD		28 AC/DC	Red	B	**3SB39 01-1SE**		1	10 units	41J
			Yellow	B	**3SB39 01-1RE**		1	10 units	41J
			Green	B	**3SB39 01-1TE**		1	10 units	41J
			White	B	**3SB39 01-1UE**		1	10 units	41J
			Blue	D	**3SB39 01-1VE**		1	10 units	41J
 3SB29 08-1AB	**Lamp extractors** For lamps with bases W2 × 4.6 d			▶	**3SB29 08-2AB**		1	1 unit	41J

[1] Included in the scope of supply of actuators or indicator lights.

[2] Included in the scope of supply of some complete units.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories for command points							
 3SB29 02-0AA	**Single frames** for square design[1]	►	**3SB29 02-0AA**		100	10 units	41J
 3SB29 08-2AG	**Name plates, yellow, Ø 50 mm** As backing plate for EMERGENCY-STOP, self-adhesive						
	• Blank	►	**3SB29 08-2AF**		1	1 unit	41J
	• With German inscription "NOT-HALT"	►	**3SB29 08-2AG**		1	1 unit	41J
	• With German inscription "NOT-AUS"	►	**3SB29 08-2AK**		1	1 unit	41J
 3SB29 08-3AA	**Blanking plugs** Black plastic (degree of protection IP65)	B	**3SB29 08-3AA**		1	1 unit	41J
 3SB29 08-1	**Protective caps, clear** Silicone, for pushbuttons with flat and raised button	B	**3SB29 08-3AB**		1	1 unit	41J
Flat connectors							
 3SB29 08-8AA	**Plug-in sleeves** For flat connectors 2.8 × 0.8 mm, cross-section 0.5 ... 1.5 mm^2	A	**3SB29 08-8AA**		100	250 units	41J
 3SB29 08-8AB	**Insulation sleeves** For flat connectors, connection from the front	D	**3SB29 08-8AB**		100	250 units	41J
 3SB29 08-8AD	**Complete connectors**[2] For connecting contact blocks and lampholders (up to 10 connections). Guaranteed finger-safe acc. to IEC 61140 and BGV A3.	B	**3SB29 08-8AD**		1	1 unit	41J
 3SB29 08-8AE	**Plug-in sleeves** For flat connectors 2.8 × 0.8 mm, with locating spring for latching in complete connector	B	**3SB29 08-8AE**		100	10 units	41J
Tools							
 3SB29 08-2AA	**Dismantling tools** For holders and lampholders with holder	►	**3SB29 08-2AA**		1	1 unit	41J
 3SB29 08-2AC	**Mounting tools** For buttons and screw lenses	►	**3SB29 08-2AC**		1	1 unit	41J
 6179 0950	**Crimping tools for non-insulated connections, type KRBC 0560** For plug-in sleeves (both versions)		Art. No. 6179 0950 Lapp Kabel, Stuttgart, Germany E-mail: info@lappkabel.de www.lappkabel.de				

[1] Not suitable for EMERGENCY-STOP mushroom pushbuttons.

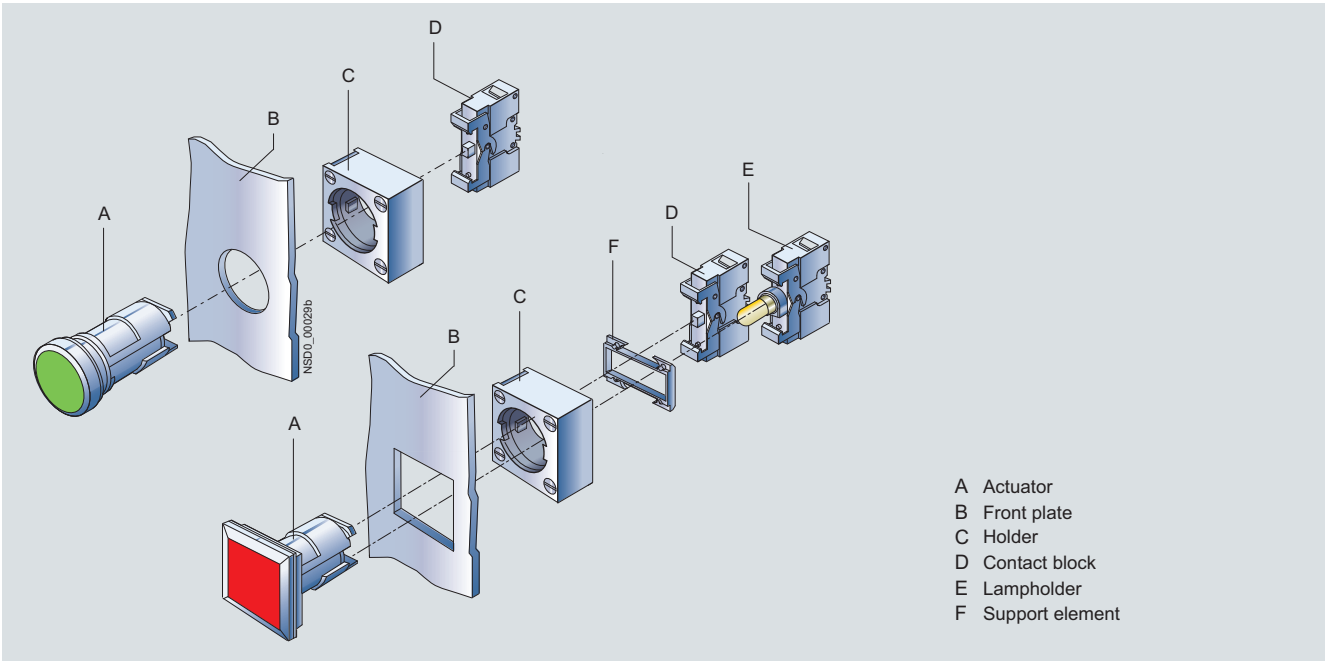
[2] Required 3SB29 08-8AE plug-in sleeves for flat connectors 2.8 × 0.8 mm are not included in the scope of supply.

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General data

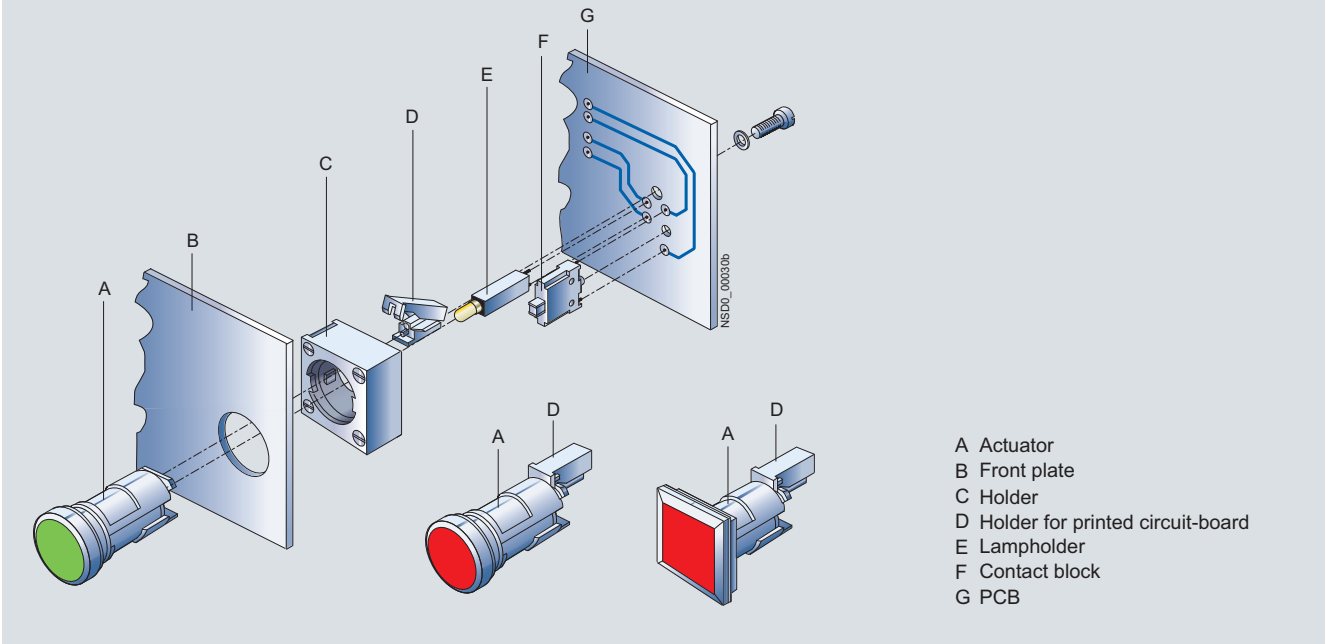
Overview

Front plate mounting



For actuators see page 13/25 to 13/62.
For contact blocks and lampholders see page 13/63 to 13/65.
For holders see page 13/66.

Mounting on printed circuit boards



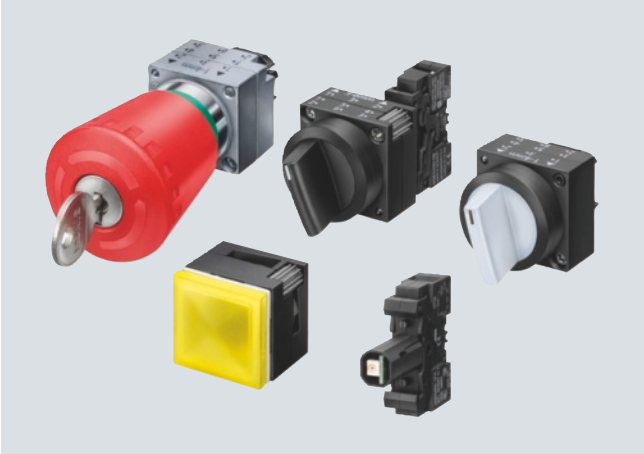
For contact blocks for use on printed circuit boards see page 13/66.

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General data

Design

The 3SB3 series is a modular range of commanding and signaling devices for front panel mounting and rear conductor connection. As an alternative, individual elements can also be supplied for use on printed circuit boards. Complete units are offered for the most commonly used applications.



Actuators and indicators and complete units

The 3SB3 series is available:

- Made of molded plastic in flat, round and square design
- Made of metal in round design.

The devices are of modern industrial design and can be mounted rapidly by a single person. The operating surfaces of the pushbuttons and illuminated pushbuttons are concave. The lenses of the indicator lights are convex.

The metal version with a high degree of protection according to IP67 and NEMA 4 is available for the world market.

One command point comprises:

- An actuator or lens assembly in front of the control panel
- A holder for mounting behind the control panel
- Up to 3 contact blocks and/or 1 lampholder behind the control panel
- A comprehensive range of accessories for inscription

Two contact blocks can be snapped onto the actuator in the standard version.

When three contact blocks or illuminated actuators are required, an additional holder must be plugged onto the actuator from the rear.

- 3SB39 01-0AB holder for 3 contact blocks or for 2 contact blocks and 1 lampholder
- 3SB39 01-0AC holder with pressure plates for actuating a central contact block when using a selector switch, key-operated switch and twin pushbutton with 3 contact blocks.

For illuminated pushbuttons, illuminated switches and illuminated selector switches the holder is included in the scope of supply as standard.

The contact blocks are fitted with slow-action contacts with double operating contacts. These ensure a high switching reliability even with small voltages and currents, such as 5 V/1 mA. They are suitable for use in solid-state systems as well as conventional controls.

Standards

IEC 60947-1, EN 60947-1,
IEC 60947-5-1, EN 60947-5-1,
IEC 60947-5-5, EN 60947-5-5 for EMERGENCY-STOP mushroom pushbuttons.

Connection methods

The devices are available with screw terminals (box terminals), spring-type terminals or solder pins.

	Screw terminals
	Spring-type terminals
	Solder pin connections
	The terminals are indicated in the corresponding tables by the symbols shown on orange backgrounds.

Application

The devices are climate-proof (KTW 24) and suitable for standard industrial applications and operation in marine applications. For operation in oily atmospheres (organic oils/lubricants) we recommend actuators which are marked as "solvent-resistant".

AS-Interface solutions

The 3SB3 commanding and signaling devices can be connected to the AS-Interface communication system quickly and safely with the help of various solutions.

The following solutions are available:

- ASIsafe EMERGENCY-STOP mushroom pushbuttons (see page 13/67)
- AS-Interface enclosures with 1 to 6 command points (see page 13/96).
- AS-Interface front panel modules for 4 command points (see Catalog IK PI)

"Intrinsic safety" type of protection EEx i according to ATEX directive 94/9/EC

The pushbuttons and indicator lights in round design can also be used in hazardous areas. The 3SB34 ..-0. contact blocks and the 3SB34 ..-1A lampholders (with 3SB39 01-1.A LED lamp) with screw terminals or spring-type terminals can be used.

See www.siemens.com/sirius/atex.

Safety EMERGENCY-STOP pushbuttons according to ISO 13850

For controls according to IEC 60204-1 or EN 60204-1, the mushroom pushbuttons of the 3SB3 series are suitable for use as safety EMERGENCY-STOP pushbuttons.

Safety circuits

IEC 60947-5-1 and EN 60947-5-1 require positive opening, i.e. for the purposes of personal safety, the assured opening of NC contacts is expressly stipulated for the electrical equipment of machines in all safety circuits and marked according to IEC 60947-5-1 with the symbol ⊖.

Category 4 according to EN 954-1 can be attained with the EMERGENCY-STOP mushroom pushbuttons if the corresponding failsafe evaluation units are selected and correctly installed, e.g. the 3TK28 safety relays or matching units from the ASIsafe, SIMATIC or SINUMERIK product ranges.

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General data

Technical specifications

Type		3SB34 00-0, 3SB34 20-0	3SB14 00-0J	3SB34 00-1, 3SB34 20-1	3SB34 03-0, 3SB34 23-0	3SB34 03-1, 3SB34 23-1	3SB34 11-0	3SB34 11-1
Contact blocks and lampholders								
Standards		IEC 60947-5-1, IEC 60947-5-5, EN 60947-5-1, EN 60947-5-5						
Connection type		Screw terminals			Spring-type terminals		Solder pins	
Rated insulation voltage U_i For pollution degree according to IEC 60947-1	V	400 Class 3		250 Class 3	400 Class 3		250 Class 3	60 Class 3
Rated impulse withstand voltage U_{imp}	kV	4		4	4	4	4	1.5
Conventional thermal current I_{th}	A	10		--	10	--	10	--
Rated operational current I_e at rated operational voltage U_e								
• Alternating current 50/60 Hz, AC-12		10		--	10	--	10	
- At U_e = 24 ... 230 V	A	10		--	10	--	10	--
- At U_e = 400 V	A	10		--	10	--	--	--
• Alternating current 50/60 Hz, AC-15								
- At U_e = 24 ... 230 V	A	6	6	--	6	--	4	--
- At U_e = 400 V	A	3	4	--	3	--	--	--
• Direct current DC-12								
- At U_e = 24 V	A	10	10	--	10	--	10	--
- At U_e = 48 V	A	5	--	--	5	--	5	--
- At U_e = 110 V	A	2.5	2	--	2.5	--	2.5	--
- At U_e = 230 V	A	1	0.5	--	1	--	1	--
• Direct current DC-13								
- At U_e = 24 V	A	3	5	--	3	--	3	--
- At U_e = 48 V	A	1.5	--	--	1.5	--	1.5	--
- At U_e = 110 V	A	0.7	0.5	--	0.7	--	0.7	--
- At U_e = 230 V	A	0.3	0.2	--	0.3	--	0.3	--
Contact stability								
• Test voltage	V	5		--	5	--	5	--
• Test current	mA	1		--	1	--	1	--
Lampholders		--		BA 9s	--	BA 9s	--	Wedge bases
Lamps		--		Incandescent lamps, glow lamps and LED lamps	--	Incandescent lamps, glow lamps and LED lamps	--	Incandescent lamps and LED lamps
Short-circuit protection, weld-free, acc. to IEC 60947-5-1								
• DIAZED fuse links, utilization category gG acc. to IEC 60269-3-1		Dz10 A						
• DIAZED fuse links, quick according to DIN VDE 0635		Dz 16 A						
• Miniature circuit breaker with C characteristic according to IEC 60898	A	10						
Mechanical endurance		10×10^6 operating cycles						
Electrical endurance								
• For utilization category AC-15 with 3RT20 15 to 3RT20 26 contactors		10×10^6 operating cycles						
• With utilization category DC-12, DC-13		With direct current it depends on the operational voltage, the breaking current, the circuit inductance and the switching frequency						
Switching frequency	1/h	1000 operating cycles						
Degree of protection acc. to IEC 60529								
• Connections		IP20						
• Contact chambers		IP40		--	IP40	--	IP40	--
Touch protection according to EN 61140 and BGV A3		Finger-safe			Finger-safe		--	
Conductor cross-sections[1]								
• Finely stranded, without end sleeves	mm^2	--			2 × (0.25 ... 1.5)		--	
• Finely stranded, with end sleeves to DIN 46228	mm^2	2 × (0.5 ... 1.5)			2 × (0.25 ... 0.75)		--	
• Solid	mm^2	2 × (1 ... 1.5)			2 × (0.25 ... 1.5)		--	
• Solid with end sleeves to DIN 46228	mm^2	2 × (0.5 ... 0.75)			--		--	
• AWG cables, solid or stranded		2 × AWG 18 ... 14			2 × AWG 24 ... 16		--	
Tightening torque, terminal screw	Nm	0.8			--		--	
Solder pins	mm^2	--			--		0.8 × 0.8	

[1] For standard screwdriver size 2 or Pozidriv 2.

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General data

Type		3SB34 00-0, 3SB34 20-0	3SB34 00-1, 3SB34 20-1	3SB34 03-0, 3SB34 23-0	3SB34 03-1, 3SB34 23-1	3SB34 11-0	3SB34 11-1
Data according to UL and CSA							
Rated operational voltage	V AC	300	--	300	--	300	--
Conventional thermal current (uninterrupted current)	A	10	--	10	--	10	--
Switching capacity		A 300, R 300, A 600 same polarity					
Rated voltage (lamps)							
• Lamp with BA 9s base	V AC	--	125	--	125	--	--
• Lamp with wedge base	V AC	--	60	--	60	--	60
• Lampholders with integrated LED	V	--	24 AC/DC, 110 AC, 230 AC	--	24 AC/DC, 110 AC, 230 AC	--	--
Rated power (lamps)	W	--	2.5	--	2.5	--	1

Type		3SB30, 3SB32 (3SB31)	3SB31, 3SB33	3SB35, 3SB36
Actuators and indicators				
Enclosure material		Plastic		Metal
Design		Round	Square	Round
Terminal designation acc. to EN 50013		Identification number on the holder, function digit on the contact block		
Device identification		Snap-on label		
Tightening torques				
• Screw on holder	Nm	max. 1		
Mechanical endurance				
• Pushbuttons		10×10^6 operating cycles		
• Illuminated pushbuttons		3×10^6 operating cycles		
• Actuators, rotary or latching		3×10^5 operating cycles		
• Key-operated switch with key monitoring		1×10^5 operating cycles		
Switching frequency	1/h	1000 operating cycles		
Climatic withstand capability acc. to EN ISO 6270-2		Climate-proof KTW24; suitable for marine applications		
Ambient temperature				
• During operation, non-illuminated and with LED	°C	–25 ... +70		
• During operation, devices with incandescent lamp	°C	–25 ... +60		
• During storage, transport	°C	–40 ... +80		
Degree of protection acc. to IEC 60529				
• Actuators and indicators, standard		IP66	IP65	IP67 and NEMA Type 4
- with protective caps		IP67	IP67	--
• Key-operated switch with key monitoring		IP54	--	--
• Twin pushbuttons (3SB31)		IP65	--	--
Protective measures		Protective measures are met automatically when the actuators and lens assemblies are mounted on metal front plates and enclosures. When mounted in insulated enclosures, the "total insulation" protective measures are met.		Grounding is necessary for operation with protective extra-low voltage (PELV).
Shock resistance according to IEC 60068-2-27 for half-sine shock type, 11 ms shock duration				
• Devices without incandescent lamp		≤ 50 *g*		
• Devices with incandescent lamp		≤ 30 *g*		
Vibration resistance acc. to IEC 60068-2-6				
• Acceleration at frequency 20 ... 200 Hz		5 *g*		

Type	3SB38 0.-0, 3SB38 0.-1	--	3SB38 0.-2, 3SB38 0.-3
Enclosures			
Enclosure material	Plastic		Metal
Actuators and indicators	Plastic, round		Metal, round
Degree of protection acc. to IEC 60529	IP65		IP67 and NEMA Type 4
Resistance to extreme climates acc. to DIN 50017	KTW 24		KTW 24

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General data

Configuration

Mounting and fixing

The 3SB3 devices can be easily and quickly mounted:

- Actuators or indicator lights are positioned in the opening of the front panel from the front
- Position the holder from the rear
- Tighten the screw on the holder
- Snap on the contact block or the lampholder directly onto the actuator from the back

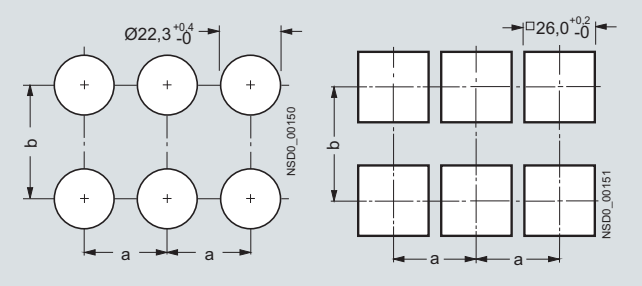
The holder for the round versions is set to a switchboard thickness of 1 to 4 mm when delivered and is placed in the direction of the arrow ↑ 1–4 mm ↑ on the actuator/indicator from the back. The fixing screw is located underneath, on the right.

For a switchboard thickness of 3 to 6 mm, the holder is reversed and mounted in the direction of the arrow at ↑ 3–6 mm ↑ and the fixing screw is located on the upper right. In this case, the fixing screw must be rotated anticlockwise to its limit before mounting the holder.

The control panel depth of 1 to 4 mm can be compensated with the holder for the square version.

When label holders, protective caps or similar accessories are used, the greatest permissible control panel thickness must be reduced by the wall thickness of the accessory part.

Mounting dimensions on front plates

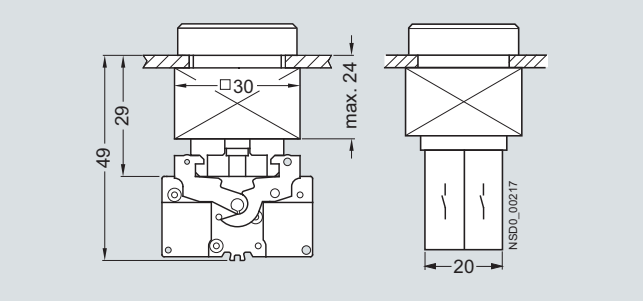


Minimum clearance	a	b
Contact blocks (1 contact) and lampholder		
• For front plate mounting, with screw terminals	30[1]	45
• For front plate mounting with spring-type terminals	30[1]	30[1]
• For use on PCB, with solder pin connections	30[1]	30[1]
Contact blocks with 2 contacts		
• for front plate mounting	30[1]	50
When using holders for inscription labels		
• 12.5 mm × 27 mm	30[1]	45[2]
• 27.0 mm × 27 mm	30[1]	60

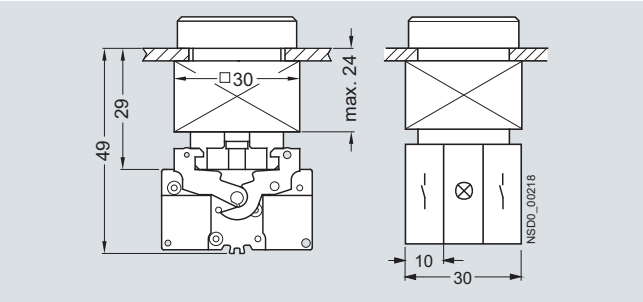
[1] For mushroom pushbutton, EMERGENCY-STOP and push-pull button: Note mushroom diameter d = 40 mm or 60 mm.

[2] 60 mm with contact blocks having two contacts.

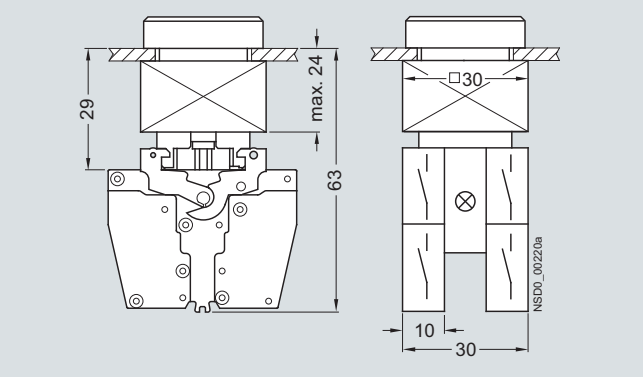
Mounting depth



Pushbutton with two contact blocks

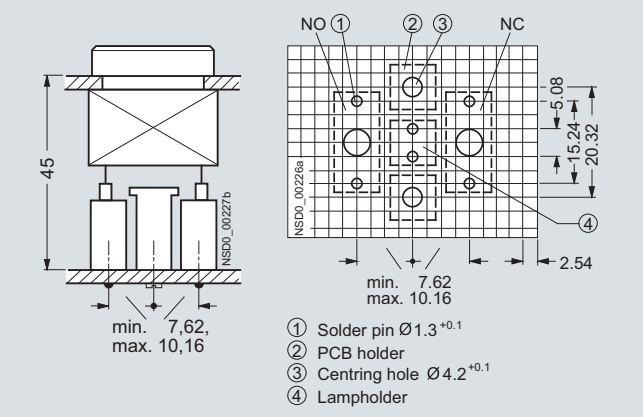


Illuminated pushbutton with lampholder and two contact blocks



Illuminated pushbutton with lampholder and two contact blocks with two contacts

Used on printed circuit boards



Illuminated pushbutton with solder pins

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Selection and ordering data

The following applies to all complete units:

PU (UNIT) = 1
PS* = 1 unit
PG = 41J

Rated voltage of lamp	Color of handle	Contacts for front plate mounting	DT	Screw terminals Configurator		DT	Spring-type terminals Configurator	
V				Order No.	Price per PU		Order No.	Price per PU
Pushbuttons								
Pushbuttons with flat button								
--	Black	1 NO	▶	**3SB32 02-0AA11**		B	**3SB32 02-0AA11-0CC0**	
	Black	1 NC	B	**3SB32 03-0AA11**		B	**3SB32 03-0AA11-0CC0**	
	Red	1 NC	▶	**3SB32 03-0AA21**		B	**3SB32 03-0AA21-0CC0**	
	Yellow	1 NO	B	**3SB32 02-0AA31**		B	**3SB32 02-0AA31-0CC0**	
	Green	1 NO	▶	**3SB32 02-0AA41**		B	**3SB32 02-0AA41-0CC0**	
	Blue	1 NO	B	**3SB32 02-0AA51**		B	**3SB32 02-0AA51-0CC0**	
	White	1 NO	▶	**3SB32 02-0AA61**		B	**3SB32 02-0AA61-0CC0**	
	Black	1 NO + 1 NC	B	**3SB32 01-0AA11**		B	**3SB32 01-0AA11-0CC0**	
	Red	1 NO + 1 NC	B	**3SB32 01-0AA21**		B	**3SB32 01-0AA21-0CC0**	
	Yellow	1 NO + 1 NC	B	**3SB32 01-0AA31**		B	**3SB32 01-0AA31-0CC0**	
	Green	1 NO + 1 NC	B	**3SB32 01-0AA41**		B	**3SB32 01-0AA41-0CC0**	
	Blue	1 NO + 1 NC	B	**3SB32 01-0AA51**		B	**3SB32 01-0AA51-0CC0**	
	White	1 NO + 1 NC	B	**3SB32 01-0AA61**		B	**3SB32 01-0AA61-0CC0**	
Illuminated pushbuttons with flat button with integrated LED (incl. holder for 3 elements)								
24 AC/DC	Red[1]	1 NC	▶	**3SB32 46-0AA21**		B	**3SB32 46-0AA21-0CC0**	
	Yellow[1]	1 NO	B	**3SB32 45-0AA31**		B	**3SB32 45-0AA31-0CC0**	
	Green[1]	1 NO	▶	**3SB32 45-0AA41**		B	**3SB32 45-0AA41-0CC0**	
	Blue[1]	1 NO	B	**3SB32 45-0AA51**		B	**3SB32 45-0AA51-0CC0**	
	White	1 NO	B	**3SB32 45-0AA61**		B	**3SB32 45-0AA61-0CC0**	
	Clear[1]	1 NO	▶	**3SB32 45-0AA71**		B	**3SB32 45-0AA71-0CC0**	
24 AC/DC	Red[1]	1 NO + 1 NC	B	**3SB32 47-0AA21**		B	**3SB32 47-0AA21-0CC0**	
	Yellow[1]	1 NO + 1 NC	B	**3SB32 47-0AA31**		B	**3SB32 47-0AA31-0CC0**	
	Green[1]	1 NO + 1 NC	B	**3SB32 47-0AA41**		B	**3SB32 47-0AA41-0CC0**	
	Blue[1]	1 NO + 1 NC	B	**3SB32 47-0AA51**		B	**3SB32 47-0AA51-0CC0**	
	White	1 NO + 1 NC	B	**3SB32 47-0AA61**		B	**3SB32 47-0AA61-0CC0**	
	Clear[1]	1 NO + 1 NC	B	**3SB32 47-0AA71**		B	**3SB32 47-0AA71-0CC0**	
110 AC	Red[1]	1 NC	B	**3SB32 50-0AA21**			--	
	Yellow[1]	1 NO	B	**3SB32 57-0AA31**			--	
	Green[1]	1 NO	B	**3SB32 57-0AA41**			--	
	Blue[1]	1 NO	B	**3SB32 57-0AA51**			--	
	White	1 NO	B	**3SB32 57-0AA61**			--	
	Clear[1]	1 NO	B	**3SB32 57-0AA71**			--	
110 AC	Red[1]	1 NO + 1 NC	B	**3SB32 51-0AA21**			--	
	Yellow[1]	1 NO + 1 NC	B	**3SB32 51-0AA31**			--	
	Green[1]	1 NO + 1 NC	B	**3SB32 51-0AA41**			--	
	Blue[1]	1 NO + 1 NC	C	**3SB32 51-0AA51**			--	
	White	1 NO + 1 NC	B	**3SB32 51-0AA61**			--	
	Clear[1]	1 NO + 1 NC	B	**3SB32 51-0AA71**			--	
230 AC	Red[1]	1 NC	▶	**3SB32 54-0AA21**		B	**3SB32 54-0AA21-0CC0**	
	Yellow[1]	1 NO	B	**3SB32 53-0AA31**		B	**3SB32 53-0AA31-0CC0**	
	Green[1]	1 NO	▶	**3SB32 53-0AA41**		B	**3SB32 53-0AA41-0CC0**	
	Blue[1]	1 NO	B	**3SB32 53-0AA51**		B	**3SB32 53-0AA51-0CC0**	
	White	1 NO	B	**3SB32 53-0AA61**		B	**3SB32 53-0AA61-0CC0**	
	Clear[1]	1 NO	▶	**3SB32 53-0AA71**		B	**3SB32 53-0AA71-0CC0**	
230 AC	Red[1]	1 NO + 1 NC	B	**3SB32 55-0AA21**		B	**3SB32 55-0AA21-0CC0**	
	Yellow[1]	1 NO + 1 NC	B	**3SB32 55-0AA31**		B	**3SB32 55-0AA31-0CC0**	
	Green[1]	1 NO + 1 NC	B	**3SB32 55-0AA41**		B	**3SB32 55-0AA41-0CC0**	
	Blue[1]	1 NO + 1 NC	B	**3SB32 55-0AA51**		B	**3SB32 55-0AA51-0CC0**	
	White	1 NO + 1 NC	B	**3SB32 55-0AA61**		B	**3SB32 55-0AA61-0CC0**	
	Clear[1]	1 NO + 1 NC	B	**3SB32 55-0AA71**		B	**3SB32 55-0AA71-0CC0**	



Pushbutton with flat button



Illuminated pushbutton with flat button

For online configurator see www.siemens.com/sirius/configurators .

1) Inscription is possible by inserting a label.

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3SB3 Pushbuttons and Indicator Lights, 22 mm

Actuators and Indicators, Plastic, Round, 22 mm

Complete units

PU (UNIT) = 1
PS* = 1 unit
PG = 41J

Color of handle	Contacts for front plate mounting	DT	Screw terminals Configurator Order No.	Price per PU	DT	Spring-type terminals Configurator Order No.	Price per PU
Pushbuttons							
 Illuminated pushbutton with flat button	**Illuminated pushbuttons with flat button** with BA 9s lampholder, without lamp (incl. holder for 3 elements)						
Red[1]	1 NC	B	**3SB32 07-0AA21**		B	**3SB32 07-0AA21-0CC0**	
Yellow[1]	1 NO	B	**3SB32 06-0AA31**		B	**3SB32 06-0AA31-0CC0**	
Green[1]	1 NO	B	**3SB32 06-0AA41**		B	**3SB32 06-0AA41-0CC0**	
Blue[1]	1 NO	B	**3SB32 06-0AA51**		B	**3SB32 06-0AA51-0CC0**	
White	1 NO	B	**3SB32 06-0AA61**		B	**3SB32 06-0AA61-0CC0**	
Clear[1]	1 NO	B	**3SB32 06-0AA71**		B	**3SB32 06-0AA71-0CC0**	
Red[1]	1 NO + 1 NC	B	**3SB32 05-0AA21**		B	**3SB32 05-0AA21-0CC0**	
Yellow[1]	1 NO + 1 NC	B	**3SB32 05-0AA31**		B	**3SB32 05-0AA31-0CC0**	
Green[1]	1 NO + 1 NC	B	**3SB32 05-0AA41**		B	**3SB32 05-0AA41-0CC0**	
Blue[1]	1 NO + 1 NC	B	**3SB32 05-0AA51**		B	**3SB32 05-0AA51-0CC0**	
White	1 NO + 1 NC	B	**3SB32 05-0AA61**		B	**3SB32 05-0AA61-0CC0**	
Clear[1]	1 NO + 1 NC	B	**3SB32 05-0AA71**		B	**3SB32 05-0AA71-0CC0**	
Mushroom pushbuttons							
 Mushroom push-pull button	**Mushroom push-pull buttons, Ø 40 mm, latching,** with pull-to-unlatch mechanism						
Red	1 NC	▶	**3SB32 03-1CA21**		B	**3SB32 03-1CA21-0CC0**	
	1 NO + 1 NC	B	**3SB32 01-1CA21**		B	**3SB32 01-1CA21-0CC0**	

For online configurator see www.siemens.com/sirius/configurators .

[1] Inscription is possible by inserting a label.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Complete units

PU (UNIT) = 1
PS* = 1 unit
PG = 41J

Version	Color of handle/ Lock No.	Contacts for front plate mounting	DT	Screw terminals Configurator Order No.	Price per PU	DT	Spring-type terminals Configurator Order No.	Price per PU
Selector switches								
 Selector switch								
Selector switches, 2 switch positions Switching sequence O-I, 50° operating angle								
Latching 	Black	1 NO	►	**3SB32 02-2KA11**		B	**3SB32 02-2KA11-0CC0**	
		1 NO + 1 NC	B	**3SB32 01-2KA11**		B	**3SB32 01-2KA11-0CC0**	
Selector switches, 2 switch positions Switching sequence O-I, 90° operating angle								
Latching 	Black	1 NO	B	**3SB32 02-2HA11**			**--**	
		1 NO + 1 NC	B	**3SB32 01-2HA11**			**--**	
Selector switches, 3 switch positions switching sequence I-O-II, 2 x 50° operating angle								
Latching 	Black	1 NO, 1 NO	►	**3SB32 10-2DA11**		B	**3SB32 10-2DA11-0CC0**	
		1 NO + 1 NC, 1 NO + 1 NC	B	**3SB32 08-2DA11**		B	**3SB32 08-2DA11-0CC0**	
Momentary contact type 	Black	1 NO, 1 NO	B	**3SB32 10-2EA11**		B	**3SB32 10-2EA11-0CC0**	
		1 NO + 1 NC, 1 NO + 1 NC	B	**3SB32 08-2EA11**		C	**3SB32 08-2EA11-0CC0**	
Key-operated switches								
 RONIS key-operated switch								
RONIS key-operated switches, 2 switch positions with 2 keys, removal position O + I, switching sequence O-I, 50° operating angle								
Latching 	SB 30	1 NO	►	**3SB32 02-4AD11**		B	**3SB32 02-4AD11-0CC0**	
		1 NO + 1 NC	B	**3SB32 01-4AD11**		B	**3SB32 01-4AD11-0CC0**	
Twin pushbuttons								
 Twin pushbutton with flat buttons								
Twin pushbuttons, with flat, square buttons[1)]								
With I/O inscription	White/White	1 NO + 1 NC, 1 NO + 1 NC	D	**3SB31 00-8AC61**			**--**	

For online configurator see www.siemens.com/sirius/configurators .

1) Mounting the twin pushbuttons in 3SB38 enclosure is not possible.
For accessories see page 13/41.

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3SB3 Pushbuttons and Indicator Lights, 22 mm

Actuators and Indicators, Plastic, Round, 22 mm

Complete units

PU (UNIT) = 1
PS* = 1 unit
PG = 41J

Color of handle	Contacts for front plate mounting		DT	Screw terminals Configurator Order No.	Price per PU	DT	Spring-type terminals Configurator Order No.	Price per PU
EMERGENCY-STOP devices according to ISO 13850, with yellow name plate, Ø 80 mm, with inscription								
 With rotate-to-unlatch mechanism	**EMERGENCY-STOP mushroom pushbuttons, Ø 40 mm, with positive latching function,** with rotate-to-unlatch mechanism							
	• German inscription "NOT-HALT"							
Red	1 NC	⇒	▶	**3SB32 03-1HA20**		B	**3SB32 03-1HA20-0CC0**	
	1 NC with mounting monitoring	⇒	X	**3SB32 66-1HA20**			**--**	
Red	1 NO + 1 NC	⇒	B	**3SB32 01-1HA20**		B	**3SB32 01-1HA20-0CC0**	
	• English inscription "EMERGENCY STOP"							
Red	1 NC	⇒	B	**3SB32 03-1HR20**			**--**	
	1 NC with mounting monitoring	⇒	X	**3SB32 66-1HR20**			**--**	
Red	1 NO + 1 NC	⇒	B	**3SB32 01-1HR20**			**--**	
	• French inscription "ARRET D'URGENCE"							
Red	1 NC	⇒	B	**3SB32 03-1HP20**			**--**	
Red	1 NO + 1 NC	⇒	B	**3SB32 01-1HP20**			**--**	
 With rotate-to-unlatch mechanism and switch position indication	With rotate-to-unlatch mechanism and mechanical switch position indication							
	• German inscription "NOT-HALT"							
Red	1 NC	⇒	▶	**3SB32 03-1HA26**		B	**3SB32 03-1HA26-0CC0**	
	1 NC with mounting monitoring	⇒	X	**3SB32 66-1HA26**			**--**	
Red	1 NO + 1 NC	⇒	B	**3SB32 01-1HA26**		B	**3SB32 01-1HA26-0CC0**	
	• English inscription "EMERGENCY STOP"							
Red	1 NC	⇒	B	**3SB32 03-1HR26**			**--**	
	1 NC with mounting monitoring	⇒	X	**3SB32 66-1HR26**			**--**	
Red	1 NO + 1 NC	⇒	B	**3SB32 01-1HR26**			**--**	
 With pull-to-unlatch mechanism	With pull-to-unlatch mechanism							
	• German inscription "NOT-HALT"							
Red	1 NC	⇒	B	**3SB32 03-1TA20**			**--**	
Red	1 NO + 1 NC	⇒	B	**3SB32 01-1TA20**			**--**	
	• English inscription "EMERGENCY STOP"							
Red	1 NC	⇒	B	**3SB32 03-1TR20**			**--**	
Red	1 NO + 1 NC	⇒	B	**3SB32 01-1TR20**			**--**	

For online configurator see www.siemens.com/sirius/configurators .

⇒ Positive opening according to IEC 60947-5-1, Appendix K.
Can be used with 3TK28 safety relays.
Certificate:

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Complete units

PU (UNIT) = 1
PS* = 1 unit
PG = 41J

Rated voltage of lamp	Color of lens	DT	Screw terminals Configurator Order No.	Price per PU	DT	Spring-type terminals Configurator Order No.	Price per PU
V							
Indicator lights							
Indicator lights with smooth lens[1] with integrated LED							
24 AC/DC	Red	▶	**3SB32 44-6AA20**		B	**3SB32 44-6AA20-0CC0**	
	Yellow	B	**3SB32 44-6AA30**		B	**3SB32 44-6AA30-0CC0**	
	Green	▶	**3SB32 44-6AA40**		B	**3SB32 44-6AA40-0CC0**	
	Blue	B	**3SB32 44-6AA50**		B	**3SB32 44-6AA50-0CC0**	
	White	B	**3SB32 44-6AA60**		B	**3SB32 44-6AA60-0CC0**	
	Clear	▶	**3SB32 44-6AA70**		B	**3SB32 44-6AA70-0CC0**	
110 AC	Red	B	**3SB32 48-6AA20**			**--**	
	Yellow	B	**3SB32 48-6AA30**			**--**	
	Green	B	**3SB32 48-6AA40**			**--**	
	Blue	B	**3SB32 48-6AA50**			**--**	
	White	B	**3SB32 48-6AA60**			**--**	
	Clear	B	**3SB32 48-6AA70**			**--**	
230 AC	Red	▶	**3SB32 52-6AA20**		B	**3SB32 52-6AA20-0CC0**	
	Yellow	B	**3SB32 52-6AA30**		B	**3SB32 52-6AA30-0CC0**	
	Green	▶	**3SB32 52-6AA40**		B	**3SB32 52-6AA40-0CC0**	
	Blue	B	**3SB32 52-6AA50**		B	**3SB32 52-6AA50-0CC0**	
	White	B	**3SB32 52-6AA60**		B	**3SB32 52-6AA60-0CC0**	
	Clear	▶	**3SB32 52-6AA70**		B	**3SB32 52-6AA70-0CC0**	
With BA 9s lampholder, without lamp							
--	Red	B	**3SB32 04-6AA20**		B	**3SB32 04-6AA20-0CC0**	
	Yellow	B	**3SB32 04-6AA30**		B	**3SB32 04-6AA30-0CC0**	
	Green	B	**3SB32 04-6AA40**		B	**3SB32 04-6AA40-0CC0**	
	Blue	B	**3SB32 04-6AA50**		B	**3SB32 04-6AA50-0CC0**	
	White	B	**3SB32 04-6AA60**		B	**3SB32 04-6AA60-0CC0**	
	Clear	B	**3SB32 04-6AA70**		B	**3SB32 04-6AA70-0CC0**	
Indicator lights with lens with concentric rings[1] with integrated LED							
24 AC/DC	Red	▶	**3SB32 44-6BA20**		B	**3SB32 44-6BA20-0CC0**	
	Yellow	B	**3SB32 44-6BA30**		B	**3SB32 44-6BA30-0CC0**	
	Green	▶	**3SB32 44-6BA40**		B	**3SB32 44-6BA40-0CC0**	
	Blue	B	**3SB32 44-6BA50**		B	**3SB32 44-6BA50-0CC0**	
	White	B	**3SB32 44-6BA60**		B	**3SB32 44-6BA60-0CC0**	
	Clear	▶	**3SB32 44-6BA70**		B	**3SB32 44-6BA70-0CC0**	
110 AC	Red	B	**3SB32 48-6BA20**			**--**	
	Yellow	B	**3SB32 48-6BA30**			**--**	
	Green	B	**3SB32 48-6BA40**			**--**	
	Blue	B	**3SB32 48-6BA50**			**--**	
	White	B	**3SB32 48-6BA60**			**--**	
	Clear	B	**3SB32 48-6BA70**			**--**	
230 AC	Red	▶	**3SB32 52-6BA20**		B	**3SB32 52-6BA20-0CC0**	
	Yellow	B	**3SB32 52-6BA30**		B	**3SB32 52-6BA30-0CC0**	
	Green	▶	**3SB32 52-6BA40**		B	**3SB32 52-6BA40-0CC0**	
	Blue	B	**3SB32 52-6BA50**		B	**3SB32 52-6BA50-0CC0**	
	White	B	**3SB32 52-6BA60**		B	**3SB32 52-6BA60-0CC0**	
	Clear	▶	**3SB32 52-6BA70**		B	**3SB32 52-6BA70-0CC0**	
With BA 9s lampholder, without lamp							
--	Amber	B	**3SB32 04-6BA00**			**--**	
	Red	B	**3SB32 04-6BA20**		B	**3SB32 04-6BA20-0CC0**	
	Yellow	B	**3SB32 04-6BA30**		B	**3SB32 04-6BA30-0CC0**	
	Green	B	**3SB32 04-6BA40**		B	**3SB32 04-6BA40-0CC0**	
	Blue	B	**3SB32 04-6BA50**		B	**3SB32 04-6BA50-0CC0**	
	White	B	**3SB32 04-6BA60**		B	**3SB32 04-6BA60-0CC0**	
	Clear	B	**3SB32 04-6BA70**		B	**3SB32 04-6BA70-0CC0**	
With BA 9s lampholder, with LED							
130 AC	Amber	B	**3SB32 40-6BA00**			**--**	
	Red	B	**3SB32 40-6BA20**			**--**	
	Yellow	B	**3SB32 40-6BA30**			**--**	
	Green	B	**3SB32 40-6BA40**			**--**	
	Blue	B	**3SB32 40-6BA50**			**--**	
	White	B	**3SB32 40-6BA60**			**--**	
	Clear	B	**3SB32 40-6BA70**			**--**	



Indicator light with smooth lens



Indicator light with lens with concentric rings

For online configurator see www.siemens.com/sirius/configurators .

1) Inscription by inserting a label is not possible.

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Complete units

Version	Rated voltage of lamp	Color of lens	DT	Screw terminals / Configurator Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	V							
Signaling devices								
Acoustic signaling devices, IP65[1]								
Continuous tone 2.4 kHz, operational current min. 4 mA, sound pressure min. 80 dB/10 cm	24 AC/DC	Black	A	**3SB32 33-7BA10**		1	1 unit	41J
	115 AC/DC		B	**3SB32 34-7BA10**		1	1 unit	41J
	230 AC/DC		A	**3SB32 35-7BA10**		1	1 unit	41J



Acoustic signaling device

For online configurator see www.siemens.com/sirius/configurators .

1) Mounting in 3SB38 enclosures only with the 3SB3400-1A lampholder for front plate mounting, which is included.

Version	Degree of protection	Color of handle	DT	Without connection Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Special devices								
Actuators for potentiometers[2)3)]								
With shaft Ø 6 mm, 30 ... 32 mm long	IP65	--	B	**3SB10 00-7CH07**		1	1 unit	41J
Pushbuttons with extended stroke[2)] for actuating relays								
12 mm stroke	IP65	Black	B	**3SB30 00-0EA11**		1	1 unit	41J



Potentiometer drive



Pushbuttons with 12 mm stroke

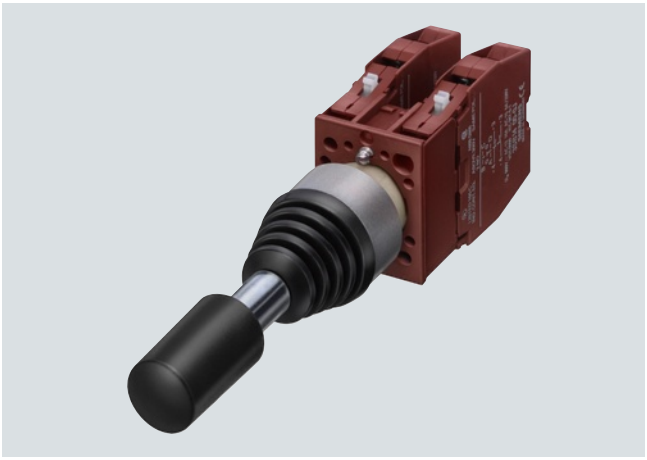
2) Mounting in 3SB38 enclosure is not possible.

3) The potentiometer is not included in the scope of supply.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



Coordinate switch with contact blocks

Coordinate switches control auxiliary circuits permitting movements in various directions of machines and equipment.

The switches are designed for front panel mounting. They are climate-proof.

Operation

The 3SB14 00-0J contact block is used, which due to its depth cannot be built into 3SB38 enclosures.

Switches are available as follows:
- With 2 or 4 switch positions
- Latching or momentary contact type
- With or without mechanical interlocking

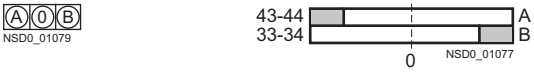
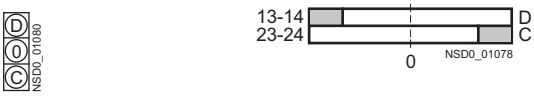
In the case of switches with mechanical interlock in O position, the switch is unlatched with the unlatching button at the front of the actuating lever.

Inscriptions

A name plate consisting of a black, plastic label holder and two or four adhesive, silver-colored inscription labels of 27 mm x 27 mm in size is available for labeling purposes. These labels can be supplied with and without customized inscription.

Note mounting dimensions!

Selection and ordering data

Version	Operating travel Contact closed Contact open	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Coordinate switches							
2 switch positions, 1 NO per direction							
Horizontal, momentary contact type							
Without mechanical interlocking in the O position							
• With plastic front ring, black		C	**3SB12 01-7DV01**		1	1 unit	41J
• With metal front ring		C	**3SB12 01-7DV20**		1	1 unit	41J
With mechanical interlocking in the O position							
• With plastic front ring, black		C	**3SB12 01-7DW01**		1	1 unit	41J
• With metal front ring		C	**3SB12 01-7DW20**		1	1 unit	41J
Vertical, momentary contact type							
Without mechanical interlocking in the O position							
• With plastic front ring, black		C	**3SB12 01-7FV01**		1	1 unit	41J
• With metal front ring		C	**3SB12 01-7FV20**		1	1 unit	41J
With mechanical interlocking in the O position							
• With plastic front ring, black		C	**3SB12 01-7FW01**		1	1 unit	41J
• With metal front ring		C	**3SB12 01-7FW20**		1	1 unit	41J



Coordinate switch, 2 switch positions

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Coordinate switches, complete

Version	Operating travel Contact closed Contact open	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Coordinate switches							
2 switch positions, 1 NO per direction							
Horizontal, latching							
Without mechanical interlocking in the O position							
• With plastic front ring, black		C	**3SB12 01-7EV01**		1	1 unit	41J
• With metal front ring		C	**3SB12 01-7EV20**		1	1 unit	41J
With mechanical interlocking in the O position							
• With plastic front ring, black		C	**3SB12 01-7EW01**		1	1 unit	41J
• With metal front ring		C	**3SB12 01-7EW20**		1	1 unit	41J
Vertical, latching							
Without mechanical interlocking in the O position							
• With plastic front ring, black		C	**3SB12 01-7GV01**		1	1 unit	41J
• With metal front ring		C	**3SB12 01-7GV20**		1	1 unit	41J
With mechanical interlocking in the O position							
• With plastic front ring, black		C	**3SB12 01-7GW01**		1	1 unit	41J
• With metal front ring		C	**3SB12 01-7GW20**		1	1 unit	41J
4 switch positions, 1 NO per direction							
Momentary contact type							
Without mechanical interlocking in the O position							
• With plastic front ring, black		C	**3SB12 08-7JV01**		1	1 unit	41J
• With metal front ring		C	**3SB12 08-7JV20**		1	1 unit	41J
With mechanical interlocking in the O position							
• With plastic front ring, black		C	**3SB12 08-7JW01**		1	1 unit	41J
• With metal front ring		C	**3SB12 08-7JW20**		1	1 unit	41J
Latching							
Without mechanical interlocking in the O position							
• With plastic front ring, black		C	**3SB12 08-7KV01**		1	1 unit	41J
• With metal front ring		C	**3SB12 08-7KV20**		1	1 unit	41J
With mechanical interlocking in the O position							
• With plastic front ring, black		C	**3SB12 08-7KW01**		1	1 unit	41J
• With metal front ring		C	**3SB12 08-7KW20**		1	1 unit	41J



Coordinate switch, 2 switch positions

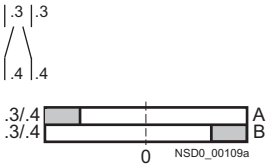


Coordinate switch, 4 switch positions

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Accessories

Version Contact blocks	Symbols/ operating travel Contact closed Contact open	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Spare contact blocks							
 3SB14 00-0J	**Contact blocks with 2 contacts** 1 NO, 1 NO (included in scope of supply of switch)		C	**3SB14 00-0J**		1	1 unit	41J

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Name plates						
 3SB19 06-0AV	**Label holders for coordinate switches**					
	2 switch positions, horizontal, 89 mm × 30 mm	B	**3SB19 06-0AU**		1	1 unit	41J
	2 switch positions, vertical, 30 mm × 89 mm	B	**3SB19 06-0AV**		1	1 unit	41J
	4 switch positions	B	**3SB19 06-0AW**		1	1 unit	41J
 3SB19 06-0AW	**Inscription labels 27 mm × 27 mm, silver-colored, for sticking in place**						
	Without inscription	B	**3SB19 06-2AA**		100	10 units	41J
	With inscription (engraved)		**3SB19 06-2XZ**				
	• Text lines (up to 5 lines each with 11 characters)	D	**K0Y, K1Y, K2Y,** or **K5Y**		1	1 unit	41J
	• Graphic symbol with number according to ISO 7000 or IEC 60417	D	**K3Y**		1	1 unit	41J
	• Any inscription or symbol	D	**K9Y**		1	1 unit	41J

For black plastic labels see page 13/74.

Options

Customized inscriptions

These labeling plates can be inscribed with text or symbols. 5 lines with 11 characters each in a letter height of 4 mm are possible.

Ordering notes

Append the following order codes to the Order No.:

- Text line(s) in upper/lower case, upper case always for beginning of line (e.g. "Lift off"): **K0Y**
- Text line(s) in upper case (e.g. "LIFT OFF"): **K1Y**
- Text line(s) in lower case (e.g. "lift off"): **K2Y**
- Text line(s) in upper/lower case, all words begin with upper case letters (e.g. "Lift Off"): **K5Y**
- Symbol with number according to ISO 7000 or IEC 60417: **K3Y**
- Any inscription or symbol according to order form supplement: **K9Y**

When ordering, specify the required inscription in plain text in addition to the order number and order code. In the case of special inscriptions with words in languages other than German, give the exact spelling and specify the language.

In the case of multi-line inscriptions, the text must be assigned to the respective line, e.g. "Z1 = Lift, Z2 =Lower".

Symbols can also be ordered with numbers according to ISO 7000 or IEC 60417.

For special symbols (order code K9Y), a CAD drawing in DXF format can be submitted.

Ordering example

A label inscribed with symbol No. 1117 according to ISO 7000 is required:

3SB19 06-2XZ
K3Y
Z = 1117 ISO

For other ordering examples see page 13/77.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3SB3 Pushbuttons and Indicator Lights, 22 mm

Actuators and Indicators, Plastic, Round, 22 mm

Selection and ordering data

Version	Inscriptions	Color of handle	DT	Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Pushbuttons with holder[1]								
 With flat button								
Pushbuttons with flat button		Black	▶	**3SB30 00-0AA11**		1	1 unit	41J
		Red	▶	**3SB30 00-0AA21**		1	1 unit	41J
		Yellow	B	**3SB30 00-0AA31**		1	1 unit	41J
		Green	▶	**3SB30 00-0AA41**		1	1 unit	41J
		Blue	B	**3SB30 00-0AA51**		1	1 unit	41J
		White	▶	**3SB30 00-0AA61**		1	1 unit	41J
		Gray	B	**3SB30 00-0AB51**		1	1 unit	41J
		Clear[2]	B	**3SB30 00-0AA71**		1	1 unit	41J
	I	Green	B	**3SB30 00-0AA81**		1	1 unit	41J
	O	Red	B	**3SB30 00-0AB01**		1	1 unit	41J
	I	White	B	**3SB30 00-0AB11**		1	1 unit	41J
	O	Black	B	**3SB30 00-0AB21**		1	1 unit	41J
	R	Blue	B	**3SB30 00-0AC81**		1	1 unit	41J
 With raised button								
Pushbuttons with raised button		Black	B	**3SB30 00-0BA11**		1	1 unit	41J
		Red	B	**3SB30 00-0BA21**		1	1 unit	41J
		Yellow	B	**3SB30 00-0BA31**		1	1 unit	41J
		Green	B	**3SB30 00-0BA41**		1	1 unit	41J
		Blue	B	**3SB30 00-0BA51**		1	1 unit	41J
		White	B	**3SB30 00-0BA61**		1	1 unit	41J
 With raised button, latching								
Pushbuttons with raised button, latching by pressing in and turning to the right, unlatches by turning to the left		Black	▶	**3SB30 00-0CA11**		1	1 unit	41J
		Red	B	**3SB30 00-0CA21**		1	1 unit	41J
Pushbuttons with raised front ring (height 13 mm)		Black	B	**3SB30 00-0AA12**		1	1 unit	41J
		Red	B	**3SB30 00-0AA22**		1	1 unit	41J
		Yellow	B	**3SB30 00-0AA32**		1	1 unit	41J
		Green	B	**3SB30 00-0AA42**		1	1 unit	41J
		Blue	B	**3SB30 00-0AA52**		1	1 unit	41J
		White	B	**3SB30 00-0AA62**		1	1 unit	41J
 With raised front ring								
Pushbuttons with raised front ring, castellated (height 13 mm)		Black	B	**3SB30 00-0AA13**		1	1 unit	41J
		Red	B	**3SB30 00-0AA23**		1	1 unit	41J
		Yellow	B	**3SB30 00-0AA33**		1	1 unit	41J
		Green	B	**3SB30 00-0AA43**		1	1 unit	41J
Illuminated pushbuttons with flat button (incl. holder for 3 elements)		Amber[2]	C	**3SB30 01-0AA01**		1	1 unit	41J
		Red[2]	▶	**3SB30 01-0AA21**		1	1 unit	41J
		Yellow[2]	▶	**3SB30 01-0AA31**		1	1 unit	41J
		Green[2]	▶	**3SB30 01-0AA41**		1	1 unit	41J
		Blue[2]	B	**3SB30 01-0AA51**		1	1 unit	41J
		White	B	**3SB30 01-0AA61**		1	1 unit	41J
		Clear[2]	▶	**3SB30 01-0AA71**		1	1 unit	41J
 With raised front ring, castellated								
Illuminated pushbuttons with raised button (incl. holder for 3 elements)		Red	B	**3SB30 01-0BA21**		1	1 unit	41J
		Yellow	B	**3SB30 01-0BA31**		1	1 unit	41J
		Green	B	**3SB30 01-0BA41**		1	1 unit	41J
		Blue	B	**3SB30 01-0BA51**		1	1 unit	41J
		Clear	B	**3SB30 01-0BA71**		1	1 unit	41J
Pushbuttons with flat button, latching, unlatches by pressing again		Black	B	**3SB30 00-0DA11**		1	1 unit	41J
		Red	B	**3SB30 00-0DA21**		1	1 unit	41J
		Yellow	B	**3SB30 00-0DA31**		1	1 unit	41J
		Green	B	**3SB30 00-0DA41**		1	1 unit	41J
		Blue	B	**3SB30 00-0DA51**		1	1 unit	41J
		White	B	**3SB30 00-0DA61**		1	1 unit	41J
		Gray	C	**3SB30 00-0DB51**		1	1 unit	41J
 Illuminated pushbutton with raised button								
Illuminated pushbuttons with flat button, latching, unlatches by pressing again (incl. holder for 3 elements)		Red[2]	B	**3SB30 01-0DA21**		1	1 unit	41J
		Yellow[2]	B	**3SB30 01-0DA31**		1	1 unit	41J
		Green[2]	B	**3SB30 01-0DA41**		1	1 unit	41J
		Blue[2]	B	**3SB30 01-0DA51**		1	1 unit	41J
		White	B	**3SB30 01-0DA61**		1	1 unit	41J
		Clear[2]	B	**3SB30 01-0DA71**		1	1 unit	41J

For online configurator see www.siemens.com/sirius/configurators .

1) Also available without holder. Supplement Order No. with **"-Z"** and quote order code **"B01"**. Price reduction on request.

2) Inscription is possible by inserting a label.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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	Version	Color of handle	DT	Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Mushroom pushbuttons with holder[1)2)]								
	**Mushroom pushbuttons, Ø 30 mm**	Black	B	**3SB30 00-1DA11**		1	1 unit	41J
		Red	B	**3SB30 00-1DA21**		1	1 unit	41J
		Yellow	B	**3SB30 00-1DA31**		1	1 unit	41J
		Green	B	**3SB30 00-1DA41**		1	1 unit	41J
	**Mushroom pushbuttons, Ø 40 mm**	Black	▶	**3SB30 00-1GA11**		1	1 unit	41J
		Red	▶	**3SB30 00-1GA21**		1	1 unit	41J
		Yellow	B	**3SB30 00-1GA31**		1	1 unit	41J
		Green	B	**3SB30 00-1GA41**		1	1 unit	41J
	**Mushroom pushbuttons, Ø 60 mm**	Black	B	**3SB30 00-1QA11**		1	1 unit	41J
		Red	B	**3SB30 00-1QA21**		1	1 unit	41J
		Yellow	B	**3SB30 00-1QA31**		1	1 unit	41J
		Green	B	**3SB30 00-1QA41**		1	1 unit	41J
	**Illuminated mushroom pushbuttons, Ø 30 mm** (incl. holder for 3 elements)	Red	B	**3SB30 01-1DA21**		1	1 unit	41J
		Yellow	B	**3SB30 01-1DA31**		1	1 unit	41J
		Green	B	**3SB30 01-1DA41**		1	1 unit	41J
		Blue	B	**3SB30 01-1DA51**		1	1 unit	41J
		White	B	**3SB30 01-1DA61**		1	1 unit	41J
		Clear	B	**3SB30 01-1DA71**		1	1 unit	41J
	**Illuminated mushroom pushbuttons, Ø 40 mm** (incl. holder for 3 elements)	Yellow	B	**3SB30 01-1GA31**		1	1 unit	41J
		Green	B	**3SB30 01-1GA41**		1	1 unit	41J
		White	B	**3SB30 01-1GA61**		1	1 unit	41J
	**Push-pull buttons, Ø 30 mm, latching**, pull to unlatch	Black	B	**3SB30 00-1EA11**		1	1 unit	41J
		Red	B	**3SB30 00-1EA21**		1	1 unit	41J
	Push-pull buttons, Ø 40 mm, latching, pull to unlatch	Black	▶	**3SB30 00-1CA11**		1	1 unit	41J
		Red	▶	**3SB30 00-1CA21**		1	1 unit	41J
	Push-pull buttons, Ø 60 mm, latching, pull to unlatch	Black	B	**3SB30 00-1RA11**		1	1 unit	41J
		Red	B	**3SB30 00-1RA21**		1	1 unit	41J
	**Push-pull buttons, Ø 30 mm, can be illuminated, latching**, pull to unlatch, (incl. holder for 3 elements)	Red	B	**3SB30 01-1EA21**		1	1 unit	41J
		Yellow	B	**3SB30 01-1EA31**		1	1 unit	41J
		Green	B	**3SB30 01-1EA41**		1	1 unit	41J
		Blue	B	**3SB30 01-1EA51**		1	1 unit	41J
		Clear	B	**3SB30 01-1EA71**		1	1 unit	41J
	Push-pull buttons, Ø 40 mm, can be illuminated, latching, pull to unlatch (incl. holder for 3 elements)	Red	B	**3SB30 01-1CA21**		1	1 unit	41J
		Yellow	B	**3SB30 01-1CA31**		1	1 unit	41J
		Green	B	**3SB30 01-1CA41**		1	1 unit	41J
		Blue	B	**3SB30 01-1CA51**		1	1 unit	41J
		Clear	B	**3SB30 01-1CA71**		1	1 unit	41J

For online configurator see www.siemens.com/sirius/configurators .

1) Also available without holder. Supplement Order No. with "**-Z**" and quote order code "**B01**". Price reduction on request.

2) Maximum permissible equipment: 3 single-pole or 2 double-pole contact blocks. When using the 3SB39 01-0AB holder, the central command point must not be empty.

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Actuators and indicators

Version	Version Illumination	Color of handle	DT	Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Selector switches with holder[1]								
Selector switches with 2 switch positions								
Switching sequence O-I, 90° operating angle, latching   Non-illuminated	**Non-illuminated**	Black	B	**3SB30 00-2HA11**		1	1 unit	41J
		Red	B	**3SB30 00-2HA21**		1	1 unit	41J
		Green	B	**3SB30 00-2HA41**		1	1 unit	41J
		White	B	**3SB30 00-2HA61**		1	1 unit	41J
	Illuminated (incl. holder for 3 elements)	Red	B	**3SB30 01-2HA21**		1	1 unit	41J
		Yellow	B	**3SB30 01-2HA31**		1	1 unit	41J
		Green	B	**3SB30 01-2HA41**		1	1 unit	41J
		Blue	B	**3SB30 01-2HA51**		1	1 unit	41J
		Clear	B	**3SB30 01-2HA71**		1	1 unit	41J
Switching sequence O-I, 50° operating angle, latching   Illuminated	**Non-illuminated**	Black	▶	**3SB30 00-2KA11**		1	1 unit	41J
		Red	B	**3SB30 00-2KA21**		1	1 unit	41J
		Green	B	**3SB30 00-2KA41**		1	1 unit	41J
		White	B	**3SB30 00-2KA61**		1	1 unit	41J
	Illuminated (incl. holder for 3 elements)	Red	B	**3SB30 01-2KA21**		1	1 unit	41J
		Yellow	B	**3SB30 01-2KA31**		1	1 unit	41J
		Green	B	**3SB30 01-2KA41**		1	1 unit	41J
		Blue	B	**3SB30 01-2KA51**		1	1 unit	41J
		Clear	B	**3SB30 01-2KA71**		1	1 unit	41J
Switching sequence O-I, 50° operating angle, momentary contact type 	**Non-illuminated**	Black	▶	**3SB30 00-2LA11**		1	1 unit	41J
		Red	B	**3SB30 00-2LA21**		1	1 unit	41J
		Green	B	**3SB30 00-2LA41**		1	1 unit	41J
		White	B	**3SB30 00-2LA61**		1	1 unit	41J
	Illuminated (incl. holder for 3 elements)	Red	B	**3SB30 01-2LA21**		1	1 unit	41J
		Yellow	B	**3SB30 01-2LA31**		1	1 unit	41J
		Green	B	**3SB30 01-2LA41**		1	1 unit	41J
		Blue	B	**3SB30 01-2LA51**		1	1 unit	41J
		Clear	B	**3SB30 01-2LA71**		1	1 unit	41J
Selector switches with 3 switch positions								
Switching sequence I-O-II, 2 x 50° operating angle, latching   Non-illuminated	**Non-illuminated**	Black	▶	**3SB30 00-2DA11**		1	1 unit	41J
		Red	B	**3SB30 00-2DA21**		1	1 unit	41J
		Green	B	**3SB30 00-2DA41**		1	1 unit	41J
		White	B	**3SB30 00-2DA61**		1	1 unit	41J
	Illuminated (incl. holder for 3 elements)	Red	B	**3SB30 01-2DA21**		1	1 unit	41J
		Yellow	B	**3SB30 01-2DA31**		1	1 unit	41J
		Green	B	**3SB30 01-2DA41**		1	1 unit	41J
		Blue	B	**3SB30 01-2DA51**		1	1 unit	41J
		Clear	B	**3SB30 01-2DA71**		1	1 unit	41J
Switching sequence I-O-II, 2 x 50° operating angle, momentary contact type   Illuminated	**Non-illuminated**	Black	▶	**3SB30 00-2EA11**		1	1 unit	41J
		Red	B	**3SB30 00-2EA21**		1	1 unit	41J
		Green	B	**3SB30 00-2EA41**		1	1 unit	41J
		White	B	**3SB30 00-2EA61**		1	1 unit	41J
	Illuminated (incl. holder for 3 elements)	Red	B	**3SB30 01-2EA21**		1	1 unit	41J
		Yellow	B	**3SB30 01-2EA31**		1	1 unit	41J
		Green	B	**3SB30 01-2EA41**		1	1 unit	41J
		Blue	B	**3SB30 01-2EA51**		1	1 unit	41J
		Clear	B	**3SB30 01-2EA71**		1	1 unit	41J
Switching sequence I-O-II, 2 x 50° operating angle, momentary contact type to the left, latching to the right 	**Non-illuminated**	Black	▶	**3SB30 00-2GA11**		1	1 unit	41J
		Red	B	**3SB30 00-2GA21**		1	1 unit	41J
		Green	B	**3SB30 00-2GA41**		1	1 unit	41J
		White	B	**3SB30 00-2GA61**		1	1 unit	41J
	Illuminated (incl. holder for 3 elements)	Red	B	**3SB30 01-2GA21**		1	1 unit	41J
		Yellow	B	**3SB30 01-2GA31**		1	1 unit	41J
		Green	B	**3SB30 01-2GA41**		1	1 unit	41J
		Blue	B	**3SB30 01-2GA51**		1	1 unit	41J
		Clear	B	**3SB30 01-2GA71**		1	1 unit	41J
Switching sequence I-O-II, 2 x 50° operating angle, latching to the left, momentary contact type to the right 	**Non-illuminated**	Black	B	**3SB30 00-2FA11**		1	1 unit	41J
		Red	B	**3SB30 00-2FA21**		1	1 unit	41J
		Green	B	**3SB30 00-2FA41**		1	1 unit	41J
		White	B	**3SB30 00-2FA61**		1	1 unit	41J
	Illuminated (incl. holder for 3 elements)	Red	B	**3SB30 01-2FA21**		1	1 unit	41J
		Yellow	B	**3SB30 01-2FA31**		1	1 unit	41J
		Green	B	**3SB30 01-2FA41**		1	1 unit	41J
		Blue	C	**3SB30 01-2FA51**		1	1 unit	41J
		Clear	B	**3SB30 01-2FA71**		1	1 unit	41J

For online configurator see www.siemens.com/sirius/configurators .

[1] Also available without holder. Supplement Order No. with **"-Z"** and quote order code **"B01"**. Price reduction on request.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Version	Lock version: Type	Lock No./ color	Key removal position	DT	Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Key-operated switches with holder[1]									
Key-operated switches with 2 keys, 2 switch positions									
Switching sequence O-I, 50° operating angle, latching	RONIS	SB 30	O+I	B	**3SB30 00-4HD11**		1	1 unit	41J
			O	B	**3SB30 00-4HD01**		1	1 unit	41J
			I	B	**3SB30 00-4HD21**		1	1 unit	41J
Switching sequence O-I, 50° operating angle, latching	RONIS	SB 30	O+I	▶	**3SB30 00-4AD11**		1	1 unit	41J
			O	▶	**3SB30 00-4AD01**		1	1 unit	41J
			I	B	**3SB30 00-4AD21**		1	1 unit	41J
	CES	SSG 10	O+I	▶	**3SB30 00-4LD11**		1	1 unit	41J
			O	▶	**3SB30 00-4LD01**		1	1 unit	41J
			I	B	**3SB30 00-4LD21**		1	1 unit	41J
		LSG 1	O+I	B	**3SB30 00-4LF01**		1	1 unit	41J
			O	B	**3SB30 00-4LF11**		1	1 unit	41J
	CES with key monitoring[2]	SSG 10	O	C	**3SB30 00-4LD05**		1	1 unit	41J
	BKS	S1	O+I	B	**3SB30 00-5AD11**		1	1 unit	41J
			O	B	**3SB30 00-5AD01**		1	1 unit	41J
			I	B	**3SB30 00-5AD21**		1	1 unit	41J
		E1 for VW[3]	O+I	B	**3SB30 00-5AE01**		1	1 unit	41J
			O	B	**3SB30 00-5AE11**		1	1 unit	41J
		E2 for VW[3]	O+I	B	**3SB30 00-5AE21**		1	1 unit	41J
			O	B	**3SB30 00-5AE31**		1	1 unit	41J
		E7 for VW[3]	O+I	B	**3SB30 00-5AE41**		1	1 unit	41J
			O	B	**3SB30 00-5AE51**		1	1 unit	41J
		E9 for VW[3]	O+I	B	**3SB30 00-5AE61**		1	1 unit	41J
			O	B	**3SB30 00-5AE71**		1	1 unit	41J
	O.M.R.[4]	73038 Light blue	O+I	B	**3SB30 00-3AG11**		1	1 unit	41J
			O	B	**3SB30 00-3AG01**		1	1 unit	41J
		73037 Red	O+I	B	**3SB30 00-3AH11**		1	1 unit	41J
			O	B	**3SB30 00-3AH01**		1	1 unit	41J
		73034 Black	O+I	B	**3SB30 00-3AJ11**		1	1 unit	41J
			O	B	**3SB30 00-3AJ01**		1	1 unit	41J
		73033 Yellow	O+I	B	**3SB30 00-3AK11**		1	1 unit	41J
			O	B	**3SB30 00-3AK01**		1	1 unit	41J
Switching sequence O-I, 50° operating angle, momentary contact type	RONIS	SB 30	O	▶	**3SB30 00-4BD01**		1	1 unit	41J
	CES	SSG 10	O	▶	**3SB30 00-4MD01**		1	1 unit	41J
		LSG 1	O	B	**3SB30 00-4MF11**		1	1 unit	41J
	BKS	S1	O	B	**3SB30 00-5BD01**		1	1 unit	41J
	O.M.R.[4]	73038 Light blue	O	B	**3SB30 00-3BG01**		1	1 unit	41J
		73037 Red	O	B	**3SB30 00-3BH01**		1	1 unit	41J
		73034 Black	O	B	**3SB30 00-3BJ01**		1	1 unit	41J
		73033 Yellow	O	B	**3SB30 00-3BK01**		1	1 unit	41J



RONIS key-operated switch



CES key-operated switch



BKS key-operated switch



O.M.R. key-operated switch

For online configurator see www.siemens.com/sirius/configurators .

For BKS and CES special locks see page 13/68.

1) Also available without holder. Supplement Order No. with **"-Z"** and quote order code **"B01"**. Price reduction on request.

2) For locks with key monitoring the supplied 3SB39 01-0AB holder must be used.
The key scan is performed by a 3SB34 single-pole NC contact block which must be snap-mounted in the center position. Scanning of the switch positions must be performed by additional contact blocks which are snap-mounted on the actuator.
Special locks can be ordered only with order code "Y01".

3) Keys are not included in scope of supply.

4) According to FIAT standards; also available for other users.

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Actuators and indicators

Version	Lock version: Type	Lock No./ color	Key removal position	DT	Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Key-operated switches with holder[1]									
Key-operated switches with 2 keys, 3 switch positions									
Switching sequence I-O-II, 2 x 50° operating angle, latching	RONIS	SB 30	I+O+II	B	**3SB30 00-4DD11**		1	1 unit	41J
			O	B	**3SB30 00-4DD01**		1	1 unit	41J
			I+II	B	**3SB30 00-4DD41**		1	1 unit	41J
			I	B	**3SB30 00-4DD21**		1	1 unit	41J
			II	B	**3SB30 00-4DD31**		1	1 unit	41J
			O+I	B	**3SB30 00-4DD51**		1	1 unit	41J
	CES	SSG 10	I+O+II	B	**3SB30 00-4PD11**		1	1 unit	41J
			O	B	**3SB30 00-4PD01**		1	1 unit	41J
			O+I	B	**3SB30 00-4PD51**		1	1 unit	41J
			I+II	B	**3SB30 00-4PD41**		1	1 unit	41J
			I	B	**3SB30 00-4PD21**		1	1 unit	41J
			II	B	**3SB30 00-4PD31**		1	1 unit	41J
	CES with key monitoring	SSG 10 [2]	O	C	**3SB30 00-4PD05**		1	1 unit	41J
	BKS	S1	I+O+II	B	**3SB30 00-5DD11**		1	1 unit	41J
			II	C	**3SB30 00-5DD31**		1	1 unit	41J
	O.M.R.[3]	73038 Light blue	I+O+II	B	**3SB30 00-3DG11**		1	1 unit	41J
			O	B	**3SB30 00-3DG01**		1	1 unit	41J
		73037 Red	O	B	**3SB30 00-3DH01**		1	1 unit	41J
			O+I	B	**3SB30 00-3DH51**		1	1 unit	41J
		73034 Black	I+O+II	B	**3SB30 00-3DJ11**		1	1 unit	41J
			O	B	**3SB30 00-3DJ01**		1	1 unit	41J
		73033 Yellow	I+O+II	B	**3SB30 00-3DK11**		1	1 unit	41J
Switching sequence I-O-II, 2 x 50° operating angle, momentary contact type	RONIS	SB 30	O	B	**3SB30 00-4ED01**		1	1 unit	41J
	CES	SSG 10	O	B	**3SB30 00-4QD01**		1	1 unit	41J
	BKS	S1	O	B	**3SB30 00-5ED01**		1	1 unit	41J
	O.M.R.[3]	73034 Black	O	B	**3SB30 00-3EJ01**		1	1 unit	41J
Switching sequence I-O-II, 2 x 50° operating angle, momentary contact type to the left, latching to the right	RONIS	SB 30	O + II	B	**3SB30 00-4GD61**		1	1 unit	41J
			O	B	**3SB30 00-4GD01**		1	1 unit	41J
			II	B	**3SB30 00-4GD31**		1	1 unit	41J
	CES	SSG 10	O + II	B	**3SB30 00-4SD61**		1	1 unit	41J
			O	B	**3SB30 00-4SD01**		1	1 unit	41J
	BKS	S1	O	B	**3SB30 00-5GD01**		1	1 unit	41J
Switching sequence I-O-II, 2 x 50° operating angle, latching to the left, momentary contact type to the right	RONIS	SB 30	O+I	B	**3SB30 00-4FD51**		1	1 unit	41J
			O	B	**3SB30 00-4FD01**		1	1 unit	41J
			I	B	**3SB30 00-4FD21**		1	1 unit	41J
	CES	SSG 10	O+I	B	**3SB30 00-4RD51**		1	1 unit	41J
			O	B	**3SB30 00-4RD01**		1	1 unit	41J
			I	B	**3SB30 00-4RD21**		1	1 unit	41J
	BKS	S1	O+I	B	**3SB30 00-5FD51**		1	1 unit	41J
			O	B	**3SB30 00-5FD01**		1	1 unit	41J
			I	B	**3SB30 00-5FD21**		1	1 unit	41J
	O.M.R.[3]	73038 Light blue	O	B	**3SB30 00-3FG01**		1	1 unit	41J
		73034 Black	I	B	**3SB30 00-3FJ21**		1	1 unit	41J


RONIS key-operated switch


CES key-operated switch


BKS key-operated switch


O.M.R. key-operated switch

For online configurator see www.siemens.com/sirius/configurators .

[1] Also available without holder. Supplement Order No. with **"-Z"** and quote order code **"B01"**. Price reduction on request.

[2] For locks with key monitoring the supplied 3SB39 01-0AB holder must be used.
The key scan is performed by a 3SB34 single-pole NC contact block which must be snap-mounted in the center position. Scanning of the switch positions must be performed by additional contact blocks which are snap-mounted on the actuator.
Special locks can be ordered only with order code "Y01".

[3] According to FIAT standards; also available for other users.

For BKS and CES special locks see page 13/68.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Version	Color of handle	Approval	DT	Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
EMERGENCY-STOP devices according to ISO 13850 and IEC 60947-5-5, with holder[1)2)]. Can also be used with 3TK28 safety relays.								
 Mushroom diameter 32 mm **EMERGENCY-STOP mushroom pushbuttons, Ø 32 mm,** with positive latching according to ISO 13850, with rotate-to-unlatch mechanism	Red	VDE	B	**3SB30 00-1FA20**		1	1 unit	41J
 Mushroom diameter 40 mm, with rotate-to-unlatch mechanism, with switch position indication **EMERGENCY-STOP mushroom pushbuttons, Ø 40 mm,** with positive latching according to ISO 13850, with rotate-to-unlatch mechanism	Red	VDE						
• Without switch position indicator			▶	**3SB30 00-1HA20**		1	1 unit	41J
• With mechanical switch position indication			▶	**3SB30 00-1HA26**		1	1 unit	41J
 Mushroom diameter 40 mm, pull-to-unlatch mechanism **EMERGENCY-STOP mushroom pushbuttons, Ø 40 mm,** with positive latching according to ISO 13850, with pull-to-unlatch mechanism	Red	VDE	B	**3SB30 00-1TA20**		1	1 unit	41J
 Mushroom diameter 60 mm **EMERGENCY-STOP mushroom pushbuttons, Ø 60 mm,** with positive latching according to ISO 13850, with rotate-to-unlatch mechanism	Red	VDE	B	**3SB30 00-1AA20**		1	1 unit	41J
 Mushroom diameter 40 mm, with RONIS key-operated switch **EMERGENCY-STOP mushroom pushbuttons, Ø 40 mm, with RONIS lock,** lock No. SB 30, with positive latching acc. to ISO 13850, unlocking only possible using key	Red	VDE	B	**3SB30 00-1BA20**		1	1 unit	41J
EMERGENCY-STOP mushroom pushbuttons, Ø 40 mm, with CES lock, lock No. SSG 10, with positive latching according to ISO 13850, unlocking only possible using key	Red	VDE	B	**3SB30 00-1KA20**		1	1 unit	41J
 Mushroom diameter 40 mm, with CES key-operated switch **EMERGENCY-STOP mushroom pushbuttons, Ø 40 mm, with BKS lock,** lock No. S1, with positive latching according to ISO 13850, unlocking only possible using key	Red	VDE	B	**3SB30 00-1LA20**		1	1 unit	41J
EMERGENCY-STOP mushroom pushbuttons, Ø 40 mm, with O.M.R. lock, lock No. 73037, with positive latching according to ISO 13850, unlocking only possible using key	Red	VDE	B	**3SB30 00-1MA20**		1	1 unit	41J

For online configurator see www.siemens.com/sirius/configurators .

1) Also available without holder. Supplement Order No. with **"-Z"** and quote order code **"B01"**. Price reduction on request.

2) The yellow backing plates must be ordered separately, see "Accessories" on page 13/83.

For BKS and CES special locks see page 13/68.

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3SB3 Pushbuttons and Indicator Lights, 22 mm

Actuators and Indicators, Plastic, Round, 22 mm

Actuators and indicators

Version	Color of lens	DT	Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Signaling elements with holder[1]							
 Indicator light with concentric rings							
Indicator lights with smooth lens[2]	Amber	B	**3SB30 01-6AA00**		1	1 unit	41J
	Red	▶	**3SB30 01-6AA20**		1	1 unit	41J
	Yellow	B	**3SB30 01-6AA30**		1	1 unit	41J
	Green	▶	**3SB30 01-6AA40**		1	1 unit	41J
	Blue	B	**3SB30 01-6AA50**		1	1 unit	41J
	White	B	**3SB30 01-6AA60**		1	1 unit	41J
	Clear	▶	**3SB30 01-6AA70**		1	1 unit	41J
Indicator lights with lens with concentric rings[2]	Amber	B	**3SB30 01-6BA00**		1	1 unit	41J
	Red	B	**3SB30 01-6BA20**		1	1 unit	41J
	Yellow	B	**3SB30 01-6BA30**		1	1 unit	41J
	Green	B	**3SB30 01-6BA40**		1	1 unit	41J
	Blue	B	**3SB30 01-6BA50**		1	1 unit	41J
	White	B	**3SB30 01-6BA60**		1	1 unit	41J
	Clear	B	**3SB30 01-6BA70**		1	1 unit	41J
 Acoustic signaling device							
Acoustic signaling devices, IP40[3] For acoustic signal transformer 24 V DC[4] (without BA 9s base)	Black	B	**3SB30 00-7AA10**		1	1 unit	41J

For online configurator see www.siemens.com/sirius/configurators .

1) Also available without holder. Supplement Order No. with **"-Z"** and quote order code **"B01"**. Price reduction on request.

2) Inscription by inserting a label is not possible.

3) For acoustic signaling devices, IP65, see "Complete Units".

4) Following must be ordered separately:
- 3SB1902-2BN acoustic signal transformer, see "Accessories".
- 3SB34 00-1A lampholder for front plate mounting or
  3SB34 20-1A lampholder for base mounting, both with screw terminals.

Devices assembled in this way are suitable for use in enclosures. Lampholders with spring-type terminals cannot be used.

Version	Inscriptions	Color of handle	DT	Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Twin pushbuttons with indicator light with holder[1][2]								
 Twin pushbutton with indicator light, with flat buttons								
Twin pushbuttons with indicator light, with flat, square buttons, incl. holder for 3 elements	I/O[3]	Green/Red	B	**3SB31 01-8BC21**		1	1 unit	41J
	I/O[3]	White/Black	B	**3SB31 01-8BC31**		1	1 unit	41J
	↑ / ↓ [3]	Green/Red	D	**3SB31 01-8BC81**		1	1 unit	41J
 Twin pushbuttons with indicator light, with flat and raised buttons								
Twin pushbuttons with indicator light, with flat and raised, square buttons, incl. holder for 3 elements	I/O[3]	Green/Red	B	**3SB31 01-8DC21**		1	1 unit	41J
	I/O[3]	White/Black	B	**3SB31 01-8DC31**		1	1 unit	41J

For online configurator see www.siemens.com/sirius/configurators .

1) Mounting the twin pushbuttons in 3SB38 enclosure is not possible.

2) Also available without holder. Supplement Order No. with **"-Z"** and quote order code **"B01"**. Price reduction on request.

3) Black inscription for green, red and white buttons; white inscription on black button.

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	Inscriptions	Color of handle	DT	Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Twin pushbuttons with holder[1)2)]								
Twin pushbuttons, with flat, square buttons	I/O[3)]	Green/Red	B	**3SB31 00-8AC21**		1	1 unit	41J
	I/O[3)]	White/Black	B	**3SB31 00-8AC31**		1	1 unit	41J
	↑ / ↓ [3)]	White/White	B	**3SB31 00-8AC61-0AD0**		1	1 unit	41J
Twin pushbuttons, with flat and raised, square buttons	I/O[3)]	Green/Red	B	**3SB31 00-8CC21**		1	1 unit	41J
	I/O[3)]	White/Black	B	**3SB31 00-8CC31**		1	1 unit	41J



Twin pushbutton with flat buttons

For online configurator see www.siemens.com/sirius/configurators .

1) Mounting the twin pushbuttons in 3SB38 enclosure is not possible.

2) Also available without holder. Supplement Order No. with **"-Z"** and quote order code **"B01"**. Price reduction on request.

3) Black inscription for green, red and white buttons; white inscription on black button.

Version	Use	DT	Order No. / Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories for twin pushbuttons						
Label holders 70 mm x 30 mm for inscription label 12.5 mm x 27 mm[1)]	Twin pushbuttons	B	**3SB39 22-0AY**	100	10 units	41J
Protective caps, clear Silicone, for degree of protection IP67	Twin pushbuttons with flat buttons	B	**3SB39 21-0AQ**	1	1 unit	41J



Label holder



Protective cap

1) Mounting in 3SB38 enclosure is not possible.
For inscription labels see pages 13/73 and 13/74.

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3SB3 Pushbuttons and Indicator Lights, 22 mm

Actuators and Indicators, Plastic, Square, 26 mm × 26 mm

Complete units

Selection and ordering data

Version	Rated voltage of lamp	Color of handle	Contacts for front plate mounting	DT	Screw terminals / Configurator — Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	V								
Pushbuttons									
 Pushbutton									
Pushbuttons with flat button	--	Black	1 NO	B	**3SB33 02-0AA11**		1	1 unit	41J
		Black	1 NC	B	**3SB33 03-0AA11**		1	1 unit	41J
		Red	1 NC	B	**3SB33 03-0AA21**		1	1 unit	41J
		Yellow	1 NO	B	**3SB33 02-0AA31**		1	1 unit	41J
		Green	1 NO	B	**3SB33 02-0AA41**		1	1 unit	41J
		Blue	1 NO	B	**3SB33 02-0AA51**		1	1 unit	41J
		White	1 NO	B	**3SB33 02-0AA61**		1	1 unit	41J
		Black	1 NO + 1 NC	B	**3SB33 01-0AA11**		1	1 unit	41J
		Red	1 NO + 1 NC	B	**3SB33 01-0AA21**		1	1 unit	41J
		Yellow	1 NO + 1 NC	B	**3SB33 01-0AA31**		1	1 unit	41J
		Green	1 NO + 1 NC	B	**3SB33 01-0AA41**		1	1 unit	41J
		Blue	1 NO + 1 NC	C	**3SB33 01-0AA51**		1	1 unit	41J
		White	1 NO + 1 NC	B	**3SB33 01-0AA61**		1	1 unit	41J
 Illuminated pushbutton									
Illuminated pushbuttons with flat button with integrated LED (incl. holder for 3 elements)	24 AC/DC	Red[1]	1 NC	B	**3SB33 46-0AA21**		1	1 unit	41J
		Yellow[1]	1 NO	B	**3SB33 45-0AA31**		1	1 unit	41J
		Green[1]	1 NO	B	**3SB33 45-0AA41**		1	1 unit	41J
		Blue[1]	1 NO	B	**3SB33 45-0AA51**		1	1 unit	41J
		White	1 NO	B	**3SB33 45-0AA61**		1	1 unit	41J
		Clear[1]	1 NO	B	**3SB33 45-0AA71**		1	1 unit	41J
		Red[1]	1 NO + 1 NC	B	**3SB33 47-0AA21**		1	1 unit	41J
		Yellow[1]	1 NO + 1 NC	B	**3SB33 47-0AA31**		1	1 unit	41J
		Green[1]	1 NO + 1 NC	B	**3SB33 47-0AA41**		1	1 unit	41J
		Blue[1]	1 NO + 1 NC	B	**3SB33 47-0AA51**		1	1 unit	41J
		White	1 NO + 1 NC	B	**3SB33 47-0AA61**		1	1 unit	41J
		Clear[1]	1 NO + 1 NC	B	**3SB33 47-0AA71**		1	1 unit	41J
Illuminated pushbuttons with flat button with integrated LED (incl. holder for 3 elements)	230 AC	Red[1]	1 NC	B	**3SB33 54-0AA21**		1	1 unit	41J
		Yellow[1]	1 NO	C	**3SB33 53-0AA31**		1	1 unit	41J
		Green[1]	1 NO	B	**3SB33 53-0AA41**		1	1 unit	41J
		Blue[1]	1 NO	C	**3SB33 53-0AA51**		1	1 unit	41J
		White	1 NO	B	**3SB33 53-0AA61**		1	1 unit	41J
		Clear[1]	1 NO	B	**3SB33 53-0AA71**		1	1 unit	41J
		Red[1]	1 NO + 1 NC	B	**3SB33 55-0AA21**		1	1 unit	41J
		Yellow[1]	1 NO + 1 NC	C	**3SB33 55-0AA31**		1	1 unit	41J
		Green[1]	1 NO + 1 NC	B	**3SB33 55-0AA41**		1	1 unit	41J
		Blue[1]	1 NO + 1 NC	C	**3SB33 55-0AA51**		1	1 unit	41J
		White	1 NO + 1 NC	C	**3SB33 55-0AA61**		1	1 unit	41J
		Clear[1]	1 NO + 1 NC	B	**3SB33 55-0AA71**		1	1 unit	41J
Illuminated pushbuttons with flat button with BA 9s lampholder without lamp (incl. holder for 3 elements)		Red[1]	1 NC	B	**3SB33 07-0AA21**		1	1 unit	41J
		Yellow[1]	1 NO	B	**3SB33 06-0AA31**		1	1 unit	41J
		Green[1]	1 NO	B	**3SB33 06-0AA41**		1	1 unit	41J
		Blue[1]	1 NO	B	**3SB33 06-0AA51**		1	1 unit	41J
		White	1 NO	B	**3SB33 06-0AA61**		1	1 unit	41J
		Clear[1]	1 NO	B	**3SB33 06-0AA71**		1	1 unit	41J
		Red[1]	1 NO + 1 NC	B	**3SB33 05-0AA21**		1	1 unit	41J
		Yellow[1]	1 NO + 1 NC	B	**3SB33 05-0AA31**		1	1 unit	41J
		Green[1]	1 NO + 1 NC	B	**3SB33 05-0AA41**		1	1 unit	41J
		Blue[1]	1 NO + 1 NC	B	**3SB33 05-0AA51**		1	1 unit	41J
		White	1 NO + 1 NC	B	**3SB33 05-0AA61**		1	1 unit	41J
		Clear[1]	1 NO + 1 NC	B	**3SB33 05-0AA71**		1	1 unit	41J

For online configurator see www.siemens.com/sirius/configurators .

1) Inscription is possible by inserting a label.

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Complete units

Version	Color of handle	Contacts for front plate mounting		DT	Screw terminals / Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
EMERGENCY-STOP devices acc. to ISO 13850, with yellow name plate, Ø 80 mm, with inscription[1]. Can also be used with 3TK28 safety relays.									
EMERGENCY-STOP mushroom pushbuttons, Ø 40 mm, with positive latching function, with rotate-to-unlatch mechanism	Red	1 NC	⊖	B	**3SB33 03-1HA20**		1	1 unit	41J
		1 NO + 1 NC	⊖	B	**3SB33 01-1HA20**		1	1 unit	41J



EMERGENCY-STOP mushroom pushbutton with rotate-to-unlatch mechanism

⚙ For online configurator see www.siemens.com/sirius/configurators .

⊖ Positive opening according to IEC 60947-5-1, Appendix K. Can be used with 3TK28 safety relays.
Certificate:

1) German inscription "NOT-HALT".

Version	Rated voltage of lamp	Color of lens	DT	Screw terminals / Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	V							
Signaling devices								
Indicator lights with integrated LED	24 AC/DC	Red	B	**3SB33 44-6AA20**		1	1 unit	41J
		Yellow	B	**3SB33 44-6AA30**		1	1 unit	41J
		Green	B	**3SB33 44-6AA40**		1	1 unit	41J
		Blue	B	**3SB33 44-6AA50**		1	1 unit	41J
		White	B	**3SB33 44-6AA60**		1	1 unit	41J
		Clear	B	**3SB33 44-6AA70**		1	1 unit	41J
Indicator lights with integrated LED	230 AC	Red	B	**3SB33 52-6AA20**		1	1 unit	41J
		Yellow	B	**3SB33 52-6AA30**		1	1 unit	41J
		Green	B	**3SB33 52-6AA40**		1	1 unit	41J
		Blue	B	**3SB33 52-6AA50**		1	1 unit	41J
		White	B	**3SB33 52-6AA60**		1	1 unit	41J
		Clear	B	**3SB33 52-6AA70**		1	1 unit	41J
Indicator lights with BA 9s lampholder (without lamp)	–	Red	B	**3SB33 04-6AA20**		1	1 unit	41J
		Yellow	B	**3SB33 04-6AA30**		1	1 unit	41J
		Green	B	**3SB33 04-6AA40**		1	1 unit	41J
		Blue	B	**3SB33 04-6AA50**		1	1 unit	41J
		White	B	**3SB33 04-6AA60**		1	1 unit	41J
		Clear	B	**3SB33 04-6AA70**		1	1 unit	41J



Indicator light

⚙ For online configurator see www.siemens.com/sirius/configurators .

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3SB3 Pushbuttons and Indicator Lights, 22 mm

Actuators and Indicators, Plastic, Square, 26 mm × 26 mm

Selection and ordering data

	Version	Color of handle	DT	Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Pushbuttons and switches with holder[1]								
 Pushbutton	**Pushbuttons with flat button**	Black	B	**3SB31 10-0AA11**		1	1 unit	41J
		Red	B	**3SB31 10-0AA21**		1	1 unit	41J
		Yellow	B	**3SB31 10-0AA31**		1	1 unit	41J
		Green	B	**3SB31 10-0AA41**		1	1 unit	41J
		Blue	B	**3SB31 10-0AA51**		1	1 unit	41J
		White	B	**3SB31 10-0AA61**		1	1 unit	41J
		Clear[2]	B	**3SB31 10-0AA71**		1	1 unit	41J
 Pushbutton with raised front ring	**Pushbuttons with raised front ring** (height 13 mm)	Black	B	**3SB31 10-0AA12**		1	1 unit	41J
		Red	B	**3SB31 10-0AA22**		1	1 unit	41J
		Green	C	**3SB31 10-0AA42**		1	1 unit	41J
		White	B	**3SB31 10-0AA62**		1	1 unit	41J
 Pushbutton with raised front ring, castellated	**Pushbuttons with raised front ring, castellated** (height 13 mm)	Black	C	**3SB31 10-0AA13**		1	1 unit	41J
		Red	C	**3SB31 10-0AA23**		1	1 unit	41J
		Yellow	C	**3SB31 10-0AA33**		1	1 unit	41J
		Green	C	**3SB31 10-0AA43**		1	1 unit	41J
		White	C	**3SB31 10-0AA63**		1	1 unit	41J
 Illuminated pushbutton	**Illuminated pushbuttons with flat button** (incl. holder for 3 elements)	Red[2]	B	**3SB31 11-0AA21**		1	1 unit	41J
		Yellow[2]	B	**3SB31 11-0AA31**		1	1 unit	41J
		Green[2]	B	**3SB31 11-0AA41**		1	1 unit	41J
		Blue[2]	B	**3SB31 11-0AA51**		1	1 unit	41J
		White	B	**3SB31 11-0AA61**		1	1 unit	41J
		Clear[2]	B	**3SB31 11-0AA71**		1	1 unit	41J
 Pushbutton	**Pushbuttons, latching**, **with flat button,** unlocking by pressing again	Black	B	**3SB31 10-0DA11**		1	1 unit	41J
		Red	B	**3SB31 10-0DA21**		1	1 unit	41J
		Yellow	B	**3SB31 10-0DA31**		1	1 unit	41J
		Green	B	**3SB31 10-0DA41**		1	1 unit	41J
		Blue	C	**3SB31 10-0DA51**		1	1 unit	41J
		White	B	**3SB31 10-0DA61**		1	1 unit	41J
 Illuminated pushbutton	**Illuminated pushbuttons, latching**, **with flat button** (incl. holder for 3 elements), unlatches by pressing again,	Red[2]	B	**3SB31 11-0DA21**		1	1 unit	41J
		Yellow[2]	B	**3SB31 11-0DA31**		1	1 unit	41J
		Green[2]	B	**3SB31 11-0DA41**		1	1 unit	41J
		Blue[2]	B	**3SB31 11-0DA51**		1	1 unit	41J
		White	B	**3SB31 11-0DA61**		1	1 unit	41J
		Clear[2]	B	**3SB31 11-0DA71**		1	1 unit	41J

For online configurator see www.siemens.com/sirius/configurators .

1) Also available without holder. Supplement Order No. with **"-Z"** and quote order code **"B01"**. Price reduction on request.

2) Inscription is possible by inserting a label.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	Version Illumination	Color of handle	DT	Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Selector switches with holder[1]								
Selector switches with 2 switch positions								
 Selector switch Switching sequence O-I, 50° operating angle, latching 	**Non-illuminated**	Black	B	**3SB31 10-2KA11**		1	1 unit	41J
		Red	B	**3SB31 10-2KA21**		1	1 unit	41J
		Green	B	**3SB31 10-2KA41**		1	1 unit	41J
		White	B	**3SB31 10-2KA61**		1	1 unit	41J
	Illuminated (incl. holder for 3 elements)	Red	B	**3SB31 11-2KA21**		1	1 unit	41J
		Yellow	B	**3SB31 11-2KA31**		1	1 unit	41J
		Green	B	**3SB31 11-2KA41**		1	1 unit	41J
		Blue	B	**3SB31 11-2KA51**		1	1 unit	41J
		Clear	B	**3SB31 11-2KA71**		1	1 unit	41J
 Selector switch, illuminated Switching sequence O-I, 50° operating angle, momentary contact type 	**Non-illuminated**	Black	B	**3SB31 10-2LA11**		1	1 unit	41J
		Red	C	**3SB31 10-2LA21**		1	1 unit	41J
		Green	C	**3SB31 10-2LA41**		1	1 unit	41J
		White	C	**3SB31 10-2LA61**		1	1 unit	41J
	Illuminated (incl. holder for 3 elements)	Red	B	**3SB31 11-2LA21**		1	1 unit	41J
		Yellow	C	**3SB31 11-2LA31**		1	1 unit	41J
		Green	C	**3SB31 11-2LA41**		1	1 unit	41J
		Blue	C	**3SB31 11-2LA51**		1	1 unit	41J
		Clear	B	**3SB31 11-2LA71**		1	1 unit	41J
Selector switches with 3 switch positions								
 Selector switch Switching sequence I-O-II, 2 x 50° operating angle, latching 	**Non-illuminated**	Black	B	**3SB31 10-2DA11**		1	1 unit	41J
		Red	B	**3SB31 10-2DA21**		1	1 unit	41J
		Green	C	**3SB31 10-2DA41**		1	1 unit	41J
		White	C	**3SB31 10-2DA61**		1	1 unit	41J
	Illuminated (incl. holder for 3 elements)	Red	B	**3SB31 11-2DA21**		1	1 unit	41J
		Yellow	B	**3SB31 11-2DA31**		1	1 unit	41J
		Green	B	**3SB31 11-2DA41**		1	1 unit	41J
		Blue	C	**3SB31 11-2DA51**		1	1 unit	41J
		Clear	B	**3SB31 11-2DA71**		1	1 unit	41J
 Selector switch, illuminated Switching sequence I-O-II, 2 x 50° operating angle, momentary contact type 	**Non-illuminated**	Black	B	**3SB31 10-2EA11**		1	1 unit	41J
		Red	B	**3SB31 10-2EA21**		1	1 unit	41J
		Green	C	**3SB31 10-2EA41**		1	1 unit	41J
		White	C	**3SB31 10-2EA61**		1	1 unit	41J
	Illuminated (incl. holder for 3 elements)	Red	C	**3SB31 11-2EA21**		1	1 unit	41J
		Yellow	C	**3SB31 11-2EA31**		1	1 unit	41J
		Green	B	**3SB31 11-2EA41**		1	1 unit	41J
		Blue	C	**3SB31 11-2EA51**		1	1 unit	41J
		Clear	B	**3SB31 11-2EA71**		1	1 unit	41J
Switching sequence I-O-II, 2 x 50° operating angle, momentary contact type to the left, latching to the right 	**Non-illuminated**	Black	B	**3SB31 10-2GA11**		1	1 unit	41J
		Green	C	**3SB31 10-2GA41**		1	1 unit	41J
		White	B	**3SB31 10-2GA61**		1	1 unit	41J
Switching sequence I-O-II, 2 x 50° operating angle, latching to the left, momentary contact type to the right 	**Non-illuminated**	Black	B	**3SB31 10-2FA11**		1	1 unit	41J
		Red	C	**3SB31 10-2FA21**		1	1 unit	41J
		Green	B	**3SB31 10-2FA41**		1	1 unit	41J

For online configurator see www.siemens.com/sirius/configurators .

1) Also available without holder. Supplement Order No. with **"-Z"** and quote order code **"B01"**. Price reduction on request.

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3SB3 Pushbuttons and Indicator Lights, 22 mm

Actuators and Indicators, Plastic, Square, 26 mm × 26 mm

Actuators and indicators

Version	Lock version: Type	Lock version: Lock No./ color	Lock version: Key removal position	DT	Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Key-operated switches with holder[1]									
Key-operated switches with 2 keys, 2 switch positions									
Switching sequence O-I, 50° operating angle, latching 	RONIS	SB 30	O+I	B	**3SB31 10-4AD11**		1	1 unit	41J
			O	B	**3SB31 10-4AD01**		1	1 unit	41J
	CES	SSG 10	O+I	B	**3SB31 10-4LD11**		1	1 unit	41J
			O	B	**3SB31 10-4LD01**		1	1 unit	41J
			I	B	**3SB31 10-4LD21**		1	1 unit	41J
		LSG 1	O+I	C	**3SB31 10-4LF01**		1	1 unit	41J
			O	B	**3SB31 10-4LF11**		1	1 unit	41J
	BKS	E2 for VW[2]	O	B	**3SB31 10-5AE31**		1	1 unit	41J
		E7 for VW[2]	O+I	B	**3SB31 10-5AE41**		1	1 unit	41J
			O	B	**3SB31 10-5AE51**		1	1 unit	41J
		E9 for VW[2]	O	B	**3SB31 10-5AE71**		1	1 unit	41J
	O.M.R.[3]	73037 Red	O	B	**3SB31 10-3AH01**		1	1 unit	41J
		73034 Black	O+I	B	**3SB31 10-3AJ11**		1	1 unit	41J
Switching sequence O-I, 50° operating angle, momentary contact type 	RONIS	SB 30	O	B	**3SB31 10-4BD01**		1	1 unit	41J
	CES	SSG 10	O	B	**3SB31 10-4MD01**		1	1 unit	41J
Key-operated switches with 2 keys, 3 switch positions									
Switching sequence I-O-II, 2 x 50° operating angle, latching 	RONIS	SB 30	I+O+II	B	**3SB31 10-4DD11**		1	1 unit	41J
	CES	SSG 10	I+O+II	B	**3SB31 10-4PD11**		1	1 unit	41J
			O	B	**3SB31 10-4PD01**		1	1 unit	41J
Switching sequence I-O-II, 2 x 50° operating angle, momentary contact type 	RONIS	SB 30	O	B	**3SB31 10-4ED01**		1	1 unit	41J
	CES	SSG 10	O	B	**3SB31 10-4QD01**		1	1 unit	41J
Switching sequence I-O-II, 2 x 50° operating angle, momentary contact type to the left, latching to the right 	CES	SSG 10	O	B	**3SB31 10-4SD01**		1	1 unit	41J
Switching sequence I-O-II, 2 x 50° operating angle, latching to the left, momentary contact type to the right 	CES	SSG 10	O+I	C	**3SB31 10-4RD51**		1	1 unit	41J


RONIS key-operated switch


CES key-operated switch


O.M.R. key-operated switch

For BKS and CES special locks see page 13/68.

For online configurator see www.siemens.com/sirius/configurators .

1) Also available without holder. Supplement Order No. with **"-Z"** and quote order code **"B01"**. Price reduction on request.

2) Keys are not included in scope of supply.

3) According to FIAT standards; also available for other users.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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	Version	Color of handle	Approval	DT	Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
EMERGENCY-STOP devices according to ISO 13850 and IEC 60947-5-5, with holder[1)2)]. Can also be used with 3TK28 safety relays.									
 EMERGENCY-STOP mushroom pushbutton with rotate-to-unlatch mechanism	**EMERGENCY-STOP mushroom pushbuttons, Ø 40 mm**, with positive latching according to ISO 13850, with rotate-to-unlatch mechanism	Red	VDE	B	**3SB31 10-1HA20**		1	1 unit	41J
 EMERGENCY-STOP mushroom pushbutton with RONIS key-operated switch	**EMERGENCY-STOP mushroom pushbuttons, Ø 40 mm, with RONIS key-operated switch** (with 2 keys), lock No. SB 30, with positive latching according to ISO 13850, unlocking only possible using key	Red	VDE	B	**3SB31 10-1BA20**		1	1 unit	41J
 EMERGENCY-STOP mushroom pushbutton with CES key-operated switch	**EMERGENCY-STOP mushroom pushbuttons, Ø 40 mm, with CES key-operated switch** (with 2 keys), lock No. SSG 10, with positive latching according to ISO 13850, unlocking only possible using key	Red	VDE	B	**3SB31 10-1KA20**		1	1 unit	41J
	EMERGENCY-STOP mushroom pushbuttons, Ø 40 mm, with BKS key-operated switch (with 2 keys), lock No. S1, with positive latching according to ISO 13850, unlocking only possible using key	Red	VDE	B	**3SB31 10-1LA20**		1	1 unit	41J
 EMERGENCY-STOP mushroom pushbutton with O.M.R. key-operated switch	**EMERGENCY-STOP mushroom pushbuttons, Ø 40 mm, with O.M.R. key-operated switch** (with 2 keys), lock No. 73037 with positive latching according to ISO 13850, unlocking only using key	Red	VDE	B	**3SB31 10-1MA20**		1	1 unit	41J

For online configurator see www.siemens.com/sirius/configurators .

1) Also available without holder. Supplement Order No. with **"-Z"** and quote order code **"B01"**. Price reduction on request.

2) Yellow backing plates must be ordered separately; see "Accessories" on page 13/83.

For BKS and CES special locks see page 13/68.

	Version	Color of lens	DT	Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Signaling elements with holder[1)]								
 Indicator lights	**Indicator lights**	Red	B	**3SB31 11-6AA20**		1	1 unit	41J
		Yellow	B	**3SB31 11-6AA30**		1	1 unit	41J
		Green	B	**3SB31 11-6AA40**		1	1 unit	41J
		Blue	B	**3SB31 11-6AA50**		1	1 unit	41J
		Clear	B	**3SB31 11-6AA70**		1	1 unit	41J
		White	B	**3SB31 11-6AA60**		1	1 unit	41J

For online configurator see www.siemens.com/sirius/configurators .

1) Also available without holder. Supplement Order No. with **"-Z"** and quote order code **"B01"**. Price reduction on request.

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Complete units

Selection and ordering data

The following applies to all complete units:

PU (UNIT) = 1
PS* = 1 unit
PG = 41J

Rated voltage of lamp	Color of handle	Contacts for front plate mounting	DT	Screw terminals Configurator	DT	Spring-type terminals Configurator
V				Order No. / Price per PU		Order No. / Price per PU
Pushbuttons						
Pushbuttons with flat button						
--	Black	1 NO	▶	**3SB36 02-0AA11**	C	**3SB36 02-0AA11-0CC0**
	Black	1 NC	B	**3SB36 03-0AA11**	C	**3SB36 03-0AA11-0CC0**
	Red	1 NC	▶	**3SB36 03-0AA21**	C	**3SB36 03-0AA21-0CC0**
	Yellow	1 NO	B	**3SB36 02-0AA31**	C	**3SB36 02-0AA31-0CC0**
	Green	1 NO	▶	**3SB36 02-0AA41**	C	**3SB36 02-0AA41-0CC0**
	Blue	1 NO	B	**3SB36 02-0AA51**	C	**3SB36 02-0AA51-0CC0**
	White	1 NO	▶	**3SB36 02-0AA61**	C	**3SB36 02-0AA61-0CC0**
	Black	1 NO + 1 NC	B	**3SB36 01-0AA11**	C	**3SB36 01-0AA11-0CC0**
	Red	1 NO + 1 NC	B	**3SB36 01-0AA21**	C	**3SB36 01-0AA21-0CC0**
	Yellow	1 NO + 1 NC	B	**3SB36 01-0AA31**	C	**3SB36 01-0AA31-0CC0**
	Green	1 NO + 1 NC	B	**3SB36 01-0AA41**	C	**3SB36 01-0AA41-0CC0**
	Blue	1 NO + 1 NC	B	**3SB36 01-0AA51**	C	**3SB36 01-0AA51-0CC0**
	White	1 NO + 1 NC	B	**3SB36 01-0AA61**	C	**3SB36 01-0AA61-0CC0**
	Clear	1 NO + 1 NC	B	**3SB36 01-0AA71**		--
Illuminated pushbuttons with flat button with integrated LED (incl. holder for 3 elements)						
24 AC/DC	Red[1]	1 NC	▶	**3SB36 46-0AA21**	C	**3SB36 46-0AA21-0CC0**
	Yellow[1]	1 NO	B	**3SB36 45-0AA31**	C	**3SB36 45-0AA31-0CC0**
	Green[1]	1 NO	▶	**3SB36 45-0AA41**	C	**3SB36 45-0AA41-0CC0**
	Blue[1]	1 NO	B	**3SB36 45-0AA51**	C	**3SB36 45-0AA51-0CC0**
	White	1 NO	B	**3SB36 45-0AA61**	C	**3SB36 45-0AA61-0CC0**
	Clear[1]	1 NO	▶	**3SB36 45-0AA71**	C	**3SB36 45-0AA71-0CC0**
	Red[1]	1 NO + 1 NC	B	**3SB36 47-0AA21**	C	**3SB36 47-0AA21-0CC0**
	Yellow[1]	1 NO + 1 NC	B	**3SB36 47-0AA31**	C	**3SB36 47-0AA31-0CC0**
	Green[1]	1 NO + 1 NC	B	**3SB36 47-0AA41**	C	**3SB36 47-0AA41-0CC0**
	Blue[1]	1 NO + 1 NC	B	**3SB36 47-0AA51**	C	**3SB36 47-0AA51-0CC0**
	White	1 NO + 1 NC	B	**3SB36 47-0AA61**	C	**3SB36 47-0AA61-0CC0**
	Clear[1]	1 NO + 1 NC	B	**3SB36 47-0AA71**	C	**3SB36 47-0AA71-0CC0**
110 AC	Red[1]	1 NC	B	**3SB36 50-0AA21**		--
	Yellow[1]	1 NO	B	**3SB36 57-0AA31**		--
	Green[1]	1 NO	B	**3SB36 57-0AA41**		--
	Blue[1]	1 NO	B	**3SB36 57-0AA51**		--
	White	1 NO	B	**3SB36 57-0AA61**		--
	Clear[1]	1 NO	D	**3SB36 57-0AA71**		--
	Red[1]	1 NO + 1 NC	B	**3SB36 51-0AA21**		--
	Yellow[1]	1 NO + 1 NC	B	**3SB36 51-0AA31**		--
	Green[1]	1 NO + 1 NC	B	**3SB36 51-0AA41**		--
	Blue[1]	1 NO + 1 NC	D	**3SB36 51-0AA51**		--
	White	1 NO + 1 NC	B	**3SB36 51-0AA61**		--
	Clear[1]	1 NO + 1 NC	B	**3SB36 51-0AA71**		--
230 AC	Red[1]	1 NC	▶	**3SB36 54-0AA21**	C	**3SB36 54-0AA21-0CC0**
	Yellow[1]	1 NO	B	**3SB36 53-0AA31**	C	**3SB36 53-0AA31-0CC0**
	Green[1]	1 NO	▶	**3SB36 53-0AA41**	C	**3SB36 53-0AA41-0CC0**
	Blue[1]	1 NO	D	**3SB36 53-0AA51**	C	**3SB36 53-0AA51-0CC0**
	White	1 NO	B	**3SB36 53-0AA61**	C	**3SB36 53-0AA61-0CC0**
	Clear[1]	1 NO	▶	**3SB36 53-0AA71**	C	**3SB36 53-0AA71-0CC0**
	Red[1]	1 NO + 1 NC	B	**3SB36 55-0AA21**	C	**3SB36 55-0AA21-0CC0**
	Yellow[1]	1 NO + 1 NC	B	**3SB36 55-0AA31**	C	**3SB36 55-0AA31-0CC0**
	Green[1]	1 NO + 1 NC	B	**3SB36 55-0AA41**	C	**3SB36 55-0AA41-0CC0**
	Blue[1]	1 NO + 1 NC	D	**3SB36 55-0AA51**	C	**3SB36 55-0AA51-0CC0**
	White	1 NO + 1 NC	B	**3SB36 55-0AA61**	C	**3SB36 55-0AA61-0CC0**
	Clear[1]	1 NO + 1 NC	B	**3SB36 55-0AA71**	C	**3SB36 55-0AA71-0CC0**


Pushbutton with flat button


Illuminated pushbutton with flat button

For online configurator see www.siemens.com/sirius/configurators .

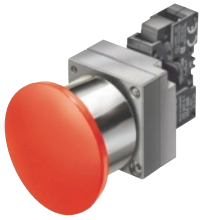
[1] Inscription is possible by inserting a label.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Complete units

PU (UNIT) = 1
PS* = 1 unit
PG = 41J

	Rated voltage of lamp	Color of handle	Contacts for front plate mounting	DT	Screw terminals Configurator Order No.	Price per PU	DT	Spring-type terminals Configurator Order No.	Price per PU
	V								
Pushbuttons									
 Illuminated pushbutton with flat button	**Illuminated pushbuttons with flat button** with BA 9s lampholder, without lamp (incl. holder for 3 elements)								
	--	Red[1]	1 NC	B	**3SB36 07-0AA21**		C	**3SB36 07-0AA21-0CC0**	
		Amber[1]	1 NO	D	**3SB36 06-0AA01**			**--**	
		Yellow[1]	1 NO	B	**3SB36 06-0AA31**		C	**3SB36 06-0AA31-0CC0**	
		Green[1]	1 NO	B	**3SB36 06-0AA41**		C	**3SB36 06-0AA41-0CC0**	
		Blue[1]	1 NO	B	**3SB36 06-0AA51**		C	**3SB36 06-0AA51-0CC0**	
		White	1 NO	B	**3SB36 06-0AA61**		C	**3SB36 06-0AA61-0CC0**	
		Clear[1]	1 NO	B	**3SB36 06-0AA71**		C	**3SB36 06-0AA71-0CC0**	
		Red[1]	1 NO + 1 NC	B	**3SB36 05-0AA21**		C	**3SB36 05-0AA21-0CC0**	
		Amber[1]	1 NO + 1 NC	B	**3SB36 05-0AA01**			**--**	
		Yellow[1]	1 NO + 1 NC	B	**3SB36 05-0AA31**		C	**3SB36 05-0AA31-0CC0**	
		Green[1]	1 NO + 1 NC	B	**3SB36 05-0AA41**		C	**3SB36 05-0AA41-0CC0**	
		Blue[1]	1 NO + 1 NC	B	**3SB36 05-0AA51**		C	**3SB36 05-0AA51-0CC0**	
		White	1 NO + 1 NC	B	**3SB36 05-0AA61**		C	**3SB36 05-0AA61-0CC0**	
		Clear[1]	1 NO + 1 NC	B	**3SB36 05-0AA71**		C	**3SB36 05-0AA71-0CC0**	
 Illuminated pushbutton with flat button	**Illuminated pushbuttons with flat, solvent-resistant button[2],** with integrated LED (incl. holder for 3 elements)								
	24 AC/DC	Red[1]	1 NC	B	**3SB36 46-0AA21-0PA0**			**--**	
		Yellow[1]	1 NO	B	**3SB36 45-0AA31-0PA0**			**--**	
		Green[1]	1 NO	B	**3SB36 45-0AA41-0PA0**			**--**	
		Blue[1]	1 NO	B	**3SB36 45-0AA51-0PA0**			**--**	
		White	1 NO	B	**3SB36 45-0AA61-0PA0**			**--**	
		Clear[1]	1 NO	B	**3SB36 45-0AA71-0PA0**			**--**	
		Red[1]	1 NO + 1 NC	B	**3SB36 47-0AA21-0PA0**			**--**	
		Yellow[1]	1 NO + 1 NC	B	**3SB36 47-0AA31-0PA0**			**--**	
		Green[1]	1 NO + 1 NC	B	**3SB36 47-0AA41-0PA0**			**--**	
		Blue[1]	1 NO + 1 NC	B	**3SB36 47-0AA51-0PA0**			**--**	
		White	1 NO + 1 NC	B	**3SB36 47-0AA61-0PA0**			**--**	
		Clear[1]	1 NO + 1 NC	B	**3SB36 47-0AA71-0PA0**			**--**	
Mushroom pushbuttons									
 Mushroom push-pull button	**Mushroom push-pull buttons, Ø 40 mm, latching** with pull-to-unlatch mechanism								
	--	Red	1 NC	B	**3SB36 03-1CA21**		C	**3SB36 03-1CA21-0CC0**	
			1 NO + 1 NC	B	**3SB36 01-1CA21**		C	**3SB36 01-1CA21-0CC0**	

For online configurator see www.siemens.com/sirius/configurators .

1) Inscription is possible by inserting a label.

2) Not suitable for laser inscription.

13

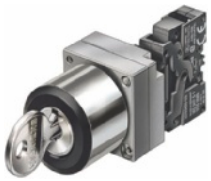
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3SB3 Pushbuttons and Indicator Lights, 22 mm

Actuators and Indicators, Metal, Round, 22 mm

Complete units

PU (UNIT) = 1
PS* = 1 unit
PG = 41J

Version	Color of handle/ Lock No.	Contacts for front plate mounting	DT	Screw terminals Configurator Order No.	Price per PU	DT	Spring-type terminals Configurator Order No.	Price per PU
Selector switches								
 Selector switch **Selector switches, 2 switch positions** Switching sequence O-I, 50° operating angle								
Latching 	Black	1 NO	►	**3SB36 02-2KA11**		C	**3SB36 02-2KA11-0CC0**	
	Standard	1 NO + 1 NC	B	**3SB36 01-2KA11**		C	**3SB36 01-2KA11-0CC0**	
	Heavy duty	1 NO	D	**3SB36 02-2PA11**			**--**	
		1 NO + 1 NC	D	**3SB36 01-2PA11**			**--**	
Selector switches, 3 switch positions switching sequence I-O-II, 2 x 50° operating angle								
Latching 	Black	1 NO, 1 NO	►	**3SB36 10-2DA11**		C	**3SB36 10-2DA11-0CC0**	
		1 NO + 1 NC, 1 NO + 1 NC	►	**3SB36 08-2DA11**		C	**3SB36 08-2DA11-0CC0**	
	Heavy duty	1 NO, 1 NO	D	**3SB36 10-2SA11**			**--**	
		1 NO + 1 NC, 1 NO + 1 NC	D	**3SB36 08-2SA11**			**--**	
Momentary contact type 	Black	1 NO, 1 NO	►	**3SB36 10-2EA11**		C	**3SB36 10-2EA11-0CC0**	
		1 NO + 1 NC, 1 NO + 1 NC	B	**3SB36 08-2EA11**		C	**3SB36 08-2EA11-0CC0**	
	Heavy duty	1 NO, 1 NO	D	**3SB36 10-2TA11**			**--**	
		1 NO + 1 NC, 1 NO + 1 NC	D	**3SB36 08-2TA11**			**--**	
Key-operated switches								
 RONIS key-operated switch **RONIS key-operated switch, 2 switch positions** with 2 keys, removal position O + I, switching sequence O-I, 50° operating angle								
Latching 	SB 30	1 NO	►	**3SB36 02-4AD11**		C	**3SB36 02-4AD11-0CC0**	
		1 NO + 1 NC	B	**3SB36 01-4AD11**		C	**3SB36 01-4AD11-0CC0**	

For online configurator see www.siemens.com/sirius/configurators .

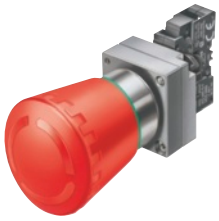
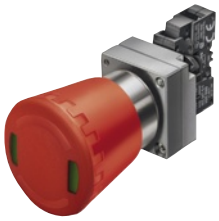
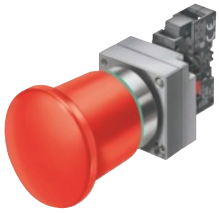
13

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Complete units

PU (UNIT) = 1
PS* = 1 unit
PG = 41J

Color of handle	Contacts for front plate mounting		DT	Screw terminals Configurator Order No.	Price per PU	DT	Spring-type terminals Configurator Order No.	Price per PU
EMERGENCY-STOP devices according to ISO 13850, with yellow name plate, Ø 80 mm, with inscription								
 EMERGENCY-STOP mushroom pushbutton with rotate-to-unlatch mechanism	**EMERGENCY-STOP mushroom pushbuttons, Ø 40 mm, with positive latching function,** with rotate-to-unlatch mechanism							
	• German inscription "NOT-HALT"							
	Red	1 NC	⊕	▶	**3SB36 03-1HA20**		B	**3SB36 03-1HA20-0CC0**
		1 NC with mounting monitoring	⊕	X	**3SB36 66-1HA20**			**--**
		1 NO + 1 NC	⊕	B	**3SB36 01-1HA20**		B	**3SB36 01-1HA20-0CC0**
		1 NC, 1 NC	⊕		**--**		B	**3SB36 11-1HA20-0CC0**
	• English inscription "EMERGENCY STOP"							
	Red	1 NC	⊕	B	**3SB36 03-1HR20**			**--**
		1 NC with mounting monitoring	⊕	X	**3SB36 66-1HR20**			**--**
		1 NO + 1 NC	⊕	B	**3SB36 01-1HR20**			**--**
	• French inscription "ARRET D'URGENCE"							
	Red	1 NC	⊕	B	**3SB36 03-1HP20**			**--**
		1 NO + 1 NC	⊕	B	**3SB36 01-1HP20**			**--**
 EMERGENCY-STOP mushroom pushbutton with rotate-to-unlatch mechanism and switch position indication	With rotate-to-unlatch mechanism and mechanical switch position indication							
	• German inscription "NOT-HALT"							
	Red	1 NC	⊕	▶	**3SB36 03-1HA26**		B	**3SB36 03-1HA26-0CC0**
		1 NC with mounting monitoring	⊕	X	**3SB36 66-1HA26**			**--**
		1 NO + 1 NC	⊕	B	**3SB36 01-1HA26**		B	**3SB36 01-1HA26-0CC0**
	• English inscription "EMERGENCY STOP"							
	Red	1 NC	⊕	B	**3SB36 03-1HR26**			**--**
		1 NC with mounting monitoring	⊕	X	**3SB36 66-1HR26**			**--**
		1 NO + 1 NC	⊕	B	**3SB36 01-1HR26**			**--**
 EMERGENCY-STOP mushroom pushbutton Pull-to-unlatch mechanism	With pull-to-unlatch mechanism, solvent-resistant							
	• German inscription "NOT-HALT"							
	Red	1 NC	⊕	B	**3SB36 03-1TA20**		B	**3SB36 03-1TA20-0CC0**
		1 NO + 1 NC	⊕	B	**3SB36 01-1TA20**		B	**3SB36 01-1TA20-0CC0**
		1 NC, 1 NC	⊕		**--**		B	**3SB36 11-1TA20-0CC0**
	• English inscription "EMERGENCY STOP"							
	Red	1 NC	⊕	B	**3SB36 03-1TR20**			**--**
		1 NO + 1 NC	⊕	B	**3SB36 01-1TR20**			**--**
	• French inscription "ARRET D'URGENCE"							
	Red	1 NC	⊕	B	**3SB36 03-1TP20**			**--**
		1 NO + 1 NC	⊕	B	**3SB36 01-1TP20**			**--**

For online configurator see www.siemens.com/sirius/configurators .

⊕ Positive opening according to IEC 60947-5-1, Appendix K.
Can be used with 3TK28 safety relays.
Certificate:

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Complete units

PU (UNIT) = 1
PS* = 1 unit
PG = 41J

Rated voltage of lamp	Color of lens	DT	Screw terminals Configurator Order No.	Price per PU	DT	Spring-type terminals Configurator Order No.	Price per PU
V							
Indicator lights							
Indicator lights with lens with concentric rings[1] with integrated LED							
24 AC/DC	Red	▶	**3SB36 44-6BA20**		C	**3SB36 44-6BA20-0CC0**	
	Yellow	B	**3SB36 44-6BA30**		C	**3SB36 44-6BA30-0CC0**	
	Green	▶	**3SB36 44-6BA40**		C	**3SB36 44-6BA40-0CC0**	
	Blue	B	**3SB36 44-6BA50**		C	**3SB36 44-6BA50-0CC0**	
	White	B	**3SB36 44-6BA60**		C	**3SB36 44-6BA60-0CC0**	
	Clear	▶	**3SB36 44-6BA70**		C	**3SB36 44-6BA70-0CC0**	
110 AC	Red	B	**3SB36 48-6BA20**		B	**3SB36 48-6BA20-0CC0**	
	Yellow	B	**3SB36 48-6BA30**		B	**3SB36 48-6BA30-0CC0**	
	Green	B	**3SB36 48-6BA40**		B	**3SB36 48-6BA40-0CC0**	
	Blue	B	**3SB36 48-6BA50**		B	**3SB36 48-6BA50-0CC0**	
	White	B	**3SB36 48-6BA60**		B	**3SB36 48-6BA60-0CC0**	
	Clear	B	**3SB36 48-6BA70**		B	**3SB36 48-6BA70-0CC0**	
230 AC	Red	▶	**3SB36 52-6BA20**		C	**3SB36 52-6BA20-0CC0**	
	Yellow	B	**3SB36 52-6BA30**		C	**3SB36 52-6BA30-0CC0**	
	Green	▶	**3SB36 52-6BA40**		C	**3SB36 52-6BA40-0CC0**	
	Blue	B	**3SB36 52-6BA50**		C	**3SB36 52-6BA50-0CC0**	
	White	B	**3SB36 52-6BA60**		C	**3SB36 52-6BA60-0CC0**	
	Clear	▶	**3SB36 52-6BA70**		C	**3SB36 52-6BA70-0CC0**	
With BA 9s lampholder, without lamp							
--	Red	B	**3SB36 04-6BA20**		C	**3SB36 04-6BA20-0CC0**	
	Yellow	B	**3SB36 04-6BA30**		C	**3SB36 04-6BA30-0CC0**	
	Green	B	**3SB36 04-6BA40**		C	**3SB36 04-6BA40-0CC0**	
	Blue	B	**3SB36 04-6BA50**		C	**3SB36 04-6BA50-0CC0**	
	White	B	**3SB36 04-6BA60**		C	**3SB36 04-6BA60-0CC0**	
	Clear	B	**3SB36 04-6BA70**		C	**3SB36 04-6BA70-0CC0**	


Indicator light

For online configurator see www.siemens.com/sirius/configurators .

1) Inscription by inserting a label is not possible.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

Version	Inscriptions	Color of handle	DT	Configurator	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Pushbuttons with holder[1]									
 Pushbutton with flat button									
Pushbuttons with flat button		Black	▶		**3SB35 00-0AA11**		1	1 unit	41J
		Red	▶		**3SB35 00-0AA21**		1	1 unit	41J
		Yellow	B		**3SB35 00-0AA31**		1	1 unit	41J
		Green	▶		**3SB35 00-0AA41**		1	1 unit	41J
		Blue	B		**3SB35 00-0AA51**		1	1 unit	41J
		White	▶		**3SB35 00-0AA61**		1	1 unit	41J
		Gray	B		**3SB35 00-0AB51**		1	1 unit	41J
		Clear[2]	B		**3SB35 00-0AA71**		1	1 unit	41J
	I	Green	B		**3SB35 00-0AA81**		1	1 unit	41J
	O	Red	B		**3SB35 00-0AB01**		1	1 unit	41J
	I	White	B		**3SB35 00-0AB11**		1	1 unit	41J
	O	Black	B		**3SB35 00-0AB21**		1	1 unit	41J
	R	Blue	D		**3SB35 00-0AC81**		1	1 unit	41J
 Pushbutton with raised button									
Pushbuttons with flat solvent-resistant button[3]		Black	▶		**3SB35 00-0AA11**		1	1 unit	41J
		Red	C		**3SB35 00-0AA21-0PA0**		1	1 unit	41J
		Yellow	C		**3SB35 00-0AA31-0PA0**		1	1 unit	41J
		Green	C		**3SB35 00-0AA41-0PA0**		1	1 unit	41J
		Blue	C		**3SB35 00-0AA51-0PA0**		1	1 unit	41J
		White	C		**3SB35 00-0AA61-0PA0**		1	1 unit	41J
 Pushbutton with raised front ring									
Pushbuttons with raised button		Black	B		**3SB35 00-0BA11**		1	1 unit	41J
		Red	B		**3SB35 00-0BA21**		1	1 unit	41J
		Yellow	B		**3SB35 00-0BA31**		1	1 unit	41J
		Green	B		**3SB35 00-0BA41**		1	1 unit	41J
		Blue	B		**3SB35 00-0BA51**		1	1 unit	41J
		White	B		**3SB35 00-0BA61**		1	1 unit	41J
Pushbuttons with raised front ring (height 15.5 mm)		Black	B		**3SB35 00-0AA12**		1	1 unit	41J
		Red	B		**3SB35 00-0AA22**		1	1 unit	41J
		Yellow	B		**3SB35 00-0AA32**		1	1 unit	41J
		Green	B		**3SB35 00-0AA42**		1	1 unit	41J
		Blue	B		**3SB35 00-0AA52**		1	1 unit	41J
		White	B		**3SB35 00-0AA62**		1	1 unit	41J
 Illuminated pushbutton with flat button									
Illuminated pushbuttons with flat button (incl. holder for 3 elements)		Amber[2]	C		**3SB35 01-0AA01**		1	1 unit	41J
		Red[2]	▶		**3SB35 01-0AA21**		1	1 unit	41J
		Yellow[2]	B		**3SB35 01-0AA31**		1	1 unit	41J
		Green[2]	▶		**3SB35 01-0AA41**		1	1 unit	41J
		Blue[2]	B		**3SB35 01-0AA51**		1	1 unit	41J
		White	B		**3SB35 01-0AA61**		1	1 unit	41J
		Clear[2]	▶		**3SB35 01-0AA71**		1	1 unit	41J
 Illuminated pushbutton with raised button									
Illuminated pushbuttons with flat, solvent-resistant button[3] (incl. holder for 3 elements)		Red[2]	C		**3SB35 01-0AA21-0PA0**		1	1 unit	41J
		Yellow[2]	C		**3SB35 01-0AA31-0PA0**		1	1 unit	41J
		Green[2]	C		**3SB35 01-0AA41-0PA0**		1	1 unit	41J
		Blue[2]	C		**3SB35 01-0AA51-0PA0**		1	1 unit	41J
		White	C		**3SB35 01-0AA61-0PA0**		1	1 unit	41J
		Clear[2]	C		**3SB35 01-0AA71-0PA0**		1	1 unit	41J
Illuminated pushbuttons with raised button (incl. holder for 3 elements)		Amber	D		**3SB35 01-0BA01**		1	1 unit	41J
		Red	B		**3SB35 01-0BA21**		1	1 unit	41J
		Yellow	B		**3SB35 01-0BA31**		1	1 unit	41J
		Green	B		**3SB35 01-0BA41**		1	1 unit	41J
		Blue	B		**3SB35 01-0BA51**		1	1 unit	41J
		Clear	B		**3SB35 01-0BA71**		1	1 unit	41J
 Pushbutton with flat button									
Pushbuttons with flat button, latching, unlatches by pressing again		Black	B		**3SB35 00-0DA11**		1	1 unit	41J
		Red	B		**3SB35 00-0DA21**		1	1 unit	41J
		Yellow	B		**3SB35 00-0DA31**		1	1 unit	41J
		Green	B		**3SB35 00-0DA41**		1	1 unit	41J
		Blue	B		**3SB35 00-0DA51**		1	1 unit	41J
		White	B		**3SB35 00-0DA61**		1	1 unit	41J
		Gray	D		**3SB35 00-0DB51**		1	1 unit	41J
Illuminated pushbuttons with flat button, latching, unlatches by pressing again (incl. holder for 3 elements)		Amber[2]	D		**3SB35 01-0DA01**		1	1 unit	41J
		Red[2]	B		**3SB35 01-0DA21**		1	1 unit	41J
		Yellow[2]	B		**3SB35 01-0DA31**		1	1 unit	41J
		Green[2]	B		**3SB35 01-0DA41**		1	1 unit	41J
		Blue[2]	B		**3SB35 01-0DA51**		1	1 unit	41J
		White	B		**3SB35 01-0DA61**		1	1 unit	41J
		Clear[2]	B		**3SB35 01-0DA71**		1	1 unit	41J

⚙ For online configurator see www.siemens.com/sirius/configurators .

1) Also available without holder. Supplement Order No. with **"–Z"** and quote order code **"B01"**. Price reduction on request.

2) Inscription is possible by inserting a label.

3) Not suitable for laser inscription.

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Mushroom pushbutton, Ø 30 mm



Mushroom pushbutton, Ø 40 mm



Illuminated mushroom pushbutton, Ø 60 mm



Push-pull button, Ø 30 mm



Push-pull button, Ø 40 mm



Push-pull button, Ø 60 mm, can be illuminated

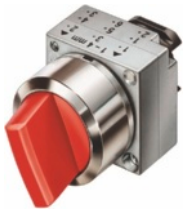
Version	Color of handle	DT	Configurator ⚙ Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Mushroom pushbuttons with holder[1]							
Mushroom pushbuttons, Ø 30 mm	Black	B	**3SB35 00-1DA11**		1	1 unit	41J
	Red	B	**3SB35 00-1DA21**		1	1 unit	41J
	Yellow	B	**3SB35 00-1DA31**		1	1 unit	41J
	Green	B	**3SB35 00-1DA41**		1	1 unit	41J
Mushroom pushbuttons, Ø 40 mm	Black	B	**3SB35 00-1GA11**		1	1 unit	41J
	Red	B	**3SB35 00-1GA21**		1	1 unit	41J
	Yellow	B	**3SB35 00-1GA31**		1	1 unit	41J
	Green	B	**3SB35 00-1GA41**		1	1 unit	41J
Mushroom pushbuttons, Ø 60 mm	Black	B	**3SB35 00-1QA11**		1	1 unit	41J
	Red	B	**3SB35 00-1QA21**		1	1 unit	41J
	Yellow	B	**3SB35 00-1QA31**		1	1 unit	41J
	Green	B	**3SB35 00-1QA41**		1	1 unit	41J
Illuminated mushroom pushbuttons, Ø 30 mm (incl. holder for 3 elements)	Amber	B	**3SB35 01-1DA01**		1	1 unit	41J
	Yellow	B	**3SB35 01-1DA31**		1	1 unit	41J
	Green	B	**3SB35 01-1DA41**		1	1 unit	41J
	White	B	**3SB35 01-1DA61**		1	1 unit	41J
Illuminated mushroom pushbuttons, Ø 40 mm (incl. holder for 3 elements)	Amber	B	**3SB35 01-1GA01**		1	1 unit	41J
	Yellow	B	**3SB35 01-1GA31**		1	1 unit	41J
	Green	B	**3SB35 01-1GA41**		1	1 unit	41J
	White	B	**3SB35 01-1GA61**		1	1 unit	41J
Illuminated mushroom pushbuttons, Ø 60 mm (incl. holder for 3 elements)	Amber	B	**3SB35 01-1QA01**		1	1 unit	41J
	Yellow	B	**3SB35 01-1QA31**		1	1 unit	41J
	Green	B	**3SB35 01-1QA41**		1	1 unit	41J
	White	B	**3SB35 01-1QA61**		1	1 unit	41J
Push-pull buttons, Ø 30 mm, latching, pull to unlatch	Black	B	**3SB35 00-1EA11**		1	1 unit	41J
	Red	B	**3SB35 00-1EA21**		1	1 unit	41J
Push-pull buttons, Ø 40 mm, latching, pull to unlatch	Black	B	**3SB35 00-1CA11**		1	1 unit	41J
	Red	B	**3SB35 00-1CA21**		1	1 unit	41J
	Yellow	B	**3SB35 00-1CA31**		1	1 unit	41J
	Green	C	**3SB35 00-1CA41**		1	1 unit	41J
Push-pull buttons, Ø 60 mm, latching, pull to unlatch	Black	B	**3SB35 00-1RA11**		1	1 unit	41J
	Red	B	**3SB35 00-1RA21**		1	1 unit	41J
Push-pull buttons, Ø 30 mm, latching, pull to unlatch, **can be illuminated** (incl. holder for 3 elements)	Amber	C	**3SB35 01-1EA01**		1	1 unit	41J
	Red	B	**3SB35 01-1EA21**		1	1 unit	41J
	Yellow	B	**3SB35 01-1EA31**		1	1 unit	41J
	Green	B	**3SB35 01-1EA41**		1	1 unit	41J
	Blue	B	**3SB35 01-1EA51**		1	1 unit	41J
	Clear	B	**3SB35 01-1EA71**		1	1 unit	41J
Push-pull buttons, Ø 40 mm, latching, pull to unlatch, **can be illuminated** (incl. holder for 3 elements)	Amber	C	**3SB35 01-1CA01**		1	1 unit	41J
	Red	B	**3SB35 01-1CA21**		1	1 unit	41J
	Yellow	B	**3SB35 01-1CA31**		1	1 unit	41J
	Green	B	**3SB35 01-1CA41**		1	1 unit	41J
	Blue	B	**3SB35 01-1CA51**		1	1 unit	41J
	Clear	B	**3SB35 01-1CA71**		1	1 unit	41J
Push-pull buttons, Ø 60 mm, latching, pull to unlatch, **can be illuminated** (incl. holder for 3 elements)	Amber	C	**3SB35 01-1RA01**		1	1 unit	41J
	Red	B	**3SB35 01-1RA21**		1	1 unit	41J
	Yellow	B	**3SB35 01-1RA31**		1	1 unit	41J
	Green	C	**3SB35 01-1RA41**		1	1 unit	41J
	Blue	B	**3SB35 01-1RA51**		1	1 unit	41J
	Clear	D	**3SB35 01-1RA71**		1	1 unit	41J

⚙ For online configurator see www.siemens.com/sirius/configurators .

[1] Also available without holder. Supplement Order No. with **"–Z"** and quote order code **"B01"**. Price reduction on request.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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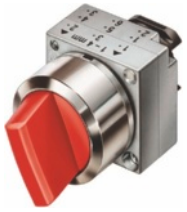
Version	Version Illumination	Color of handle	DT	Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Selector switches with holders								
Selector switches with 2 switch positions								
 Selector switch, 2 switch positions, standard version, 90°								
Switching sequence O-I, 90° operating angle, latching 	**Non-illuminated, standard version**[1]	Black	▶	**3SB35 00-2HA11**		1	1 unit	41J
		Red	A	**3SB35 00-2HA21**		1	1 unit	41J
		Green	C	**3SB35 00-2HA41**		1	1 unit	41J
		White	B	**3SB35 00-2HA61**		1	1 unit	41J
	Non-illuminated, with solvent-resistant knob[1]	Black	B	**3SB35 00-2HA11-0PA0**		1	1 unit	41J
		Red	B	**3SB35 00-2HA21-0PA0**		1	1 unit	41J
		Green	B	**3SB35 00-2HA41-0PA0**		1	1 unit	41J
	Illuminated, standard version[1] (incl. holder for 3 elements)	Amber	C	**3SB35 01-2HA01**		1	1 unit	41J
		Red	C	**3SB35 01-2HA21**		1	1 unit	41J
		Yellow	C	**3SB35 01-2HA31**		1	1 unit	41J
		Green	C	**3SB35 01-2HA41**		1	1 unit	41J
		Blue	C	**3SB35 01-2HA51**		1	1 unit	41J
		Clear	C	**3SB35 01-2HA71**		1	1 unit	41J
 Selector switch, 2 switch positions, standard version, 50°								
Switching sequence O-I, 50° operating angle, latching 	**Non-illuminated, standard version**[1]	Black	▶	**3SB35 00-2KA11**		1	1 unit	41J
		Red	B	**3SB35 00-2KA21**		1	1 unit	41J
		Green	B	**3SB35 00-2KA41**		1	1 unit	41J
		White	B	**3SB35 00-2KA61**		1	1 unit	41J
	Non-illuminated, with solvent-resistant knob[1]	Black	D	**3SB35 00-2KA11-0PA0**		1	1 unit	41J
		Red	D	**3SB35 00-2KA21-0PA0**		1	1 unit	41J
		Green	B	**3SB35 00-2KA41-0PA0**		1	1 unit	41J
	Illuminated, standard version[1] (incl. holder for 3 elements)	Amber	D	**3SB35 01-2KA01**		1	1 unit	41J
		Red	B	**3SB35 01-2KA21**		1	1 unit	41J
		Yellow	B	**3SB35 01-2KA31**		1	1 unit	41J
		Green	B	**3SB35 01-2KA41**		1	1 unit	41J
		Blue	B	**3SB35 01-2KA51**		1	1 unit	41J
		Clear	B	**3SB35 01-2KA71**		1	1 unit	41J
 Selector switch, 2 switch positions, heavy-duty version								
	Illuminated, with solvent-resistant knob[1] (incl. holder for 3 elements)	Red	D	**3SB35 01-2KA21-0PA0**		1	1 unit	41J
		Green	D	**3SB35 01-2KA41-0PA0**		1	1 unit	41J
		Blue	D	**3SB35 01-2KA51-0PA0**		1	1 unit	41J
		Clear	D	**3SB35 01-2KA71-0PA0**		1	1 unit	41J
	Non-illuminated, heavy-duty version	Black	C	**3SB35 00-2PA11**		1	1 unit	41J
		Red	D	**3SB35 00-2PA21**		1	1 unit	41J
		Green	D	**3SB35 00-2PA41**		1	1 unit	41J
		White	D	**3SB35 00-2PA61**		1	1 unit	41J
	Illuminated, heavy-duty version (incl. holder for 3 elements)	Amber	D	**3SB35 01-2PA01**		1	1 unit	41J
		Red	D	**3SB35 01-2PA21**		1	1 unit	41J
		Yellow	D	**3SB35 01-2PA31**		1	1 unit	41J
		Green	D	**3SB35 01-2PA41**		1	1 unit	41J
		Blue	D	**3SB35 01-2PA51**		1	1 unit	41J
		Clear	D	**3SB35 01-2PA71**		1	1 unit	41J
 Selector switch, 2 switch positions, long handle								
	Non-illuminated, long handle	Black	D	**3SB35 00-3PA11**		1	1 unit	41J
		Red	D	**3SB35 00-3PA21**		1	1 unit	41J
		Green	D	**3SB35 00-3PA41**		1	1 unit	41J
		White	D	**3SB35 00-3PA61**		1	1 unit	41J
	Illuminated long handle (incl. holder for 3 elements)	Red	D	**3SB35 01-3PA21**		1	1 unit	41J
		Yellow	D	**3SB35 01-3PA31**		1	1 unit	41J
		Green	D	**3SB35 01-3PA41**		1	1 unit	41J
		Blue	D	**3SB35 01-3PA51**		1	1 unit	41J
		Clear	D	**3SB35 01-3PA71**		1	1 unit	41J

⚙ For online configurator see www.siemens.com/sirius/configurators .

1) Also available without holder. Supplement Order No. with **"–Z"** and quote order code **"B01"**. Price reduction on request.

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Actuators and indicators



Selector switch, 2 switch positions, standard version



Selector switch, 2 switch positions, heavy-duty version



Selector switch, 2 switch positions, long handle

Version	Version Illumination	Color of handle	DT	Configurator Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Selector switches with holders								
Selector switches with 2 switch positions								
Switching sequence O-I, 50° operating angle, momentary contact type 	**Non-illuminated, standard version**[1]	Black	▶	**3SB35 00-2LA11**		1	1 unit	41J
		Red	B	**3SB35 00-2LA21**		1	1 unit	41J
		Green	B	**3SB35 00-2LA41**		1	1 unit	41J
		White	B	**3SB35 00-2LA61**		1	1 unit	41J
	Non-illuminated, with solvent-resistant knob[1]	Black	B	**3SB35 00-2LA11-0PA0**		1	1 unit	41J
		Red	B	**3SB35 00-2LA21-0PA0**		1	1 unit	41J
		Green	B	**3SB35 00-2LA41-0PA0**		1	1 unit	41J
	Illuminated, standard version[1] (incl. holder for 3 elements)	Amber	D	**3SB35 01-2LA01**		1	1 unit	41J
		Red	B	**3SB35 01-2LA21**		1	1 unit	41J
		Yellow	B	**3SB35 01-2LA31**		1	1 unit	41J
		Green	B	**3SB35 01-2LA41**		1	1 unit	41J
		Blue	B	**3SB35 01-2LA51**		1	1 unit	41J
		Clear	B	**3SB35 01-2LA71**		1	1 unit	41J
	Illuminated, with solvent-resistant knob[1] (incl. holder for 3 elements)	Red	D	**3SB35 01-2LA21-0PA0**		1	1 unit	41J
		Green	D	**3SB35 01-2LA41-0PA0**		1	1 unit	41J
		Blue	D	**3SB35 01-2LA51-0PA0**		1	1 unit	41J
		Clear	B	**3SB35 01-2LA71-0PA0**		1	1 unit	41J
	Non-illuminated, heavy-duty version	Black	D	**3SB35 00-2QA11**		1	1 unit	41J
		Red	D	**3SB35 00-2QA21**		1	1 unit	41J
		Green	D	**3SB35 00-2QA41**		1	1 unit	41J
		White	D	**3SB35 00-2QA61**		1	1 unit	41J
	Illuminated, heavy-duty version (incl. holder for 3 elements)	Amber	D	**3SB35 01-2QA01**		1	1 unit	41J
		Red	D	**3SB35 01-2QA21**		1	1 unit	41J
		Yellow	D	**3SB35 01-2QA31**		1	1 unit	41J
		Green	D	**3SB35 01-2QA41**		1	1 unit	41J
		Blue	D	**3SB35 01-2QA51**		1	1 unit	41J
		Clear	D	**3SB35 01-2QA71**		1	1 unit	41J
	Non-illuminated, long handle	Black	D	**3SB35 00-3QA11**		1	1 unit	41J
		Red	D	**3SB35 00-3QA21**		1	1 unit	41J
		Green	D	**3SB35 00-3QA41**		1	1 unit	41J
	Illuminated long handle (incl. holder for 3 elements)	Red	D	**3SB35 01-3QA21**		1	1 unit	41J
		Yellow	D	**3SB35 01-3QA31**		1	1 unit	41J
		Green	D	**3SB35 01-3QA41**		1	1 unit	41J
		Blue	D	**3SB35 01-3QA51**		1	1 unit	41J
		Clear	D	**3SB35 01-3QA71**		1	1 unit	41J

For online configurator see www.siemens.com/sirius/configurators .

[1] Also available without holder. Supplement Order No. with **"–Z"** and quote order code **"B01"**. Price reduction on request.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Version	Version Illumination	Color of handle	DT	Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Selector switches with holders								
Selector switches with 3 switch positions								
Switching sequence I-O-II, 2 x 50° operating angle, latching 	**Non-illuminated, standard version** [1]	Black	▶	**3SB35 00-2DA11**		1	1 unit	41J
		Red	B	**3SB35 00-2DA21**		1	1 unit	41J
		Green	B	**3SB35 00-2DA41**		1	1 unit	41J
		White	B	**3SB35 00-2DA61**		1	1 unit	41J
	Non-illuminated, with solvent-resistant knob [1]	Black	B	**3SB35 00-2DA11-0PA0**		1	1 unit	41J
		Red	B	**3SB35 00-2DA21-0PA0**		1	1 unit	41J
		Green	B	**3SB35 00-2DA41-0PA0**		1	1 unit	41J
	Illuminated, standard version [1] (incl. holder for 3 elements)	Amber	D	**3SB35 01-2DA01**		1	1 unit	41J
		Red	B	**3SB35 01-2DA21**		1	1 unit	41J
		Yellow	B	**3SB35 01-2DA31**		1	1 unit	41J
		Green	B	**3SB35 01-2DA41**		1	1 unit	41J
		Blue	B	**3SB35 01-2DA51**		1	1 unit	41J
		Clear	B	**3SB35 01-2DA71**		1	1 unit	41J
	Illuminated, with solvent-resistant knob [1] (incl. holder for 3 elements)	Red	B	**3SB35 01-2DA21-0PA0**		1	1 unit	41J
		Green	D	**3SB35 01-2DA41-0PA0**		1	1 unit	41J
		Blue	B	**3SB35 01-2DA51-0PA0**		1	1 unit	41J
		Clear	D	**3SB35 01-2DA71-0PA0**		1	1 unit	41J
 Selector switch, 3 switch positions, standard version	**Non-illuminated, heavy-duty version**	Black	C	**3SB35 00-2SA11**		1	1 unit	41J
		Red	D	**3SB35 00-2SA21**		1	1 unit	41J
		Green	D	**3SB35 00-2SA41**		1	1 unit	41J
		White	D	**3SB35 00-2SA61**		1	1 unit	41J
	Illuminated, heavy-duty version (incl. holder for 3 elements)	Amber	D	**3SB35 01-2SA01**		1	1 unit	41J
		Red	D	**3SB35 01-2SA21**		1	1 unit	41J
		Yellow	D	**3SB35 01-2SA31**		1	1 unit	41J
		Green	D	**3SB35 01-2SA41**		1	1 unit	41J
		Blue	D	**3SB35 01-2SA51**		1	1 unit	41J
		Clear	D	**3SB35 01-2SA71**		1	1 unit	41J
 Selector switch, 3 switch positions, heavy-duty version	**Non-illuminated, long handle**	Black	D	**3SB35 00-3SA11**		1	1 unit	41J
		Red	D	**3SB35 00-3SA21**		1	1 unit	41J
		Green	D	**3SB35 00-3SA41**		1	1 unit	41J
		White	D	**3SB35 00-3SA61**		1	1 unit	41J
	Illuminated long handle (incl. holder for 3 elements)	Red	D	**3SB35 01-3SA21**		1	1 unit	41J
		Yellow	D	**3SB35 01-3SA31**		1	1 unit	41J
		Green	D	**3SB35 01-3SA41**		1	1 unit	41J
		Blue	D	**3SB35 01-3SA51**		1	1 unit	41J
		Clear	D	**3SB35 01-3SA71**		1	1 unit	41J
 Selector switch, 3 switch positions, long handle								
Switching sequence I-O-II, 2 x 50° operating angle, momentary contact type 	**Non-illuminated, standard version** [1]	Black	▶	**3SB35 00-2EA11**		1	1 unit	41J
		Red	B	**3SB35 00-2EA21**		1	1 unit	41J
		Green	B	**3SB35 00-2EA41**		1	1 unit	41J
		White	B	**3SB35 00-2EA61**		1	1 unit	41J
	Non-illuminated, with solvent-resistant knob [1]	Black	B	**3SB35 00-2EA11-0PA0**		1	1 unit	41J
		Red	B	**3SB35 00-2EA21-0PA0**		1	1 unit	41J
		Green	B	**3SB35 00-2EA41-0PA0**		1	1 unit	41J
	Illuminated, standard version [1] (incl. holder for 3 elements)	Amber	D	**3SB35 01-2EA01**		1	1 unit	41J
		Red	B	**3SB35 01-2EA21**		1	1 unit	41J
		Yellow	B	**3SB35 01-2EA31**		1	1 unit	41J
		Green	B	**3SB35 01-2EA41**		1	1 unit	41J
		Blue	B	**3SB35 01-2EA51**		1	1 unit	41J
		Clear	B	**3SB35 01-2EA71**		1	1 unit	41J
	Illuminated, with solvent-resistant knob [1] (incl. holder for 3 elements)	Red	B	**3SB35 01-2EA21-0PA0**		1	1 unit	41J
		Green	B	**3SB35 01-2EA41-0PA0**		1	1 unit	41J
		Blue	B	**3SB35 01-2EA51-0PA0**		1	1 unit	41J
		Clear	D	**3SB35 01-2EA71-0PA0**		1	1 unit	41J

For online configurator see www.siemens.com/sirius/configurators .

[1] Also available without holder. Supplement Order No. with **"–Z"** and quote order code **"B01"**. Price reduction on request.

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Actuators and indicators



Selector switch, 3 switch positions, standard version



Selector switch, 3 switch positions, heavy-duty version



Selector switch, 3 switch positions, long handle

Version	Version Illumination	Color of handle	DT	Configurator ⚙ Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Selector switches with holders								
Selector switches with 3 switch positions								
Switching sequence I-O-II, 2 x 50° operating angle, momentary contact type 	**Non-illuminated, heavy-duty version**	Black	C	**3SB35 00-2TA11**		1	1 unit	41J
		Red	D	**3SB35 00-2TA21**		1	1 unit	41J
		Green	D	**3SB35 00-2TA41**		1	1 unit	41J
		White	D	**3SB35 00-2TA61**		1	1 unit	41J
	Illuminated, heavy-duty version (incl. holder for 3 elements)	Amber	D	**3SB35 01-2TA01**		1	1 unit	41J
		Red	D	**3SB35 01-2TA21**		1	1 unit	41J
		Yellow	D	**3SB35 01-2TA31**		1	1 unit	41J
		Green	D	**3SB35 01-2TA41**		1	1 unit	41J
		Blue	D	**3SB35 01-2TA51**		1	1 unit	41J
		Clear	D	**3SB35 01-2TA71**		1	1 unit	41J
	Non-illuminated, long handle	Black	D	**3SB35 00-3TA11**		1	1 unit	41J
		Red	D	**3SB35 00-3TA21**		1	1 unit	41J
		Green	D	**3SB35 00-3TA41**		1	1 unit	41J
		White	D	**3SB35 00-3TA61**		1	1 unit	41J
	Illuminated long handle (incl. holder for 3 elements)	Red	D	**3SB35 01-3TA21**		1	1 unit	41J
		Yellow	D	**3SB35 01-3TA31**		1	1 unit	41J
		Green	D	**3SB35 01-3TA41**		1	1 unit	41J
		Blue	D	**3SB35 01-3TA51**		1	1 unit	41J
		Clear	D	**3SB35 01-3TA71**		1	1 unit	41J
Switching sequence I-O-II, 2 x 50° operating angle, momentary contact type to the left, latching to the right 	**Non-illuminated, standard version**[1]	Black	B	**3SB35 00-2GA11**		1	1 unit	41J
		Red	B	**3SB35 00-2GA21**		1	1 unit	41J
		Green	B	**3SB35 00-2GA41**		1	1 unit	41J
		White	B	**3SB35 00-2GA61**		1	1 unit	41J
	Illuminated, standard version[1] (incl. holder for 3 elements)	Amber	D	**3SB35 01-2GA01**		1	1 unit	41J
		Red	D	**3SB35 01-2GA21**		1	1 unit	41J
		Yellow	D	**3SB35 01-2GA31**		1	1 unit	41J
		Green	B	**3SB35 01-2GA41**		1	1 unit	41J
		Blue	D	**3SB35 01-2GA51**		1	1 unit	41J
		Clear	D	**3SB35 01-2GA71**		1	1 unit	41J
	Non-illuminated, heavy-duty version	Black	D	**3SB35 00-2VA11**		1	1 unit	41J
		Red	D	**3SB35 00-2VA21**		1	1 unit	41J
		Green	D	**3SB35 00-2VA41**		1	1 unit	41J
		White	D	**3SB35 00-2VA61**		1	1 unit	41J
	Illuminated, heavy-duty version	Amber	D	**3SB35 01-2VA01**		1	1 unit	41J
		Red	D	**3SB35 01-2VA21**		1	1 unit	41J
		Yellow	D	**3SB35 01-2VA31**		1	1 unit	41J
		Green	D	**3SB35 01-2VA41**		1	1 unit	41J
		Blue	D	**3SB35 01-2VA51**		1	1 unit	41J
		Clear	D	**3SB35 01-2VA71**		1	1 unit	41J
	Non-illuminated, long handle	Black	D	**3SB35 00-3VA11**		1	1 unit	41J
		Red	D	**3SB35 00-3VA21**		1	1 unit	41J
Switching sequence I-O-II, 2 x 50° operating angle, latching to the left, momentary contact type to the right 	**Non-illuminated, standard version**[1]	Black	B	**3SB35 00-2FA11**		1	1 unit	41J
		Red	D	**3SB35 00-2FA21**		1	1 unit	41J
		Green	B	**3SB35 00-2FA41**		1	1 unit	41J
		White	B	**3SB35 00-2FA61**		1	1 unit	41J
	Illuminated, standard version[1] (incl. holder for 3 elements)	Amber	D	**3SB35 01-2FA01**		1	1 unit	41J
		Red	D	**3SB35 01-2FA21**		1	1 unit	41J
		Yellow	D	**3SB35 01-2FA31**		1	1 unit	41J
		Green	B	**3SB35 01-2FA41**		1	1 unit	41J
		Blue	D	**3SB35 01-2FA51**		1	1 unit	41J
		Clear	B	**3SB35 01-2FA71**		1	1 unit	41J
	Non-illuminated, heavy-duty version	Black	D	**3SB35 00-2UA11**		1	1 unit	41J
		Red	D	**3SB35 00-2UA21**		1	1 unit	41J
		Green	D	**3SB35 00-2UA41**		1	1 unit	41J
		White	D	**3SB35 00-2UA61**		1	1 unit	41J
	Illuminated, heavy-duty version	Amber	D	**3SB35 01-2UA01**		1	1 unit	41J
		Red	D	**3SB35 01-2UA21**		1	1 unit	41J
		Yellow	D	**3SB35 01-2UA31**		1	1 unit	41J
		Green	D	**3SB35 01-2UA41**		1	1 unit	41J
		Blue	D	**3SB35 01-2UA51**		1	1 unit	41J
		Clear	D	**3SB35 01-2UA71**		1	1 unit	41J
	Non-illuminated, long handle	Black	D	**3SB35 00-3UA11**		1	1 unit	41J
		Red	D	**3SB35 00-3UA21**		1	1 unit	41J
		Green	D	**3SB35 00-3UA41**		1	1 unit	41J
		White	D	**3SB35 00-3UA61**		1	1 unit	41J

⚙ For online configurator see www.siemens.com/sirius/configurators .

[1] Also available without holder. Supplement Order No. with **"–Z"** and quote order code **"B01"**. Price reduction on request.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	Lock version: Type	Lock No./ color	Key removal position	DT	Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Key-operated switches with holder[1]									
Key-operated switches with 2 keys, 2 switch positions									
Switching sequence O-I, 50° operating angle, latching	RONIS	SB 30	O+I	▶	**3SB35 00-4AD11**		1	1 unit	41J
			O	▶	**3SB35 00-4AD01**		1	1 unit	41J
			I	B	**3SB35 00-4AD21**		1	1 unit	41J
	CES	SSG 10	O+I	▶	**3SB35 00-4LD11**		1	1 unit	41J
			O	▶	**3SB35 00-4LD01**		1	1 unit	41J
			I	B	**3SB35 00-4LD21**		1	1 unit	41J
		LSG 1	O+I	B	**3SB35 00-4LF01**		1	1 unit	41J
			O	B	**3SB35 00-4LF11**		1	1 unit	41J
	BKS	S1	O+I	B	**3SB35 00-5AD11**		1	1 unit	41J
			O	B	**3SB35 00-5AD01**		1	1 unit	41J
		E1 for VW[2]	O	B	**3SB35 00-5AE11**		1	1 unit	41J
		E2 for VW[2]	O+I	B	**3SB35 00-5AE21**		1	1 unit	41J
			O	B	**3SB35 00-5AE31**		1	1 unit	41J
		E7 for VW[2]	O+I	B	**3SB35 00-5AE41**		1	1 unit	41J
			O	B	**3SB35 00-5AE51**		1	1 unit	41J
		E9 for VW[2]	O	B	**3SB35 00-5AE71**		1	1 unit	41J
	O.M.R.[3]	73038 Light blue	O+I	B	**3SB35 00-3AG11**		1	1 unit	41J
			O	B	**3SB35 00-3AG01**		1	1 unit	41J
			I	B	**3SB35 00-3AG21**		1	1 unit	41J
		73037 Red	O+I	B	**3SB35 00-3AH11**		1	1 unit	41J
			O	B	**3SB35 00-3AH01**		1	1 unit	41J
			I	B	**3SB35 00-3AH21**		1	1 unit	41J
		73034 Black	O+I	B	**3SB35 00-3AJ11**		1	1 unit	41J
			O	B	**3SB35 00-3AJ01**		1	1 unit	41J
			I	B	**3SB35 00-3AJ21**		1	1 unit	41J
		73033 Yellow	O+I	B	**3SB35 00-3AK11**		1	1 unit	41J
			O	B	**3SB35 00-3AK01**		1	1 unit	41J
			I	B	**3SB35 00-3AK21**		1	1 unit	41J
Switching sequence O-I, 50° operating angle, momentary contact type	RONIS	SB 30	O	▶	**3SB35 00-4BD01**		1	1 unit	41J
	CES	SSG 10	O	▶	**3SB35 00-4MD01**		1	1 unit	41J
		LSG 1	O	B	**3SB35 00-4MF11**		1	1 unit	41J
	BKS	S1	O	B	**3SB35 00-5BD01**		1	1 unit	41J
	O.M.R.[3]	73038 Light blue	O	B	**3SB35 00-3BG01**		1	1 unit	41J
		73037 Red	O	B	**3SB35 00-3BH01**		1	1 unit	41J
		73034 Black	O	B	**3SB35 00-3BJ01**		1	1 unit	41J
		73033 Yellow	O	B	**3SB35 00-3BK01**		1	1 unit	41J



RONIS key-operated switch



CES key-operated switch



BKS key-operated switch



O.M.R. key-operated switch

For online configurator see www.siemens.com/sirius/configurators .

For BKS and CES special locks see page 13/68.

1) Also available without holder. Supplement Order No. with **"–Z"** and quote order code **"B01"**. Price reduction on request.

2) Keys are not included in scope of supply.

3) According to FIAT standards; also available for other users.

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Actuators and indicators

Version	Lock version: Type	Lock version: Lock No./ color	Lock version: Key removal position	DT	Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Key-operated switches with holder[1]									
Key-operated switches with 2 keys, 3 switch positions									
Switching sequence I-O-II, 2 x 50° operating angle, latching 	RONIS	SB 30	I+O+II	B	**3SB35 00-4DD11**		1	1 unit	41J
			O	B	**3SB35 00-4DD01**		1	1 unit	41J
			I+II	B	**3SB35 00-4DD41**		1	1 unit	41J
			I	B	**3SB35 00-4DD21**		1	1 unit	41J
			II	B	**3SB35 00-4DD31**		1	1 unit	41J
			O+I	B	**3SB35 00-4DD51**		1	1 unit	41J
	CES	SSG 10	O+I+II	B	**3SB35 00-4PD11**		1	1 unit	41J
			O	B	**3SB35 00-4PD01**		1	1 unit	41J
			I+II	B	**3SB35 00-4PD41**		1	1 unit	41J
			I	B	**3SB35 00-4PD21**		1	1 unit	41J
			II	B	**3SB35 00-4PD31**		1	1 unit	41J
	BKS	S1	O	C	**3SB35 00-5DD01**		1	1 unit	41J
			I+II	C	**3SB35 00-5DD41**		1	1 unit	41J
	O.M.R.[2]	73038 Light blue	I+O+II	B	**3SB35 00-3DG11**		1	1 unit	41J
		73037 Red	I+O+II	B	**3SB35 00-3DH11**		1	1 unit	41J
		73034 Black	I+O+II	B	**3SB35 00-3DJ11**		1	1 unit	41J
			O	B	**3SB35 00-3DJ01**		1	1 unit	41J
Switching sequence I-O-II, 2 x 50° operating angle, momentary contact type 	RONIS	SB 30	O	B	**3SB35 00-4ED01**		1	1 unit	41J
	CES	SSG 10	O	B	**3SB35 00-4QD01**		1	1 unit	41J
	BKS	S1	O	B	**3SB35 00-5ED01**		1	1 unit	41J
	O.M.R.	73034 Black	O	B	**3SB35 00-3EJ01**		1	1 unit	41J
Switching sequence I-O-II, 2 x 50° operating angle, momentary contact type to the left, latching to the right 	RONIS	SB 30	O + II	B	**3SB35 00-4GD61**		1	1 unit	41J
			O	B	**3SB35 00-4GD01**		1	1 unit	41J
	CES	SSG 10	O + II	B	**3SB35 00-4SD61**		1	1 unit	41J
			O	B	**3SB35 00-4SD01**		1	1 unit	41J
			II	B	**3SB35 00-4SD31**		1	1 unit	41J
	BKS	S1	O + II	C	**3SB35 00-5GD61**		1	1 unit	41J
			O	C	**3SB35 00-5GD01**		1	1 unit	41J
	O.M.R.	73033 Yellow	II	C	**3SB35 00-3GK31**		1	1 unit	41J
Switching sequence I-O-II, 2 x 50° operating angle, latching to the left, momentary contact type to the right 	RONIS	SB 30	O+I	B	**3SB35 00-4FD51**		1	1 unit	41J
	CES	SSG 10	O+I	B	**3SB35 00-4RD51**		1	1 unit	41J
			O	B	**3SB35 00-4RD01**		1	1 unit	41J
			I	B	**3SB35 00-4RD21**		1	1 unit	41J
	BKS	S1	O+I	C	**3SB35 00-5FD51**		1	1 unit	41J
			O	B	**3SB35 00-5FD01**		1	1 unit	41J
			I	B	**3SB35 00-5FD21**		1	1 unit	41J


RONIS key-operated switch


CES key-operated switch


BKS key-operated switch


O.M.R. key-operated switch

For online configurator see www.siemens.com/sirius/configurators .

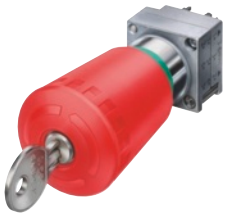
1) Also available without holder. Supplement Order No. with **"–Z"** and quote order code **"B01"**. Price reduction on request.

2) According to FIAT standards; also available for other users.

For BKS and CES special locks see page 13/68.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	Color of handle	Approval	DT	Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
EMERGENCY-STOP devices according to ISO 13850 and IEC 60947-5-5, with holder[1)2)]. Can also be used with 3TK28 safety relays.								
 Mushroom diameter 32 mm								
EMERGENCY-STOP mushroom pushbuttons, Ø 32 mm, with positive latching according to ISO 13850, with rotate-to-unlatch mechanism								
• Standard version			B	**3SB35 00-1FA20**		1	1 unit	41J
• Solvent-resistant			B	**3SB35 00-1FA20-0PA0**		1	1 unit	41J
 Mushroom diameter 40 mm, with rotate-to-unlatch mechanism, with switch position indication								
EMERGENCY-STOP mushroom pushbuttons, Ø 40 mm, with positive latching according to ISO 13850, with rotate-to-unlatch mechanism	Red							
• Without switch position indicator			▶	**3SB35 00-1HA20**		1	1 unit	41J
• Without switch position indicator, solvent-resistant			B	**3SB35 00-1HA20-0PA0**		1	1 unit	41J
• With mechanical switch position indication			▶	**3SB35 00-1HA26**		1	1 unit	41J
 Mushroom diameter 40 mm, pull-to-unlatch mechanism								
EMERGENCY-STOP mushroom pushbuttons, Ø 40 mm, with positive latching according to ISO 13850, with pull-to-unlatch mechanism	Red		B	**3SB35 00-1TA20**		1	1 unit	41J
 Mushroom diameter 60 mm								
EMERGENCY-STOP mushroom pushbuttons, Ø 60 mm, with positive latching according to ISO 13850, with rotate-to-unlatch mechanism	Red		B	**3SB35 00-1AA20**		1	1 unit	41J
 Mushroom diameter 40 mm, with RONIS key-operated switch								
EMERGENCY-STOP mushroom pushbuttons, Ø 40 mm, with RONIS key-operated switch (with 2 keys), lock No. SB 30, with positive latching according to ISO 13850, unlocking only possible using key	Red		B	**3SB35 00-1BA20**		1	1 unit	41J
EMERGENCY-STOP mushroom pushbuttons, Ø 40 mm, with CES key-operated switch, (with 2 keys), lock No. SSG 10, with positive latching according to ISO 13850, unlocking only possible using key	Red		B	**3SB35 00-1KA20**		1	1 unit	41J
 Mushroom diameter 40 mm, with CES key-operated switch								
EMERGENCY-STOP mushroom pushbuttons, Ø 40 mm, with BKS key-operated switch, (with 2 keys), lock No. S1, with positive latching according to ISO 13850, unlocking only possible using key	Red		B	**3SB35 00-1LA20**		1	1 unit	41J
EMERGENCY-STOP mushroom pushbuttons, Ø 40 mm, with O.M.R. key-operated switch (with 2 keys), lock No. 73037, with positive latching according to ISO 13850, unlocking only using key	Red		B	**3SB35 00-1MA20**		1	1 unit	41J

For online configurator see www.siemens.com/sirius/configurators .

1) Also available without holder. Supplement Order No. with **"–Z"** and quote order code **"B01"**. Price reduction on request.

2) Yellow backing plates must be ordered separately; see "Accessories" on page 13/83.

For BKS and CES special locks see page 13/68.

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Actuators and indicators

Version	Color of lens	DT	Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Signaling elements with holder[1]							
 Indicator light with smooth lens							
Indicator lights with lens with concentric rings[2]	Amber	B	**3SB35 01-6BA00**		1	1 unit	41J
	Red	▶	**3SB35 01-6BA20**		1	1 unit	41J
	Yellow	B	**3SB35 01-6BA30**		1	1 unit	41J
	Green	▶	**3SB35 01-6BA40**		1	1 unit	41J
	Blue	B	**3SB35 01-6BA50**		1	1 unit	41J
	White	B	**3SB35 01-6BA60**		1	1 unit	41J
	Clear	▶	**3SB35 01-6BA70**		1	1 unit	41J
Indicator lights with smooth lens[2]	Amber	B	**3SB35 01-6AA00**		1	1 unit	41J
	Red	B	**3SB35 01-6AA20**		1	1 unit	41J
	Yellow	B	**3SB35 01-6AA30**		1	1 unit	41J
	Green	B	**3SB35 01-6AA40**		1	1 unit	41J
	Blue	B	**3SB35 01-6AA50**		1	1 unit	41J
	White	▶	**3SB35 01-6AA60**		1	1 unit	41J
	Clear	B	**3SB35 01-6AA70**		1	1 unit	41J
Indicator lights with smooth solvent-resistant lens[2][3]	Red	C	**3SB35 01-6AA20-0PA0**		1	1 unit	41J
	Yellow	C	**3SB35 01-6AA30-0PA0**		1	1 unit	41J
	Green	C	**3SB35 01-6AA40-0PA0**		1	1 unit	41J
	Blue	C	**3SB35 01-6AA50-0PA0**		1	1 unit	41J
	White	C	**3SB35 01-6AA60-0PA0**		1	1 unit	41J
	Clear	C	**3SB35 01-6AA70-0PA0**		1	1 unit	41J

For online configurator see www.siemens.com/sirius/configurators .

1) Also available without holder. Supplement Order No. with **"–Z"** and quote order code **"B01"**. Price reduction on request.

2) Inscription by inserting a label is not possible.

3) Not suitable for laser inscription.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Selection and ordering data

Version	Diagram	Operating travel Contact closed Contact open	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Contact blocks for front plate mounting								
Contact blocks with one contact • Mounting depth: 50 mm								
1 NO	.3 .4	NSD0_00015 3-4 0 1 2 3 4 mm 2,3	▶	**3SB34 00-0B**		1	1 unit	41J
1 NO with gold-plated contacts	.3 .4	NSD0_00015 3-4 0 1 2 3 4 mm 2,3	C	**3SB34 00-0BA**		1	1 unit	41J
1 NC	.1 .2	NSD0_00017 1-2 0 1 2 3 4 mm 1,6	▶	**3SB34 00-0C**		1	1 unit	41J
1 NC with gold-plated contacts	.1 .2	NSD0_00017 1-2 0 1 2 3 4 mm 1,6	C	**3SB34 00-0CA**		1	1 unit	41J
1 NC with mounting monitoring contact[1] • Mounting depth: 63 mm	.1 .2	NSD0_00017 1-2 0 1 2 3 4 mm 1,6	B	**3SB34 00-0M**		1	1 unit	41J
Contact block with 2 contacts Mounting depth 63 mm (including unit labeling plate)								
1 NO + 1 NC	.3 .1 .4 .2	NSD0_00038 3-4 1-2 0 1 2 3 4 mm 1,6 2,3	▶	**3SB34 00-0A**		1	1 unit	41J
1 NO + 1 NC with gold-plated contacts	.3 .1 .4 .2	NSD0_00038 3-4 1-2 0 1 2 3 4 mm 1,6 2,3	B	**3SB34 00-0AA**		1	1 unit	41J
1 NO + 1 NC with dust protection[2]	.3 .1 .4 .2	NSD0_00038 3-4 1-2 0 1 2 3 4 mm 1,6 2,3	D	**3SB34 00-0N**		1	1 unit	41J
1 NO leading + 1 NC lagging	.7 .5 .8 .6	NSD0_00037b 7-8 5-6 0 1 2 3 4 mm 1,3 2,2	B	**3SB34 00-0H**		1	1 unit	41J
1 NO leading + 1 NC lagging with gold-plated contacts	.7 .5 .8 .6	NSD0_00037b 7-8 5-6 0 1 2 3 4 mm 1,3 2,2	D	**3SB34 00-0HA**		1	1 unit	41J
2 NO	.3 .3 .4 .4	NSD0_00039 3-4 3-4 0 1 2 3 4 mm 2,3	B	**3SB34 00-0D**		1	1 unit	41J
2 NO with gold-plated contacts	.3 .3 .4 .4	NSD0_00039 3-4 3-4 0 1 2 3 4 mm 2,3	B	**3SB34 00-0DA**		1	1 unit	41J
2 NO with dust protection[2]	.3 .3 .4 .4	NSD0_00039 3-4 3-4 0 1 2 3 4 mm 2,3	C	**3SB34 00-0P**		1	1 unit	41J
2 NC	.1 .1 .2 .2	NSD0_00040 1-2 1-2 0 1 2 3 4 mm 1,6	B	**3SB34 00-0E**		1	1 unit	41J
2 NC with gold-plated contacts	.1 .1 .2 .2	NSD0_00040 1-2 1-2 0 1 2 3 4 mm 1,6	B	**3SB34 00-0EA**		1	1 unit	41J
2 NC with dust protection[2]	.1 .1 .2 .2	NSD0_00040 1-2 1-2 0 1 2 3 4 mm 1,6	C	**3SB34 00-0Q**		1	1 unit	41J
Blocks with 2 diodes type 1N 4007 Mounting depth: 63 mm U_{RMS} = max. 250 V I_{FAV} = 0.8 A at T_u = 60 °C	(L+) X5 X7 (L-) X6 X8 NSD0_00113		B	**3SB34 00-2A**		1	1 unit	41J


3SB34 00-0B


3SB34 00-0M


3SB34 00-0A


3SB34 00-2A

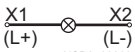
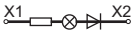
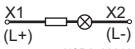
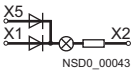
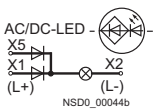
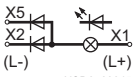
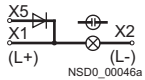
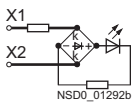
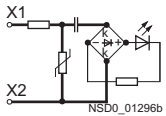
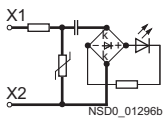
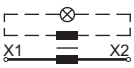
⊖ Positive opening according to IEC 60947-5-1, Appendix K.

1) The NC contact opens automatically upon disconnection of the actuator. On delivery, the contact is open (= safe state). Activation (= NC contacts on the non-actuated control device are closed) takes place upon first-time actuation after the contact block is snapped onto the actuator. Not suitable for mounting in 3SB38 enclosures.

2) With 3SB30 01-0CH dust protection shield

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Contact blocks and lampholders

Version	Diagram	Rated voltage	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		V						
Contact blocks for front plate mounting								
 3SB34 00-1A								
BA 9s lampholders, mounting depth 50 mm								
Without lamp	 NSD0_00003	Acc. to lamp	▶	**3SB34 00-1A**		1	1 unit	41J
With 24 V incandescent lamp (3SX1 344)		24 AC/DC	B	**3SB34 00-1D**		1	1 unit	41J
BA 9s lampholders, mounting depth 50 mm								
With integrated voltage reducer and with 130 V lamp (3SX1 731)[1]	 NSD0_00042	230 / 240 AC	B	**3SB34 00-1C**		1	1 unit	41J
BA 9s lampholders, mounting depth 50 mm								
With built-in resistor for longer endurance and with 130 V lamp (3SX1 731)[1]	 NSD0_00041	110/130 AC/DC	B	**3SB34 00-1B**		1	1 unit	41J
 3SB34 00-1F								
BA 9s lampholders with separate lamp test function[2][3]								
With integrated voltage reducer and with 130 V lamp (3SX1 731)[1]	 NSD0_00043	230 / 240 AC	B	**3SB34 00-1F**		1	1 unit	41J
Without lamp For incandescent lamp, max. 2.6 W; for LED lamp, 24/48/230 V AC/DC[4]	 NSD0_00044b	Acc. to lamp	B	**3SB34 00-1G**		1	1 unit	41J
Without lamp For incandescent lamp, max. 2.6 W; for LED lamp, AC or DC[5]	 NSD0_00045	Acc. to lamp	B	**3SB34 00-1L**		1	1 unit	41J
Without lamp For incandescent lamp, max. 2.6 W; for glow lamp, AC	 NSD0_00046a	Acc. to lamp	B	**3SB34 00-1H**		1	1 unit	41J
 3SB34 00-1PA								
Lampholders with integrated LED Mounting depth: 50 mm								
Yellow	 NSD0_01292b	24 AC/DC	B	**3SB34 00-1PA**		1	1 unit	41J
Red			▶	**3SB34 00-1PB**		1	1 unit	41J
Green			▶	**3SB34 00-1PC**		1	1 unit	41J
Blue			B	**3SB34 00-1PD**		1	1 unit	41J
White			▶	**3SB34 00-1PE**		1	1 unit	41J
Yellow	 NSD0_01296b	110 AC	B	**3SB34 00-1QA**		1	1 unit	41J
Red			B	**3SB34 00-1QB**		1	1 unit	41J
Green			B	**3SB34 00-1QC**		1	1 unit	41J
Blue			B	**3SB34 00-1QD**		1	1 unit	41J
White			B	**3SB34 00-1QE**		1	1 unit	41J
Yellow	 NSD0_01296b	230 AC	B	**3SB34 00-1RA**		1	1 unit	41J
Red			▶	**3SB34 00-1RB**		1	1 unit	41J
Green			▶	**3SB34 00-1RC**		1	1 unit	41J
Blue			B	**3SB34 00-1RD**		1	1 unit	41J
White			▶	**3SB34 00-1RE**		1	1 unit	41J
 3SB34 00-3.								
Transformers For snapping onto 3SB34 00-1A lampholder	 NSD0_00047	127 / 24	B	**3SB34 00-3A**		1	1 unit	41J
		240 / 24	B	**3SB34 00-3C**		1	1 unit	41J
		260 / 24	D	**3SB34 00-3E**		1	1 unit	41J
		400 / 24	B	**3SB34 00-3F**		1	1 unit	41J
For incandescent lamp AC, max. 2 W Mounting depth: 97 mm		127 / 6	B	**3SB34 00-3M**		1	1 unit	41J
		240 / 6	B	**3SB34 00-3P**		1	1 unit	41J
		400 / 6	B	**3SB34 00-3S**		1	1 unit	41J
		480 / 6	B	**3SB34 00-3U**		1	1 unit	41J
		600 / 6	D	**3SB34 00-3W**		1	1 unit	41J

1) Use these lamps only.

2) The lampholder with separate lamp test function can not be installed in an enclosure.

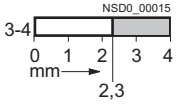
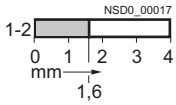
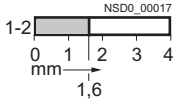
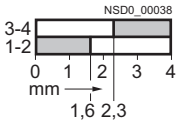
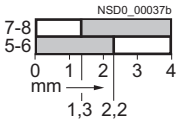
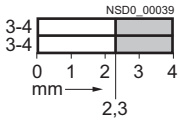
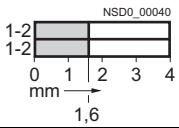
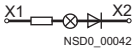
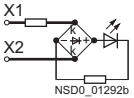
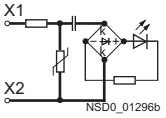
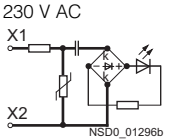
3) For circuit examples see Reference manual "Commanding and Signaling Devices".

4) Not suitable for LEDs which are suitable only for AC or DC.

5) Not suitable for LED for 24/48/230 V AC/DC. For connecting to DC, X5 must be connected to L–.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Version	Rated voltage of lamp/ Diagram V	Operating travel/color ▭ Contact closed ▭ Contact open	DT	Spring-type terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Contact blocks for front plate mounting								
 3SB34 03-0B	**Contact blocks with one contact**, mounting depth 50 mm							
1 NO			B	**3SB34 03-0B**		1	1 unit	41J
1 NO with gold-plated contacts			B	**3SB34 03-0BA**		1	1 unit	41J
1 NC ➔			B	**3SB34 03-0C**		1	1 unit	41J
1 NC with gold-plated contacts ➔			B	**3SB34 03-0CA**		1	1 unit	41J
 3SB34 03-0M								
1 NC with mounting monitoring contact[1] ➔ • Mounting depth: 63 mm			B	**3SB34 03-0M**		1	1 unit	41J
Contact blocks with 2 contacts, mounting depth 63 mm								
1 NO + 1 NC ➔			B	**3SB34 03-0A**		1	1 unit	41J
1 NO + 1 NC with gold-plated contacts ➔			B	**3SB34 03-0AA**		1	1 unit	41J
 3SB34 03-0A								
1 NO leading + 1 NC lagging			B	**3SB34 03-0H**		1	1 unit	41J
1 NO leading + 1 NC lagging with gold-plated contacts			B	**3SB34 03-0HA**		1	1 unit	41J
2 NO			B	**3SB34 03-0D**		1	1 unit	41J
2 NO with gold-plated contacts			D	**3SB34 03-0DA**		1	1 unit	41J
2 NC ➔			B	**3SB34 03-0E**		1	1 unit	41J
2 NC with gold-plated contacts ➔			D	**3SB34 03-0EA**		1	1 unit	41J
 3SB34 03-1C	**BA 9s lampholders,** mounting depth 50 mm							
Without lamp[2]	Acc. to lamp 		B	**3SB34 03-1A**		1	1 unit	41J
With integrated voltage reducer and with 130 V lamp (3SX1 731)[2)3)]	230/240 V AC 		B	**3SB34 03-1C**		1	1 unit	41J
 3SB3403-1PA	**Lampholders with integrated LED** Mounting depth: 50 mm	24 V AC/DC 	Yellow	B	**3SB34 03-1PA**		1	1 unit	41J
			Red	B	**3SB34 03-1PB**		1	1 unit	41J
			Green	B	**3SB34 03-1PC**		1	1 unit	41J
			Blue	B	**3SB34 03-1PD**		1	1 unit	41J
			White	B	**3SB34 03-1PE**		1	1 unit	41J
		110 V AC 	Yellow	B	**3SB34 03-1QA**		1	1 unit	41J
			Red	B	**3SB34 03-1QB**		1	1 unit	41J
			Green	B	**3SB34 03-1QC**		1	1 unit	41J
			Blue	B	**3SB34 03-1QD**		1	1 unit	41J
			White	B	**3SB34 03-1QE**		1	1 unit	41J
		230 V AC 	Yellow	B	**3SB34 03-1RA**		1	1 unit	41J
			Red	B	**3SB34 03-1RB**		1	1 unit	41J
			Green	B	**3SB34 03-1RC**		1	1 unit	41J
			Blue	B	**3SB34 03-1RD**		1	1 unit	41J
			White	B	**3SB34 03-1RE**		1	1 unit	41J

➔ Positive opening according to IEC 60947-5-1, Appendix K.

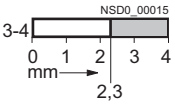
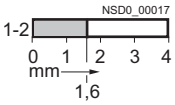
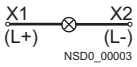
1) The NC contact opens automatically upon disconnection of the actuator. On delivery, the contact is open (= safe state). For more explanations see footnote, page 13/63. Not suitable for mounting in 3SB38 enclosures.

2) Not suitable for square command devices.

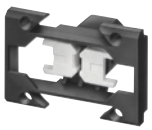
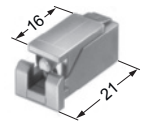
3) Use these lamps only.

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Contact blocks and lampholders

Version	Diagram	Operating travel Contact closed Contact open	DT	Solder pin connections Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Contact blocks for use on printed circuit boards								
 3SB34 11-0B								
Contact blocks with one contact Mounting depth 44 mm								
1 NO			B	**3SB34 11-0B**		1	1 unit	41J
1 NC ➔			B	**3SB34 11-0C**		1	1 unit	41J
 3SB34 11-1A								
Wedge base lampholders W2 x 4.6 d Mounting depth: 44 mm								
Without lamp			B	**3SB34 11-1A**		1	1 unit	41J

➔ Positive opening according to IEC 60947-5-1, Appendix K.

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Holders for 3 contact blocks, for front panel mounting						
 3SB39 01-0AB						
Holders for pushbuttons and switches[1] for snapping on 3 blocks (for illuminated pushbuttons and illuminated selector switches the holder is included in the scope of supply)	►	**3SB39 01-0AB**		100	20 units	41J
 3SB39 01-0AC						
Holders for selector switches, key-operated switches and twin pushbuttons With pressure plate for actuating the central contact block of 3 contact blocks	►	**3SB39 01-0AC**		100	10 units	41J
Pressure plates for use on printed circuit boards						
 3SB39 01-0AW						
Pressure plates for selector switches and key-operated switches For actuating the central contact block of 3 contact blocks	B	**3SB39 01-0AW**		100	10 units	41J
Accessories for printed circuit boards						
 3SB39 01-0AA						
Holders for printed circuit boards for mounting the command devices on the printed circuit board (screw is included in the scope of supply)	B	**3SB39 01-0AA**		100	10 units	41J

[1] Holder also for mushroom pushbutton and push-pull button.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



EMERGENCY-STOP mushroom pushbutton with F adapter for bus connection

The AS-Interface F adapter is used to connect an EMERGENCY-STOP device according to ISO 13850 from the 3SB3 series to the AS-Interface bus system. The F adapter is suitable for control devices with mounting on front plates.

The F adapter has a safe AS-Interface 2I slave and is snapped from behind onto the EMERGENCY-STOP mushroom pushbutton. In the 2I/1O expanded version, an output is also available for actuating an indicator light with LED.

Depending on the version, screw terminals or spring-type terminals or the insulation piercing method are used for connecting to the AS-Interface bus cable. Addressing is performed using the AS-Interface connection or the integrated addressing socket.

Safety category 4 (SIL 3) is achieved with the adapter.

Selection and ordering data

Version	DT	**Screw terminals** Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
AS-Interface F adapter for 3SB3 EMERGENCY-STOP mushroom pushbuttons For mounting on front plates						
• 2I	►	**3SF5 402-1AA03**		1	1 unit	42A
• 2I/1O, with output for LED control	►	**3SF5 402-1AB03**		1	1 unit	42A



3SF5 402-1AA03

Version	DT	**Spring-type terminals** Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
AS-Interface F adapter for 3SB3 EMERGENCY-STOP mushroom pushbuttons For mounting on front plates						
• 2I	►	**3SF5 402-1AA04**		1	1 unit	42A
• 2I/1O, with output for LED control	►	**3SF5 402-1AB04**		1	1 unit	42A



3SF5 402-1AA04

Version	DT	**Insulation piercing method** Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
AS-Interface F adapter for 3SB3 EMERGENCY-STOP mushroom pushbuttons For mounting on front plates						
• 2I	►	**3SF5 402-1AA05**		1	1 unit	42A
• 2I/1O, with output for LED control	►	**3SF5 402-1AB05**		1	1 unit	42A



3SF5 402-1AA05

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Special locks

Options

Special locks for key-operated switches

The BKS and CES plastic and metal key-operated switches, round and square versions, can be optionally equipped with special locks.

In this case the Order No. of the matching key-operated switch must be supplemented with **"-Z"**, the matching order code **"Y01"** or **"Y02"** and the required lock number.

Order code	Y01	Y02
In accordance with the table of special locks	No	Yes
Normal delivery time	25 working days	5 working days
Additional price per unit	On request	On request
Ordering example	3SB30 00-4LD01-Z Y01 Z = SSG18	3SB30 00-4LD01-Z Y02 Z = SSG11

Available special locks with order code **"Y02"**	Order No. with order code
Key-operated switch	
CES SSG 11 to SSG 15	**3SB3. ..-4LD01-Z Y02** **3SB3. ..-4LD11-Z Y02** **3SB3. ..-4LD21-Z Y02** **3SB3. ..-4MD01-Z Y02** **3SB3. ..-4PD..-Z Y02** **3SB3. ..-4QD..-Z Y02** **3SB3. ..-4RD..-Z Y02** **3SB3. ..-4SD..-Z Y02**
BKS E1, E2, E7, E9[1)]	**3SB3. ..-5AD..-Z Y02** **3SB3. ..-5BD01-Z Y02** **3SB3. ..-5DD..-Z Y02** **3SB3. ..-5ED01-Z Y02** **3SB3. ..-5FD01-Z Y02** **3SB3. ..-5GD01-Z Y02**
BKS E9[1)]	**3SB3. ..-5FD51-Z Y02**
EMERGENCY-STOP mushroom push-buttons	
CES SSP 9	**3SB3. ..-1KA20-Z Y02**
BKS E2, E7, E9[1)]	**3SB3. ..-1LA20-Z Y02**

[1)] Delivery of these BKS key-operated switches (locks for VW) without key.

Ordering notes

- For all special locks, an additional price applies.
- The order code **"Y01"** or **"Y02"** must be quoted in accordance with the table above. Automated processing of the order with a defined delivery time can be guaranteed only for correctly submitted orders.
- For applications in which access security is important and several lock numbers are used, we recommend the use of BKS or CES key-operated switches.
- Special locks for VW (E1, E2, ...) will be delivered without keys, all others with 2 keys.

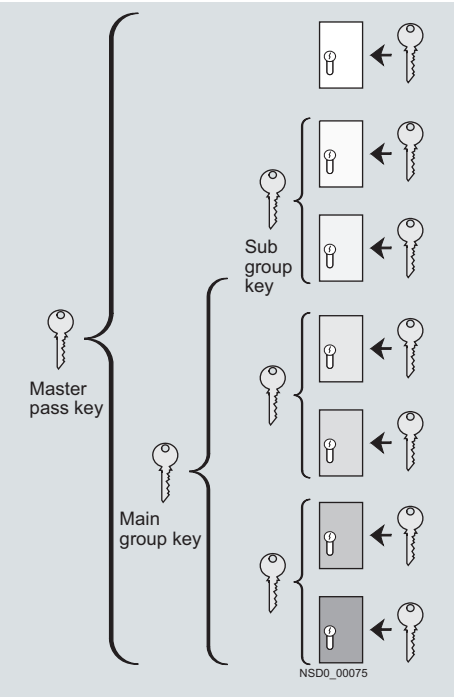
Master and master-pass key systems

The following key systems can be supplied with BKS or CES key-operated switches:

- Central lock systems
- Master key systems
- Central master key systems
- Master-pass key systems

When placing an order you must supplement the Order No. of the matching key-operated switches with **"-Z"** and quote the order code **"Y03"**.

Please enquire for price and delivery time.



Example of master-pass key system

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Overview

Inscription of actuators and indicators

Actuators and indicators of plastic as well as metal version can be optionally inscribed with a laser.



Pushbutton (metal) with laser inscription

The actuators of the pushbuttons, illuminated pushbuttons, mushroom pushbuttons and illuminated mushroom pushbuttons can be inscribed as well as the lenses of the indicator lights.

Selector switches can be inscribed only if they are made of plastic (only one text line on the front ring).



Pushbutton and selector switch (plastic) with laser inscription

Version

A letter height of 4 mm is used as standard for text inscriptions:

The typeface used is Arial. Other letter heights and typefaces are possible, but must be specified when ordering.

For round buttons and lenses, the possible number of characters per line is:

- 10 characters for one line of text
- 8 characters for 2 lines of text
- 6 characters for 3 lines of text, but 10 characters in the middle line

On square buttons and lenses, 10 characters are possible per line.

Ordering notes

When ordering, supplement the Order No. of the actuator or the indicator light with **"–Z"** and an order code:

- Text line in upper/lower case, always upper case for beginning of line (e.g. "Lift off"): **Y10**
- Text in upper case (e.g. "LIFT OFF"): **Y11**
- Text in lower case (e.g. "lift off"): **Y12**
- Text in upper/lower case, all words begin with capital letters (e.g. "Lift Off"): **Y15**
- Symbol with number according to ISO 7000 or IEC 60417: **Y13**
- Any inscription or symbol according to order form supplement: **Y19**

Additional price per unit for Y10 to Y19 on request.

When ordering, specify the required inscription in plain text in addition to the order number and order code. In the case of special inscriptions with words in languages other than German, give the exact spelling and specify the language (see ordering example 1).

In the case of multi-line inscriptions, the text must be assigned to the respective line, e.g. "Z1 = Lift, Z2 =Lower". For long words you can also specify the end-of-line division.

Symbols can also be ordered with numbers according to ISO 7000 or IEC 60417 (see ordering examples 2 and 3).

For special symbols (order code Y19), a CAD drawing in DXF format can be submitted.

Ordering example 1

A round pushbutton with the inscription "Reset" is required:

3SB30 00–0AA41–Z
Y10
Z = Reset (English)

Ordering example 2

A square pushbutton inscribed with symbol No. 5389 according to IEC 60417 is required:

3SB31 10–0AA31–Z
Y13
Z = 5389 IEC

Ordering example 3

A round pushbutton inscribed with symbol No. 1118 according to ISO 7000 is required:

3SB30 00–0AA41–Z
Y13
Z = 1118 ISO

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Inscriptions by laser printer

Overview

Label inscriptions

Using the *Label Designer* software, which can be downloaded from the Internet, and the inscription labels for laser inscription you can create your own customized labels with a standard laser printer.

The self-adhesive or snap-on labels can be stuck or snapped onto the corresponding label holders (see Name plates). Round labels are provided for inserting in illuminated pushbuttons and switches.

The labels are suitable for printing with one to three lines of text or symbols.

For applications with more exacting requirements we recommend factory-printed inscription labels and insert labels (laser-printed or engraved depending on the type).

You can find the *Label Designer* software on the Internet at:

www.siemens.com/sirius-label-designer

Selection and ordering data

Version	Color	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Labels for printing							
 **Insert labels** for inserting in round illuminated pushbuttons and illuminated switches	Milky	A	**3SB39 01-2AB**		100	480 units	41J
Inscription labels 12.5 mm x 27 mm for sticking onto label holder	White	A	**3SB39 02-2AA**		100	480 units	41J
Inscription labels 27 mm x 27 mm for sticking onto label holder	White	A	**3SB39 03-2AA**		100	480 units	41J
Inscription labels 17.5 mm x 28 mm for snapping onto label holder	White	A	**3SB39 05-2AA**		100	720 units	41J
Inscription labels 22 mm x 22 mm for sticking onto enclosure	White	A	**3SB39 06-2AA**		100	700 units	41J

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Pushbuttons (clear) and illuminated pushbuttons with a flat button can be fitted with insert labels for identification purposes, but indicator lights cannot.

These insert labels are made of clear, transparent plastic with black inscription; they can be fitted in any 90° angle.

Inscriptions

The inscriptions have upper case initial letters. Graphic symbols, including those not listed in the catalog, are according to ISO 7000 or IEC 60417 (see page 13/72).

The insert labels without inscription are suitable for user marking with permanent pen.

Selection and ordering data

PU (UNIT) = 100 (customized inscription: 1)
PS* = 10 units (customized inscription: 1 unit)
PG = 41J

Inscription/Symbol		Symbol No.	DT	Round range Order No.	Price per PU	DT	Square range Order No.	Price per PU
Insert labels								
For self-inscription								
Blank			B	**3SB19 01-4AS**		B	**3SB39 40-4AA**	
With inscription								
Ein			B	**3SB19 01-4AB**		B	**3SB39 40-4AB**	
On			B	**3SB19 01-4EB**		B	**3SB39 40-4EB**	
Aus			B	**3SB19 01-4AC**		B	**3SB39 40-4AC**	
Off			B	**3SB19 01-4EC**		B	**3SB39 40-4EC**	
Auf			B	**3SB19 01-4AD**		B	**3SB39 40-4AD**	
Up			B	**3SB19 01-4ED**		B	**3SB39 40-4ED**	
Ab			B	**3SB19 01-4AE**		B	**3SB39 40-4AE**	
Down			B	**3SB19 01-4EE**		B	**3SB39 40-4EE**	
Vor			B	**3SB19 01-4AF**			**--**	
Forward			B	**3SB19 01-4EF**		B	**3SB39 40-4EF**	
Zurück			B	**3SB19 01-4AG**			**--**	
Reverse			B	**3SB19 01-4EG**		B	**3SB39 40-4EG**	
Rechts			B	**3SB19 01-4AH**			**--**	
Right			C	**3SB19 01-4EH**			**--**	
Links			B	**3SB19 01-4AJ**			**--**	
Left			C	**3SB19 01-4EJ**			**--**	
Auf			B	**3SB19 01-4AD**		B	**3SB39 40-4AD**	
Open			B	**3SB19 01-4EP**			**--**	
Zu			B	**3SB19 01-4AL**		B	**3SB39 40-4AL**	
Close			B	**3SB19 01-4EQ**			**--**	
Schnell			B	**3SB19 01-4AM**		B	**3SB39 40-4AM**	
Fast			B	**3SB19 01-4ER**			**--**	
Langsam			B	**3SB19 01-4AN**		B	**3SB39 40-4AN**	
Slow			B	**3SB19 01-4ES**			**--**	
Betrieb			B	**3SB19 01-4AP**			**--**	
Running			B	**3SB19 01-4EV**			**--**	
Störung			B	**3SB19 01-4AQ**		B	**3SB39 40-4AQ**	
Fault			B	**3SB19 01-4EW**			**--**	
Einrichten			B	**3SB19 01-4AR**			**--**	
Reset			B	**3SB19 01-4EM**		B	**3SB39 40-4EM**	
Test			B	**3SB19 01-4EN**			**--**	
Start			B	**3SB19 01-4EK**		B	**3SB39 40-4EK**	
Halt			B	**3SB19 01-4AK**		B	**3SB39 40-4AK**	
Stop			B	**3SB19 01-4EL**		B	**3SB39 40-4EL**	
With graphic symbol								
O (Off)		5008 IEC	B	**3SB19 01-4MB**		B	**3SB39 40-4MB**	
I (On)		5007 IEC	B	**3SB19 01-4MC**		B	**3SB39 40-4MC**	
II (On)		--	B	**3SB19 01-4MD**		B	**3SB39 40-4MD**	
Electric motor		0011 ISO	B	**3SB19 01-4PA**			**--**	
Motion in direction of arrow		5022 IEC	B	**3SB19 01-4NA**		B	**3SB39 40-4NA**	
Increase, plus		5005 IEC	B	**3SB19 01-4NG**		B	**3SB39 40-4NG**	
Decrease, minus		5006 IEC	B	**3SB19 01-4MC**		B	**3SB39 40-4MC**	
With customized inscription								
For inscriptions or symbols see "Options"				**3SB19 01-4AZ**			**3SB39 40-4AZ**	
• Text line(s) or symbol with No.			B	**K0Y, K1Y, K2Y, K3Y** or **K5Y**		B	**K0Y. K1Y. K2Y. K3Y** or **K5Y**	
• Any inscription or symbol			B	**K9Y**		B	**K9Y**	

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Insert labels

Options

Customized inscriptions

The labels can be inscribed with text and symbols not listed in the ordering data.

By default, a letter height of 4 mm (for a single line of text) or 3 mm (for 2 or 3 lines of text) is used for text inscriptions.

The typeface used is Arial. Other letter heights and typefaces are possible, but must be specified when ordering.

For round insert labels, the maximum possible number of characters per line is:

- 10 characters for one line of text
- 8 characters for 2 lines of text
- 6 characters for 3 lines of text, but 10 characters in the middle line

On square insert labels, 10 characters are possible per line.

Examples for customized inscription



Two-line inscription in upper/lower case lettering (K0Y)



Single-line inscription in upper case lettering (K1Y)



Three-line inscription in lower case letters (K2Y)



Symbol number 5011 according to IEC 60147 (K3Y)



Any symbol according to order form supplement (K9Y)

Ordering notes

Append the following codes to the Order No.:

- Text line(s) in upper/lower case, upper case always for beginning of line (e.g. "Lift off"): **K0Y**
- Text line(s) in upper case (e.g. "LIFT OFF"): **K1Y**
- Text line(s) in lower case (e.g. "lift off"): **K2Y**
- Text line(s) in upper/lower case, all words begin with upper case letters (e.g. "Lift Off"): **K5Y**
- Symbol with number according to ISO 7000 or IEC 60417: **K3Y**
- Any inscription or symbol according to order form supplement: **K9Y**

When ordering, specify the required inscription in plain text in addition to the order number and order code. In the case of special inscriptions with words in languages other than German, give the exact spelling and specify the language.

In the case of multi-line inscriptions, the text must be assigned to the respective line, e.g. "Z1 = Lift, Z2 =Lower". For long words you can also specify the end-of-line division (see ordering example 1).

Symbols can also be ordered with numbers according to ISO 7000 or IEC 60417 (see ordering examples 2 and 3).

For special symbols (order code K9Y), a CAD drawing in DXF format should be submitted to:

sirius-attach.aud@siemens.com

Ordering example 1

A label with 2 lines of text is required:

3SB19 01–4AZ
K1Y
Z1 = LIFT
Z2 = LOWER

Ordering example 2

A label inscribed with symbol No. 5011 according to IEC 60417 is required:

3SB19 01–4AZ
K3Y
Z = 5011 IEC

Ordering example 3

A label inscribed with symbol No. 1118 according to ISO 7000 is required:

3SB19 01–4AZ
K3Y
Z = 1118 ISO

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Overview

The name plates consist of a black plastic label holder and an inscription label (black with white print or silver-colored with black print) for sticking or snapping in place. They are not suitable for EMERGENCY-STOP pushbuttons.

Note mounting dimensions!

Inscriptions

The inscriptions have upper case initial letters. The typeface is Arial. Graphic symbols, including those not listed in the tables, are according to ISO 7000 or IEC 60417 (see page 13/77).

Self-adhesive labels

There are 2 sizes available for the round and square ranges:

- Label holders 30 mm × 45 mm × 7 mm with inscription label 12.5 mm × 27 mm.
- Label holders 30 mm × 60 mm × 7 mm with inscription label 27 mm × 27 mm.

Snap-on labels

The following version is available for the round range:

- Label holders 29.8 mm × 51 mm × 3 mm with inscription label 17.5 mm × 28 mm (inscription area: 17.5 mm × 27 mm)

Selection and ordering data

PU (UNIT) = 100
PS* = 10 units
PG = 41J

Inscriptions	DT	Black Order No.	Price per PU	DT	Silver-colored Order No.	Price per PU
Inscription labels, self-adhesive, 12.5 mm × 27 mm						
						
For self-inscription						
Blank	▶	**3SB39 02-1AA**		B	**3SB19 01-2AA**	
With inscription						
Ein	B	**3SB39 02-1AB**		B	**3SB19 01-2AB**	
On	B	**3SB39 02-1EB**		B	**3SB19 01-2EB**	
Aus	B	**3SB39 02-1AC**		B	**3SB19 01-2AC**	
Off	B	**3SB39 02-1EC**		B	**3SB19 01-2EC**	
Auf	B	**3SB39 02-1AD**		B	**3SB19 01-2AD**	
Up	B	**3SB39 02-1ED**		B	**3SB19 01-2ED**	
Ab	B	**3SB39 02-1AE**		B	**3SB19 01-2AE**	
Down	B	**3SB39 02-1EE**		B	**3SB19 01-2EE**	
Vor	B	**3SB39 02-1AF**		B	**3SB19 01-2AF**	
Forward	B	**3SB39 02-1EF**			**--**	
Zurück	B	**3SB39 02-1AG**		B	**3SB19 01-2AG**	
Reverse	B	**3SB39 02-1EG**			**--**	
Rechts	B	**3SB39 02-1AH**		B	**3SB19 01-2AH**	
Right	B	**3SB39 02-1EH**		B	**3SB19 01-2EH**	
Links	B	**3SB39 02-1AJ**		B	**3SB19 01-2AJ**	
Left	B	**3SB39 02-1EJ**		B	**3SB19 01-2EJ**	
Auf	B	**3SB39 02-1AD**		B	**3SB19 01-2AD**	
Open	B	**3SB39 02-1EP**		B	**3SB19 01-2EP**	
Zu	B	**3SB39 02-1AL**		B	**3SB19 01-2AL**	
Close	B	**3SB39 02-1EQ**		B	**3SB19 01-2EQ**	
Schnell		**--**		B	**3SB19 01-2AM**	
Fast		**--**		B	**3SB19 01-2ER**	
Langsam		**--**		B	**3SB19 01-2AN**	
Slow		**--**		B	**3SB19 01-2ES**	
Halt	B	**3SB39 02-1AK**		B	**3SB19 01-2AK**	
Stop	B	**3SB39 02-1EK**		B	**3SB19 01-2EK**	
Start	B	**3SB39 02-1EL**		B	**3SB19 01-2EL**	
Test	B	**3SB39 02-1EN**		B	**3SB19 01-2EN**	
Betrieb	B	**3SB39 02-1AP**		B	**3SB19 01-2AP**	
Running		**--**		B	**3SB19 01-2EV**	
Störung	B	**3SB39 02-1AQ**		B	**3SB19 01-2AQ**	
Fault	B	**3SB39 02-1EW**		B	**3SB19 01-2EW**	
Einrichten		**--**		B	**3SB19 01-2AR**	
Reset		**--**		B	**3SB19 01-2EM**	
Stop Start	B	**3SB39 02-1BC**		B	**3SB19 01-2BC**	
Hand Auto	B	**3SB39 02-1BA**		B	**3SB19 01-2BA**	
Man Auto	B	**3SB39 02-1EU**		B	**3SB19 01-2EU**	
Hand O Auto		**--**		B	**3SB19 01-2BE**	
Man O Auto		**--**		B	**3SB19 01-2ET**	

For label holders see page 13/76.

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Inscriptions

Name plates

PU (UNIT) = 100 (customized inscription: 1)
PS* = 10 units (customized inscription: 1 unit)
PG = 41J

Inscriptions	DT	Black Order No.	Black Price per PU	DT	Silver-colored Order No.	Silver-colored Price per PU
Inscription labels, self-adhesive, 12.5 mm × 27 mm						
						
With graphic symbol						
O	B	**3SB39 02-1MB**		B	**3SB19 01-2MB**	
I	B	**3SB39 02-1MC**		B	**3SB19 01-2MC**	
II		**--**		C	**3SB19 01-2MD**	
III		**--**		B	**3SB19 01-2ME**	
O I	B	**3SB39 02-1MF**		B	**3SB19 01-2MF**	
I O II	B	**3SB39 02-1MG**		B	**3SB19 01-2MG**	
1 O 2		**--**		B	**3SB19 01-2MK**	
1 2	B	**3SB39 02-1ML**			**--**	
↑	B	**3SB39 02-1NJ**		B	**3SB19 01-2NA**	
→	B	**3SB39 02-1NA**		B	**3SB19 01-2NJ**	
						
With customized inscription						
For inscriptions or symbols see "Options"		**3SB39 02-1XZ**			**3SB19 01-2XZ**	
• Text line(s)	B	**K0Y**		B	**K0Y**	
• Text line(s) or symbol with No.	B	**K1Y, K2Y, K3Y** or **K5Y**		B	**K1Y. K2Y. K3Y** or **K5Y**	
• Any inscription or symbol	B	**K9Y**		B	**K9Y**	

Inscriptions	DT	Black Order No.	Black Price per PU	DT	Silver-colored Order No.	Silver-colored Price per PU
Inscription labels, self-adhesive, 27 mm × 27 mm						
						
For self-inscription						
Blank	B	**3SB39 03-1AA**		B	**3SB19 06-2AA**	
With inscription						
						
Ein	B	**3SB39 03-1AB**			**--**	
On	B	**3SB39 03-1EB**			**--**	
Aus	B	**3SB39 03-1AC**			**--**	
Off	B	**3SB39 03-1EC**			**--**	
Auf	B	**3SB39 03-1AD**			**--**	
Ab	B	**3SB39 03-1AE**			**--**	
Vor	B	**3SB39 03-1AF**			**--**	
Zurück	B	**3SB39 03-1AG**			**--**	
Rechts	B	**3SB39 03-1AH**			**--**	
Links	B	**3SB39 03-1AJ**			**--**	
Auf	B	**3SB39 03-1AD**			**--**	
Zu	B	**3SB39 03-1AL**			**--**	
Halt	B	**3SB39 03-1AK**			**--**	
Start	B	**3SB39 03-1EL**			**--**	
Betrieb	B	**3SB39 03-1AP**			**--**	
Störung	B	**3SB39 03-1AQ**			**--**	
Stop Start	B	**3SB39 03-1BC**			**--**	
Hand Auto	B	**3SB39 03-1BA**			**--**	
With graphic symbol						
						
O	B	**3SB39 03-1MB**			**--**	
O I	B	**3SB39 03-1MF**			**--**	
→	B	**3SB39 03-1NA**			**--**	
With customized inscription						
						
For inscriptions or symbols see "Options"		**3SB39 03-1XZ**			**3SB19 06-2XZ**	
• Text line(s)	B	**K0Y**		B	**K0Y**	
• Text line(s) or symbol with No.	B	**K1Y, K2Y, K3Y** or **K5Y**		B	**K1Y. K2Y. K3Y** or **K5Y**	
• Any inscription or symbol	B	**K9Y**		B	**K9Y**	

For label holders see page 13/76.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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PU (UNIT) = 100 (customized inscription: 1)
PS* = 10 units (customized inscription: 1 unit)
PG = 41J

Inscriptions	DT	Black Order No.	Price per PU	DT	Silver-colored Order No.	Price per PU
Inscription labels, for snapping on, 17.5 mm × 28 mm						
For self-inscription						
Blank	B	**3SB39 05-1AA**		B	**3SB19 04-2AA**	
With inscription						
Ein	B	**3SB39 05-1AB**		B	**3SB19 04-2AB**	
On	B	**3SB39 05-1EB**		B	**3SB19 04-2EB**	
OffAus	B	**3SB39 05-1AC**		B	**3SB19 04-2AC**	
Off	B	**3SB39 05-1EC**		B	**3SB19 04-2EC**	
Auf	B	**3SB39 05-1AD**		B	**3SB19 04-2AD**	
Up	B	**3SB39 05-1ED**			**--**	
Ab	B	**3SB39 05-1AE**		B	**3SB19 04-2AE**	
Down	B	**3SB39 05-1EE**			**--**	
Vor	B	**3SB39 05-1AF**		B	**3SB19 04-2AF**	
Forward	B	**3SB39 05-1EF**			**--**	
Zurück	B	**3SB39 05-1AG**		B	**3SB19 04-2AG**	
Reverse	B	**3SB39 05-1EG**		B	**3SB19 04-2EG**	
Rechts	B	**3SB39 05-1AH**		B	**3SB19 04-2AH**	
Right	B	**3SB39 05-1EH**			**--**	
Links		**--**		B	**3SB19 04-2AJ**	
Auf	B	**3SB39 05-1AD**		B	**3SB19 04-2AD**	
Open	B	**3SB39 05-1EP**			**--**	
Zu	B	**3SB39 05-1AL**		B	**3SB19 04-2AL**	
Close	B	**3SB39 05-1EQ**			**--**	
Halt	B	**3SB39 05-1AK**		B	**3SB19 04-2AK**	
Stop	B	**3SB39 05-1EK**		B	**3SB19 04-2EK**	
Start	B	**3SB39 05-1EL**		B	**3SB19 04-2EL**	
Test		**--**		B	**3SB19 04-2EN**	
Betrieb	B	**3SB39 05-1AP**		B	**3SB19 04-2AP**	
Running	B	**3SB39 05-1EV**			**--**	
Störung	B	**3SB39 05-1AQ**		B	**3SB19 04-2AQ**	
Fault	B	**3SB39 05-1EW**		B	**3SB19 04-2EW**	
Einrichten		**--**		B	**3SB19 04-2AR**	
Reset		**--**		B	**3SB19 04-2EM**	
Stop Start	B	**3SB39 05-1BC**		B	**3SB19 04-2BC**	
Hand Auto	B	**3SB39 05-1BA**		B	**3SB19 04-2BA**	
Man Auto	B	**3SB39 05-1EU**		C	**3SB19 04-2EU**	
Man O Auto		**--**		B	**3SB19 04-2ET**	
With graphic symbol						
O	B	**3SB39 05-1MB**		B	**3SB19 04-2MB**	
I	B	**3SB39 05-1MC**		B	**3SB19 04-2MC**	
O I	B	**3SB39 05-1MF**		B	**3SB19 04-2MF**	
I O II		**--**		B	**3SB19 04-2MG**	
1 O 2		**--**		B	**3SB19 04-2MK**	
→	B	**3SB39 05-1NA**		B	**3SB19 04-2NA**	
↑	B	**3SB39 05-1NJ**		B	**3SB19 04-2NJ**	
With customized inscription						
For inscriptions or symbols see "Options"		**3SB39 05-1XZ**			**3SB19 04-2XZ**	
• Text line(s)	B	**K0Y**		B	**K0Y**	
• Text line(s) or symbol with No.	B	**K1Y, K2Y, K3Y** or **K5Y**		B	**K1Y. K2Y. K3Y** or **K5Y**	
• Any inscription or symbol	B	**K9Y**		B	**K9Y**	

For label holders see page 13/76.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Inscriptions

Name plates

Version	DT	Black		PU (UNIT, SET, M)	PS*	PG
		Order No.	Price per PU			
Label holders for inscription labels 12.5 mm × 27 mm						
For round range, flat	B	**3SB39 22-0AV**		100	10 units	41J
For potentiometer drives 3SB10 00-7CH07[1)]	B	**3SB39 22-0AS**		1	1 unit	41J
For square range, flat	B	**3SB39 42-0AX**		100	5 units	41J
Label holders for inscription labels 27 mm × 27 mm						
For round range, flat	B	**3SB39 23-0AV**		100	10 units	41J
For round range, raised	C	**3SB39 23-0AX**		1	10 units	41J
For potentiometer drives, flat	B	**3SB39 23-0AS**		1	1 unit	41J
For square range, flat	B	**3SB39 43-0AX**		100	1 unit	41J
Label holders for inscription labels 17.5 mm × 28 mm						
For round design	►	**3SB39 25-0AV**		100	10 units	41J



3SB39 22-0AV



3SB39 23-0AV



3SB39 25-0AV

1) This label holder can also be used for pushbuttons with dust covers if the front panel thickness of 3 mm is not exceeded.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Options

Customized inscriptions

The labels can be inscribed with text and symbols not listed in the ordering data.

The following letter heights are used as standard for text inscriptions:

- Label size 12.5 mm × 27 mm: maximum 3 lines with letter height 4 mm (1-line), 3.5 mm (2-line) or 2.5 mm (3-line)
- Label size 27 mm × 27 mm: maximum 5 lines with letter height 4 mm (1- to 5-line)
- Label size 17.5 mm × 28 mm: maximum 3 lines with letter height 4 mm (1- and 2-line) or 3 mm (3-line)

Up to 11 characters per line are possible. The typeface used is Arial. Other letter heights and typefaces are possible, but must be specified when ordering.

Examples for customized inscription



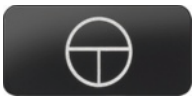
Two-line inscription in upper/lower case lettering (K0Y)



Single-line inscription in upper case lettering (K1Y)



Three-line inscription in lower case lettering (K2Y)



Symbol number 5011 according to IEC 60417 (K3Y)



Any symbol according to order form supplement (K9Y)

Ordering notes

Append the following codes to the Order No.:

- Text line(s) in upper/lower case, upper case always for beginning of line (e.g. "Lift off"): **K0Y**
- Text line(s) in upper case (e.g. "LIFT OFF"): **K1Y**
- Text line(s) in lower case (e.g. "lift off"): **K2Y**
- Text line(s) in upper/lower case, all words begin with upper case letters (e.g. "Lift Off"): **K5Y**
- Symbol with number according to ISO 7000 or IEC 60417: **K3Y**
- Any inscription or symbol according to order form supplement: **K9Y**

When ordering, specify the required inscription in plain text in addition to the order number and order code. In the case of special inscriptions with words in languages other than German, give the exact spelling and specify the language.

In the case of multi-line inscriptions, the text must be assigned to the respective line, e.g. "Z1 = Lift, Z2 =Lower". For long words you can also specify the end-of-line division (see ordering example 1).

Symbols can also be ordered with numbers according to ISO 7000 or IEC 60417 (see ordering examples 2 and 3).

For special symbols (order code K9Y), a CAD drawing in DXF format should be submitted to:

sirius-attach.aud@siemens.com

Ordering example 1

A label with 2 lines of text is required:

3SB39 02–1XZ
K1Y
Z1 = LIFT
Z2 = LOWER

Ordering example 2

A label inscribed with symbol No. 5011 according to IEC 60417 is required:

3SB39 02–1XZ
K3Y
Z = 5011 IEC

Ordering example 3

A label inscribed with symbol No. 1118 according to ISO 7000 is required:

3SB39 02–1XZ
K3Y
Z = 1118 ISO

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Selection and ordering data

Version	Color	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Buttons and lenses for round version[1]							
3SB39 30-0CA6 **Buttons, flat** for round illuminated pushbuttons and illuminated switches, plastic version	Red	B	**3SB39 30-0CA2**		100	10 units	41J
	Yellow	B	**3SB39 30-0CA3**		100	10 units	41J
	Green	B	**3SB39 30-0CA4**		100	10 units	41J
	Blue	B	**3SB39 30-0CA5**		100	10 units	41J
	White	B	**3SB39 30-0CA6**		100	10 units	41J
	Clear	B	**3SB39 30-0CA7**		100	10 units	41J
 3SB39 30-0EA3 **Buttons, flat** for round pushbuttons and switches, metal version	Black	B	**3SB39 30-0EA1**		100	10 units	41J
	Red	B	**3SB39 30-0EA2**		100	10 units	41J
	Yellow	B	**3SB39 30-0EA3**		100	10 units	41J
	Green	B	**3SB39 30-0EA4**		100	10 units	41J
	Blue	B	**3SB39 30-0EA5**		100	10 units	41J
	White	B	**3SB39 30-0EA6**		100	10 units	41J
	Clear	B	**3SB39 30-0EA7**		100	10 units	41J
 3SB39 30-0DA4 **Buttons, raised** for round illuminated pushbuttons and illuminated switches, plastic version	Red	B	**3SB39 30-0DA2**		1	10 units	41J
	Green	B	**3SB39 30-0DA4**		1	10 units	41J
	Clear	B	**3SB39 30-0DA7**		1	10 units	41J
Buttons, raised for round pushbuttons and switches, metal version	Black	D	**3SB39 30-0FA1**		1	10 units	41J
	Red	C	**3SB39 30-0FA2**		1	10 units	41J
	Yellow	C	**3SB39 30-0FA3**		1	10 units	41J
	Green	C	**3SB39 30-0FA4**		1	10 units	41J
	Blue	C	**3SB39 30-0FA5**		1	10 units	41J
	White	C	**3SB39 30-0FA6**		1	10 units	41J
	Clear	C	**3SB39 30-0FA7**		1	10 units	41J
 3SB39 30-0FA4 **Buttons, flat** for round illuminated pushbuttons and illuminated switches, metal version	Amber	B	**3SB39 30-0GA0**		100	10 units	41J
	Red	B	**3SB39 30-0GA2**		100	10 units	41J
	Yellow	B	**3SB39 30-0GA3**		100	10 units	41J
	Green	B	**3SB39 30-0GA4**		100	10 units	41J
	Blue	B	**3SB39 30-0GA5**		100	10 units	41J
	White	B	**3SB39 30-0GA6**		100	10 units	41J
	Clear	B	**3SB39 30-0GA7**		100	10 units	41J
 3SB39 30-0GA3 **Buttons, flat, solvent-resistant**[2], for round illuminated pushbuttons and switches, metal version	Red	B	**3SB39 30-0GA20-0PA0**		100	10 units	41J
	Yellow	B	**3SB39 30-0GA30-0PA0**		100	10 units	41J
	Green	B	**3SB39 30-0GA40-0PA0**		100	10 units	41J
	Blue	B	**3SB39 30-0GA50-0PA0**		100	10 units	41J
	White	B	**3SB39 30-0GA60-0PA0**		100	10 units	41J
	Clear	B	**3SB39 30-0GA70-0PA0**		100	10 units	41J
 3SB39 30-0HA4 **Buttons, raised** for round illuminated pushbuttons and illuminated switches, metal version	Amber	C	**3SB39 30-0HA0**		1	10 units	41J
	Red	C	**3SB39 30-0HA2**		1	10 units	41J
	Yellow	C	**3SB39 30-0HA3**		1	10 units	41J
	Green	C	**3SB39 30-0HA4**		1	10 units	41J
	Blue	C	**3SB39 30-0HA5**		1	10 units	41J
	White	C	**3SB39 30-0HA6**		1	10 units	41J
	Clear	C	**3SB39 30-0HA7**		1	10 units	41J
 3SB39 30-6BA3 **Lenses, smooth** For round indicator lights, plastic and metal version	Amber	C	**3SB39 30-6BA0**		1	10 units	41J
	Red	B	**3SB39 30-6BA2**		1	10 units	41J
	Yellow	B	**3SB39 30-6BA3**		1	10 units	41J
	Green	B	**3SB39 30-6BA4**		1	10 units	41J
	Blue	B	**3SB39 30-6BA5**		1	10 units	41J
	White	B	**3SB39 30-6BA6**		1	10 units	41J
	Clear	B	**3SB39 30-6BA7**		1	10 units	41J
 3SB39 30-6CA3 **Lenses with concentric rings** For round indicator lights, plastic and metal version	Amber	B	**3SB39 30-6CA0**		1	10 units	41J
	Red	B	**3SB39 30-6CA2**		1	10 units	41J
	Yellow	B	**3SB39 30-6CA3**		1	10 units	41J
	Green	B	**3SB39 30-6CA4**		1	10 units	41J
	Blue	B	**3SB39 30-6CA5**		1	10 units	41J
	White	B	**3SB39 30-6CA6**		1	10 units	41J
	Clear	B	**3SB39 30-6CA7**		1	10 units	41J
Buttons and lenses for square version							
 3SB39 50-0CA6 **Buttons, flat** For square illuminated pushbuttons and illuminated switches, plastic version	Red	B	**3SB39 50-0CA2**		100	10 units	41J
	Yellow	B	**3SB39 50-0CA3**		100	10 units	41J
	Green	B	**3SB39 50-0CA4**		100	10 units	41J
	Blue	B	**3SB39 50-0CA5**		100	10 units	41J
	White	B	**3SB39 50-0CA6**		100	10 units	41J
	Clear	B	**3SB39 50-0CA7**		100	10 units	41J
 3SB39 50-6AA2 **Lenses, smooth** For square indicator lights, plastic version	Red	B	**3SB39 50-6AA2**		1	10 units	41J
	Yellow	B	**3SB39 50-6AA3**		1	10 units	41J
	Green	B	**3SB39 50-6AA4**		1	10 units	41J
	Blue	B	**3SB39 50-6AA5**		1	10 units	41J
	White	B	**3SB39 50-6AA6**		1	10 units	41J
	Clear	B	**3SB39 50-6AA7**		1	10 units	41J

[1] In scope of supply of pushbuttons or indicator lights.

[2] Not suitable for laser inscription.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

	Version	Rated voltage V	Color	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Lamps, BA 9s bases[1]									
 3SB19 02-0AY	**Incandescent lamps 1.2 W,** length up to 28 mm, max. bulb diameter 10 mm	24 AC/DC	Clear	A	**3SB19 02-0AY**		1	10 units	41J
	Incandescent lamps 2 W, length up to 28 mm, max. bulb diameter 10 mm	6 AC/DC	Clear	A	**3SX1 342**		1	10 units	41J
		12 AC/DC		A	**3SX1 343**		1	10 units	41J
		24 AC/DC		A	**3SX1 344**		1	10 units	41J
		30 AC/DC		B	**3SB19 02-2AF**		1	10 units	41J
		48 AC/DC		B	**3SB19 02-1AP**		1	10 units	41J
		60 AC/DC		A	**3SR94 24**		1	10 units	41J
	Incandescent lamps 2.6 W, length 28 mm, bulb diameter 10 mm	110 ... 130 AC/DC[2]	Clear	▶	**3SX1 731**		1	10 units	41J
	Multi-incandescent lamps 1.2 W, endurance 25 000 h, high resistance to vibration	24 AC/DC		B	**3SB19 02-2BU**		1	10 units	41J
 3SB39 01-1PA	**LED lamps, super-bright** Length up to 28 mm, max. bulb diameter 10 mm, max. operational current 15 mA	24 AC/DC	Red	▶	**3SB39 01-1CA**		1	10 units	41J
			Yellow	B	**3SB39 01-1BA**		1	10 units	41J
			Green	▶	**3SB39 01-1DA**		1	10 units	41J
			Blue	B	**3SB39 01-1PA**		1	10 units	41J
			White	▶	**3SB39 01-1QA**		1	10 units	41J
		48 AC/DC	Red	B	**3SB39 01-1CC**		1	10 units	41J
			Yellow	B	**3SB39 01-1BC**		1	10 units	41J
			Green	B	**3SB39 01-1DC**		1	10 units	41J
			Blue	B	**3SB39 01-1PC**		1	10 units	41J
			White	B	**3SB39 01-1QC**		1	10 units	41J
		130 AC, 70 ... 90 DC, if X1 at "+"	Red	B	**3SB39 01-1CD**		1	10 units	41J
			Yellow	B	**3SB39 01-1BD**		1	10 units	41J
			Green	B	**3SB39 01-1DD**		1	10 units	41J
			Blue	B	**3SB39 01-1PD**		1	10 units	41J
			White	B	**3SB39 01-1QD**		1	10 units	41J
		230 AC, 110 ... 160 DC, if X1 at "+"	Red	B	**3SB39 01-1CF**		1	10 units	41J
			Yellow	B	**3SB39 01-1BF**		1	10 units	41J
			Green	B	**3SB39 01-1DF**		1	10 units	41J
			Blue	B	**3SB39 01-1PF**		1	10 units	41J
			White	B	**3SB39 01-1QF**		1	10 units	41J
		230 AC/DC	Red	B	**3SB39 01-1CG**		1	10 units	41J
			Yellow	B	**3SB39 01-1BG**		1	10 units	41J
			Green	B	**3SB39 01-1DG**		1	10 units	41J
			Blue	B	**3SB39 01-1PG**		1	10 units	41J
			White	B	**3SB39 01-1QG**		1	10 units	41J
 3SB19 02-4MC	**LED lamps** Length up to 28 mm, max. bulb diameter 10 mm, max. operational current 15 mA	22 ... 32 DC	Red	D	**3SB19 02-4AJ**		1	10 units	41J
			Yellow	D	**3SB19 02-4BJ**		1	10 units	41J
			Green	D	**3SB19 02-4CJ**		1	10 units	41J
	LED lamps, flashing (1.4 Hz), length up to 28 mm, bulb diameter 10 mm, operational current 24 ... 29 mA	24 DC	Red	B	**3SB19 02-4LC**		1	10 units	41J
			Yellow	C	**3SB19 02-4MC**		1	10 units	41J
			Green	C	**3SB19 02-4NC**		1	10 units	41J
 3SX1 703	**Glow lamps**[3] length 28 mm, bulb diameter 10 mm, operational current approx. 1.8 mA	110 AC	Clear	A	**3SX1 703**		1	10 units	41J
		220 AC	Clear	A	**3SX1 701**		1	10 units	41J
		220 AC	Green	C	**3SX1 702**		1	10 units	41J
 3SB19 02-2AD	**Lamp extractors** For lamps with BA 9s base			▶	**3SB19 02-2AD**		1	1 unit	41J

1) Essential accessories when using lampholders with BA 9s base and delivery without lamp.

2) Also for 230 V when used with a 3SB34 00-1C voltage reducer.

3) Due to the inherent orange color of glow lamps and their lower luminance level compared to incandescent lamps, it is recommended that they should only be used with clear or red screw lenses and in areas where ambient light levels are not very high.

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Lamps, acoustic signal transformers and keys

	Version	Rated voltage	Color	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		V							
Lamps, Wedge bases[1]									
 3SB29 08-1AE	**Incandescent lamps** Wedge base W2 × 4.6 d, 1.0 W	6 AC/DC	Clear	C	**3SB29 08-1AA**		100	10 units	41J
		12 AC/DC		B	**3SB29 08-1AB**		100	10 units	41J
		24 AC/DC		▶	**3SB29 08-1AC**		100	10 units	41J
		30 AC/DC		A	**3SB29 08-1AD**		100	10 units	41J
		48 AC/DC		B	**3SB29 08-1AE**		1	10 units	41J
		60 AC/DC		B	**3SB29 08-1AF**		1	10 units	41J
 3SB39 01-1SB	**LED lamps, super-bright** Wedge base W2 × 4.6 d, operational current 10 mA	24 AC/DC	Red	B	**3SB39 01-1SB**		1	10 units	41J
			Yellow	B	**3SB39 01-1RB**		1	10 units	41J
			Green	B	**3SB39 01-1TB**		1	10 units	41J
			White	B	**3SB39 01-1UB**		1	10 units	41J
			Blue	B	**3SB29 08-1BD**		1	10 units	41J
 3SB39 01-1VE		28 AC/DC	Red	B	**3SB39 01-1SE**		1	10 units	41J
			Yellow	B	**3SB39 01-1RE**		1	10 units	41J
			Green	B	**3SB39 01-1TE**		1	10 units	41J
			White	B	**3SB39 01-1UE**		1	10 units	41J
			Blue	D	**3SB39 01-1VE**		1	10 units	41J
 3SB29 08-2AB	**Lamp extractors** for lamps with bases W2 × 4.6 d			▶	**3SB29 08-2AB**		1	1 unit	41J
 3SB19 02-1AU	**Lamp adapters** For fitting a lamp with a wedge base socket into a BA 9s lampholder			C	**3SB19 02-1AU**		1	1 unit	41J
Acoustic signal transformers, BA 9s base									
 3SB19 02-2BN	**Acoustic signal transformers** for acoustic signaling devices[2] operational current 25 mA, 0.6 W, sound pressure 80 dB/10 cm	24 ... 28 DC		B	**3SB19 02-2BN**		1	1 unit	41J

[1] Can be used with lamp adapters in lampholders with BA 9s base.

[2] For increased protection, the IP65 acoustic signaling device (complete unit) can be used.

	Version Lock Manufacturer	Lock No.	Color	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Keys for actuators[1]									
 3SY1 054	RONIS	SB 30	--	B	**3SB39 10-4A**		1	1 unit	41J
	BKS	S1	--	A	**3SY1 066**		1	1 unit	41J
	CES	LSG 1	--	B	**3SB19 10-2F**		1	1 unit	41J
		SSG 10	--	B	**3SY1 054**		1	1 unit	41J
		SSP 9	--	A	**3SY1 052**		1	1 unit	41J
	O.M.R.	73038	Light blue	C	**3SB19 10-2L**		1	1 unit	41J
		73037	Red	B	**3SB19 10-2M**		1	1 unit	41J
		73034	Black	B	**3SB19 10-2N**		1	1 unit	41J
		73033	Yellow	D	**3SB19 10-2P**		1	1 unit	41J

[1] Included in scope of supply of the key-operated switches and the EMERGENCY-STOP mushroom pushbuttons with key-operated switch. Also available with special lock. Supplement Order No. with **"-Z"** and quote the required lock in plain text. Additional price on request. This does not include locks for VW and main and general locking systems.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Selection and ordering data

	Version	Use	Color	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Protective caps[1], degree of protection IP67									
	Material: elastolan								
 3SB39 21-0AJ	**Protective caps** For round version	Flat button (plastic)	Clear	B	**3SB39 21-0AJ**		1	1 unit	41J
		Flat button (metal), raised button (plastic)	Clear	B	**3SB39 21-0AM**		1	1 unit	41J
	• PVC	Raised button (metal)	Clear	C	**3SB19 02-2AN**		1	1 unit	41J
 3SB39 41-0AJ	**Protective caps** For square version	Flat button (plastic)	Clear	B	**3SB39 41-0AJ**		1	1 unit	41J
	Material: silicone								
 3SB39 21-0AH	**Protective caps** For round version	Flat button (plastic)	Clear	B	**3SB39 21-0AH**		1	1 unit	41J
 3SB19 02-0AK		Flat button (metal), raised button (plastic)	Clear	B	**3SB19 02-0AK**		1	1 unit	41J
 3SB19 02-0AN		Raised button (metal)	Clear	B	**3SB19 02-0AN**		1	1 unit	41J
 3SB39 21-0BA	**Protective caps** For round version	Selector switch (plastic and metal, normal handle)	Clear	B	**3SB39 21-0BA**		1	1 unit	41J
 3SB19 02-2BH	**Protective caps** For round version	Mushroom push-pull button, Ø 40 mm (plastic and metal)	Clear	B	**3SB19 02-2BH**		1	1 unit	41J
 3SB39 21-0BU		EMERGENCY-STOP mushroom pushbutton, Ø 40 mm (plastic and metal)	Clear	B	**3SB39 21-0BU**		1	1 unit	41J
 3SB39 41-0AH	**Protective caps** For square version	Flat button (plastic)	Clear	B	**3SB39 41-0AH**		1	1 unit	41J

[1] Protective caps are not suitable for use with 3SB38 plastic enclosures. With 3SB38 metal enclosures, protective caps can only be used with 3SB34 00 single-pole contact blocks for front plate mounting. Not to be used with label holder.

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Protective covers

	Version	Use	Color	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Other protective caps[1]									
 3SB19 02-0AL	**Sealable caps** For round version	Flat button (plastic)	Black	B	**3SB19 02-0AL**		1	1 unit	41J
		Flat button (metal), raised button (plastic)	Clear	B	**3SB19 02-2AR**		1	1 unit	41J
 3SB19 02-2AR									
 3SB39 21-0BT	**Dust covers** For use in dusty environments	BKS, CES, O.M.R. key-operated switch	Clear	B	**3SB39 21-0BT**		1	1 unit	41J
Protective collars for front plates									
 3SB39 21-0AX	**Protective collars for EMERGENCY-STOP**[2] For round version	EMERGENCY-STOP mushroom pushbutton without key-operated switch	Yellow	▶	**3SB39 21-0AK**		1	1 unit	41J
			Gray	C	**3SB39 21-0AP**		1	1 unit	41J
		EMERGENCY-STOP mushroom pushbutton with key-operated switch	Yellow	B	**3SB39 21-0AX**		1	1 unit	41J
 3SB39 21-0CG	**Protective collars for EMERGENCY-STOP for 5 padlocks**[2] For round version	3SB3...-1AA20 EMERGENCY-STOP mushroom pushbutton	Yellow	▶	**3SB39 21-0CG**		1	1 unit	41J
 3SB39 21-0AS	**Sun collars** For round version	Illuminated pushbuttons	Black	B	**3SB39 21-0AS**		1	1 unit	41J
Blanking plugs for spare command points for front plates									
 3SB39 21-0AA	**Blanking plugs** For round version	Plastic version	Black	▶	**3SB39 21-0AA**		1	10 units	41J
 3SB39 41-0AA	**Blanking plugs** For square version	Plastic version	Black	B	**3SB39 41-0AA**		1	1 unit	41J
 3SB19 02-0AQ	**Blanking plugs** (plastic) for round version	Metal version	Alumi-nized	B	**3SB19 02-0AQ**		1	10 units	41J

[1] Not suitable for mounting in 3SB38 enclosures. Not to be used with label holder.

[2] The protective collar must only be used to protect against inadvertent actuating and must be fitted to allow unimpeded actuation of the EMERGENCY-STOP mushroom pushbutton.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

	Version	Use	Inscriptions	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Yellow name plates for EMERGENCY-STOP									
	For use on front plates								
	Name plates, round Self-adhesive, external diameter 60 mm, internal diameter 23 mm	EMERGENCY-STOP mushroom pushbutton (round version)	Blank	B	**3SB39 21-0DY**		1	1 unit	41J
 3SB39 21-0AC	**Name plates, round** Self-adhesive, external diameter 80 mm, internal diameter 23 mm	EMERGENCY-STOP mushroom pushbutton (round version)	Blank	B	**3SB39 21-0AB**		1	1 unit	41J
			4 languages, de[1], en, it, es	B	**3SB39 21-0BW**		1	1 unit	41J
			NOT-HALT	B	**3SB39 21-0AC**		1	1 unit	41J
			NOT-AUS	B	**3SB39 21-0CK**		1	1 unit	41J
			EMERGENCY STOP	B	**3SB39 21-0AD**		1	1 unit	41J
 3SB39 21-0BW			ARRET D'URGENCE	B	**3SB39 21-0AG**		1	1 unit	41J
			EMERGENZA	B	**3SB39 21-0AN**		1	1 unit	41J
			Other languages[2]	B	**3SB39 21-0AB**		1	1 unit	41J
	Name plates, round Self-adhesive, external diameter 80 mm, cutout 26 mm × 26 mm	EMERGENCY-STOP mushroom pushbuttons (square version)	Blank	B	**3SB39 41-0AB**		1	1 unit	41J
			NOT-HALT	B	**3SB39 41-0AC**		1	1 unit	41J
			NOT-AUS	B	**3SB39 41-0BX**		1	1 unit	41J
			EMERGENCY STOP	B	**3SB39 41-0AD**		1	1 unit	41J
	Name plates, round 1 mm thick, external diameter 75 mm, internal diameter 22.5 mm	EMERGENCY-STOP mushroom pushbutton (round version)	Blank	B	**3SB19 02-2BA**		1	1 unit	41J
			NOT-HALT	B	**3SB19 02-2BB**		1	1 unit	41J
			NOT-AUS	B	**3SB39 21-0CH**		1	1 unit	41J
 3SB39 21-0DA	**Name plates, round** Self-adhesive, external diameter 60 mm, internal diameter 23 mm[3] Illuminated, suitable as signaling device for EMERGENCY-STOP, with plug-in connection for 24 V AC/DC[4]	EMERGENCY-STOP mushroom pushbutton (round version)	Blank	B	**3SB39 21-0DA**		1	1 unit	41J
			NOT-HALT	B	**3SB39 21-0DK**		1	1 unit	41J
			NOT-AUS	B	**3SB39 21-0DC**		1	1 unit	41J
			EMERGENCY STOP	B	**3SB39 21-0DD**		1	1 unit	41J
Inscription labels									
 3SB39 01-0CH	**Inscription labels** For supporting dust resistance	Contact blocks		B	**3SB39 01-0CH**		100	10 units	41J
 3TX4 210-0H	**Unit labeling plates**	Contact blocks		B	**3TX4 210-0H**		100	100 units	41B

1) With German inscription "NOT-HALT".

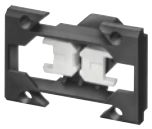
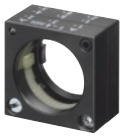
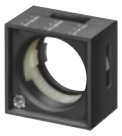
2) Also available in other languages than those listed above. Supplement the Order No. with **"-Z"** and quote the required inscription in plain text. Additional price on request.

3) For front panel thickness of max. 4 mm.

4) The illuminated label can also be operated through the AS-Interface F adapter (see page 13/67).

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Miscellaneous accessories

	Version	Use	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Holders and pressure plates								
 3SB39 01-0AB	**Holders** For snapping on 3 blocks[1]	Pushbuttons, push-pull buttons, mushroom pushbuttons with front plate mounting	▶	**3SB39 01-0AB**		100	20 units	41J
 3SB39 01-0AC	**Holders with pressure plate** For actuating the central contact block of 3 contact blocks[2]	Selector switches, key-operated switches and twin pushbuttons with front plate mounting	▶	**3SB39 01-0AC**		100	10 units	41J
 3SB39 01-0AW	**Pressure plates** For actuating the central contact block of 3 contact blocks[2]	Selector switches and key-operated switches for use on PCBs or with base mounting	B	**3SB39 01-0AW**		100	10 units	41J
Holders for commanding and signaling elements[3]								
 3SB39 31-0AA	**Holders** For plastic version, round	As-supplied state for front panel thickness 1 ... 4 mm	▶	**3SB39 31-0AA**		1	10 units	41J
 3SB39 51-0AA	**Holders** For plastic version, square		B	**3SB39 51-0AA**		1	1 unit	41J
 3SB39 31-0AC	**Holders** For metal version, round		▶	**3SB39 31-0AC**		1	10 units	41J
 3SB39 21-0BD	**Grounding screws** For grounding metal actuators for fitting in front plates made of non-conducting materials		B	**3SB39 21-0BD**		100	50 units	41J

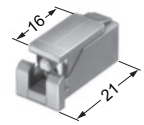
1) The holder for illuminated commanding devices is included in the scope of supply.

2) The pressure plates can be removed one by one to meet individual requirements.

3) The matching holder for actuators and indicators is included in the scope of supply (exception: Order with order code **"B01"**).

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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	Version	Use	Color	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Tools									
 3SB39 41-0AF	**Blanking tools** 26 mm × 26 mm, for square version			B	**3SB39 41-0AF**		1	1 unit	41J
 3SB19 02-2BG	**Hole drilling templates** for 30 mm × 30 mm grid, horizontal, for round and square versions			C	**3SB19 02-2BG**		1	1 unit	41J
 3SB39 21-0BC	**Mounting tools** For buttons and lenses, metal version			B	**3SB39 21-0BC**		1	1 unit	41J
 3SX1 707	**Mounting tools** For potentiometer drives and for pushbuttons with extended stroke			C	**3SX1 707**		1	1 unit	41J
 3SB39 01-0CB	**Dismantling tools** For contact blocks and lampholders	Blocks with screw terminals		B	**3SB39 01-0CB**		1	1 unit	41J
	Dismantling tools For contact blocks and lampholders	With spring-type terminals		C	**3SB39 01-0CG**		1	1 unit	41J
Various accessories									
 3SB39 21-0AU	**Single frames** For square design of the round version		Black	C	**3SB39 21-0AU**		1	1 unit	41J
 3SB39 21-0AE	**Adapter parts** Adapters for 30.5 mm mounting hole, comprising a metal disk with an adhesive layer on one side, degree of protection IP65	As thrust ring for a thin molded-plastic front plate		B	**3SB39 21-0AE**		1	1 unit	41J
 3SB39 01-0AA	**Printed circuit board holders** For mounting the command devices on the printed circuit board (screw is included in the scope of supply)	Contact blocks and lamphold-ers for solder connection		B	**3SB39 01-0AA**		100	10 units	41J
 3SX1 335	**Extension plungers** For compensation of the distance between a pushbutton and the unlatching button of an overload relay	Pushbuttons with extended stroke		A	**3SX1 335**		1	1 unit	41J

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Enclosures

General data

Overview



Enclosures with standard and customized equipment

Enclosed pushbuttons and indicator lights are used as hand operated control devices for separately allocated control units and cabinets.

Enclosures with handle are available for suspension (e.g. for crane control units).

The enclosed pushbuttons and indicator lights are available with conventional controls as well as for connection to the AS-Interface bus system.

The following versions are available:

- Enclosures with standard fittings with 1 to 3 command points
- Enclosures with customized equipment with 1 to 6 command points
- Empty enclosures (individual parts must be ordered separately)

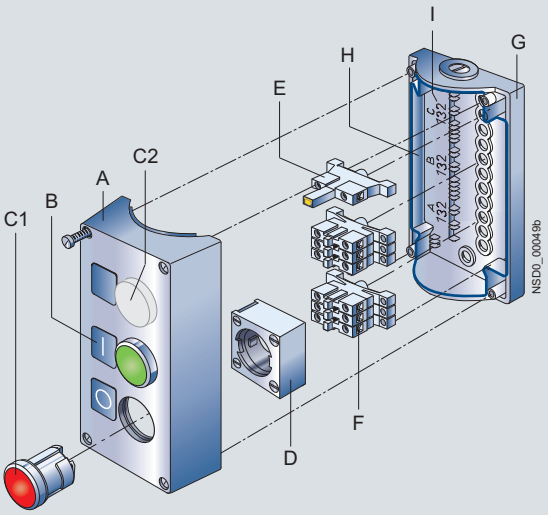
Customer-specific enclosures

On request enclosures with more than 6 command points can also be supplied with AS-Interface connection.

Use the configurator for selection.

For AS-Interface enclosures see page 13/96.

Enclosures with standard fittings



A Top part of enclosure
B Inscription labels
C1 Pushbutton
C2 Indicator light
D Holder
E Contact designations
F Contact blocks, lampholders for floor mounting
G Bottom part of enclosure
H Identification letters for the command points
I Identification number

Standards

IEC 60947-5-1, EN 60947-5-1

Application

The devices are climate-proof (KTW 24) according to EN ISO 6270-2 and suitable for stationary use (weather-protected) and for use in marine applications.

Technical specifications

Type	3SB38 0.-0, 3SB38 0.-1	3SB38 0.-2, 3SB38 0.-3
Enclosures		
Enclosure material	Plastic	Metal
Actuators and indicators	Plastic, round	Metal, round
Degree of protection acc. to IEC 60529	IP65	IP67 and NEMA Type 4
Climatic withstand capability according to EN ISO 6270-2	KTW 24	
Shock resistance according to IEC 60068-2-27 for half-sine shock type, 11 ms shock duration		
• Devices without incandescent lamp	≤ 50 *g*	
• Devices with incandescent lamp	≤ 30 *g*	
Vibration resistance acc. to IEC 60068-2-6		
• Acceleration at frequency 20 ... 200 Hz	5 *g*	

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Overview

Enclosures with standard fittings are available with:

- 1 to 3 command points
- Operational voltage up to 400 V
- Vertical mounting type
- Plastic enclosures are equipped with plastic actuators and indicators, metal enclosures are equipped with metal actuators and indicators
- Contact blocks and lampholders for base mounting (are snapped into the enclosure base); screw terminals (box terminals) as standard; some versions also with spring-type terminals (Order No. ends with -0CC0)

Color of enclosure cover:

- Gray, RAL 7035
- Yellow, RAL 1004

Color of enclosure base:

- Black, RAL 9005

Selection and ordering data

Equipment	Contact block function	Number of command points	DT	Screw terminals / Configurator Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Plastic enclosures with standard fittings								
Cable entry top and bottom each 1 x M20								
 3SB38 01-0DA3								
A = Pushbutton green, label "I"	1 NO	1	B	**3SB38 01-0DA3**		1	1 unit	41J
A = Pushbutton red, label "O"	1 NC	1	B	**3SB38 01-0DB3**		1	1 unit	41J
A = Pushbutton white, label "I"	1 NO	1	B	**3SB38 01-0DD3**		1	1 unit	41J
A = Pushbutton black, label "O"	1 NC	1	B	**3SB38 01-0DE3**		1	1 unit	41J
 3SB38 01-0.F3								
A = EMERGENCY-STOP mushroom pushbutton, Ø 40 mm, with positive latching according to ISO 13850 and rotate-to-unlatch mechanism								
• With yellow top part, without protective collar	1 NC ➔	1	B	**3SB38 01-0DG3**		1	1 unit	41J
	2 NC ➔	1	B	**3SB38 01-0EG3**		1	1 unit	41J
• With yellow top part, with protective collar[1]	1 NC ➔	1	B	**3SB38 01-0DF3**		1	1 unit	41J
	2 NC ➔	1	B	**3SB38 01-0EF3**		1	1 unit	41J
 3SB38 02-0DA3								
B = Pushbutton green, label "I" A = Pushbutton red, label "O"	1 NO, 1 NC	2	B	**3SB38 02-0DA3**		1	1 unit	41J
B = Pushbutton white, label "I" A = Pushbutton black, label "O"	1 NO, 1 NC	2	B	**3SB38 02-0DB3**		1	1 unit	41J
 3SB38 03-0DA3								
C = Indicator light clear, label without inscription, B = Pushbutton green, label "I", A = Pushbutton red, label "O"	BA 9s[2], 1 NO, 1 NC	3	B	**3SB38 03-0DA3**		1	1 unit	41J
C = Pushbutton black, label "II" B = Pushbutton black, label "I", A = Pushbutton red, label "O"	1 NO, 1 NO, 1 NC	3	C	**3SB38 03-0DB3**		1	1 unit	41J
C = Indicator light clear, label without inscription, B = Pushbutton white, label "I", A = Pushbutton black, label "O"	BA 9s[2], 1 NO, 1 NC	3	C	**3SB38 03-0DC3**		1	1 unit	41J

For online configurator see www.siemens.com/sirius/configurators .

➔ Positive opening according to IEC 60947-5-1, Appendix K.

1) The protective collar must only be used to protect against inadvertent actuating and must be fitted to allow unimpeded access to the EMERGENCY-STOP mushroom pushbutton.

2) Only lampholder; order lamp separately.

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Enclosures

Enclosures with standard fittings

Equipment	Contact block function	Number of command points	DT	Screw terminals / Spring-type terminals[3] / Configurator — Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Metal enclosures with standard fittings								
Cable entry top and bottom each 1 x M20								
 3SB38 01-2DB3								
A = Pushbutton green, label "I"	1 NO	1	B	**3SB38 01-2DA3**		1	1 unit	41J
A = Pushbutton red, label "O"	1 NC	1	B	**3SB38 01-2DB3**		1	1 unit	41J
A = Pushbutton white, label "I"	1 NO	1	B	**3SB38 01-2DD3**		1	1 unit	41J
A = Pushbutton black, label "O"	1 NC	1	B	**3SB38 01-2DE3**		1	1 unit	41J
 3SB38 01-2.F3								
A = EMERGENCY-STOP mushroom pushbutton, Ø 40 mm, with positive latching according to ISO 13850 and rotate-to-unlatch mechanism								
• With yellow top part, without protective collar	1 NC ⊖	1	B	**3SB38 01-2DG3**		1	1 unit	41J
	2 NC ⊖	1	B	**3SB38 01-2EG3**		1	1 unit	41J
- With M12 socket	2 NC ⊖ [2]	1	C	**3SB38 01-2EG10-0CC0**		1	1 unit	41J
• With yellow top part, with protective collar[1]	1 NC ⊖	1	B	**3SB38 01-2DF3**		1	1 unit	41J
	2 NC ⊖	1	B	**3SB38 01-2EF3**		1	1 unit	41J
 3SB38 01-2EB30-0CC0								
A = EMERGENCY-STOP mushroom pushbutton, Ø 60 mm, with positive latching according to ISO 13850 and rotate-to-unlatch mechanism								
• With yellow top part, with protective collar for 5 padlocks	2 NC ⊖	1	B	**3SB38 01-2EA30**		1	1 unit	41J
	2 NC ⊖ [2]	1	B	**3SB38 01-2EA30-0CC0**		1	1 unit	41J
 3SB38 02-2DA3								
A = mushroom pushbutton, Ø 60 mm, black, with positive latching and rotate-to-unlatch mechanism								
• With gray top part, with protective collar for 5 padlocks	2 NC[2]	1	B	**3SB38 01-2EB30-0CC0**		1	1 unit	41J
B = Pushbutton green, label "I" A = Pushbutton red, label "O"	1 NO, 1 NC	2	B	**3SB38 02-2DA3**		1	1 unit	41J
 3SB38 03-2DA3								
B = Pushbutton white, label "I" A = Pushbutton black, label "O"	1 NO, 1 NC	2	B	**3SB38 02-2DB3**		1	1 unit	41J
C = Indicator light clear, label without inscription, B = Pushbutton green, label "I", A = Pushbutton red, label "O"	BA 9s[3], 1 NO, 1 NC	3	B	**3SB38 03-2DA3**		1	1 unit	41J
C = Pushbutton black, label "II" B = Pushbutton black, label "I", A = Pushbutton red, label "O"	1 NO, 1 NO, 1 NC	3	B	**3SB38 03-2DB3**		1	1 unit	41J
C = Indicator light clear, label without inscription, B = Pushbutton white, label "I", A = Pushbutton black, label "O"	BA 9s[3], 1 NO, 1 NC	3	B	**3SB38 03-2DC3**		1	1 unit	41J
 3SB38 03-2DB3								

For online configurator see www.siemens.com/sirius/configurators .

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

1) The protective collar must only be used to protect against inadvertent actuating and must be fitted to allow unimpeded access to the EMERGENCY-STOP mushroom pushbutton.

2) **-0CC0**: Contact blocks with spring-type terminals.

3) Only lampholder; order lamp separately.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

Version	Number of command points	DT	Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Empty enclosures, plastic							
 3SB38 02-0AA3							
Cable entry top and bottom each 1 x M20 for 1 to 3 command points, each 1 x M25 for 4 and 6 command points							
For contact blocks, lampholders and accessories with snap-on base mounting, also single-pole front plate blocks can be used (switching state is maintained upon opening), with gray top part	1	B	**3SB38 01-0AA3**		1	1 unit	41J
	2	B	**3SB38 02-0AA3**		1	1 unit	41J
	3	B	**3SB38 03-0AA3**		1	1 unit	41J
	4	B	**3SB38 04-0AA3**		1	1 unit	41J
	6	B	**3SB38 06-0AA3**		1	1 unit	41J
 3SB38 01-0AB3							
For EMERGENCY-STOP, for contact blocks, lampholders and accessories with snap-on base mounting, also single-pole front plate blocks can be used (switching state is maintained upon opening)							
• With yellow top part, without protective collar	1	B	**3SB38 01-0AB3**		1	1 unit	41J
• With yellow top part, with protective collar[1)]	1	B	**3SB38 01-0AD3**		1	1 unit	41J
Empty enclosures, metal							
 3SB38 04-2AA3							
Cable entry top and bottom each 1 x M20 for 1 to 3 command points, each 1 x M25 for 4 and 6 command points							
For contact blocks, lampholders and accessories with snap-on base mounting, also single-pole front plate blocks can be used (switching state is maintained upon opening), with gray top part	1	B	**3SB38 01-2AA3**		1	1 unit	41J
	2	B	**3SB38 02-2AA3**		1	1 unit	41J
	3	B	**3SB38 03-2AA3**		1	1 unit	41J
	4	B	**3SB38 04-2AA3**		1	1 unit	41J
	6	B	**3SB38 06-2AA3**		1	1 unit	41J
 3SB38 01-2AB3							
For EMERGENCY-STOP, for contact blocks, lampholders and accessories with snap-on base mounting, also single-pole front plate blocks can be used (switching state is maintained upon opening)							
• With yellow top part, without protective collar	1	B	**3SB38 01-2AB3**		1	1 unit	41J
• With yellow top part, with protective collar[1)]	1	B	**3SB38 01-2AD3**		1	1 unit	41J
 3SB38 01-2AD3							
• With gray top part, with protective collar	1	B	**3SB38 01-2AE3**		1	1 unit	41J
• With yellow top part, with protective collar for 3 padlocks, for mushroom Ø 40 mm, can be locked (BKS, CES, O.M.R.)	1	B	**3SB38 01-2EC3**		1	1 unit	41J
 3SB38 01-2EC3							

For online configurator see www.siemens.com/sirius/configurators .

1) The protective collar must only be used to protect against inadvertent actuating and must be fitted to allow unimpeded access to the EMERGENCY-STOP mushroom pushbutton.

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Enclosures

Customized enclosures

Overview

Customized enclosures are available with:
- 1 to 6 command points
- Operational voltage up to 400 V

One command point comprises:
- 1 actuator or indicator
- Up to 3 contact blocks or up to 2 contact blocks + 1 lamp-holder
- 1 inscription label

For plastic enclosures the command points are equipped as standard with plastic actuators and indicators, for metal enclosures they are equipped with metal actuators and indicators.

For cable entry in each case, a hole is provided at the top and bottom:
- For M20 for 1 to 3 command points
- For M25 for 4 and 6 command points

Ordering notes (selection by configurator)

To order customized enclosures with the 3SB3 control devices (except suspended pushbuttons), use the 3SB3/3SF5 configurator to select the blocks for equipping. An electronic order form will be generated for the additional options. The configurator is available in the electronic catalog CA 01 on DVD or in the online catalog (Mall) on the Internet:

www.siemens.com/industrymall

Supplement the Order No. with the order code **"K0Y"** (as already listed in the selection table).

The list price of the complete enclosure is generated in the configurator for the customized equipment.

Please send the resulting electronic order form along with your order by e-mail to our Competence Center at

sirius-attach.aud@siemens.com

If you are unable to access either catalog, please contact our Technical Assistance.

Selection and ordering data

Version	Number of command points	DT	Configurator ⚙ Order No.	Price per PU[1]	PU (UNIT, SET, M)	PS*	PG
Plastic enclosures							
 3SB38 03-.AZ							
With contact blocks and lampholders for base mounting	1	C	**3SB38 01-0AZK0Y**		1	1 unit	41J
	2	C	**3SB38 02-0AZK0Y**		1	1 unit	41J
	3	C	**3SB38 03-0AZK0Y**		1	1 unit	41J
	4	B	**3SB38 04-0AZK0Y**		1	1 unit	41J
	6	B	**3SB38 06-0AZK0Y**		1	1 unit	41J
With single-pole contact blocks and lampholders for front plate mounting	1	C	**3SB38 01-1AZK0Y**		1	1 unit	41J
	2	C	**3SB38 02-1AZK0Y**		1	1 unit	41J
	3	C	**3SB38 03-1AZK0Y**		1	1 unit	41J
	4	B	**3SB38 04-1AZK0Y**		1	1 unit	41J
	6	B	**3SB38 06-1AZK0Y**		1	1 unit	41J
Metal enclosures							
 3SB38 03-.AZ							
With contact blocks and lampholders for base mounting	1	C	**3SB38 01-2AZK0Y**		1	1 unit	41J
	2	C	**3SB38 02-2AZK0Y**		1	1 unit	41J
	3	C	**3SB38 03-2AZK0Y**		1	1 unit	41J
	4	C	**3SB38 04-2AZK0Y**		1	1 unit	41J
	6	C	**3SB38 06-2AZK0Y**		1	1 unit	41J
With single-pole contact blocks and lampholders for front plate mounting	1	C	**3SB38 01-3AZK0Y**		1	1 unit	41J
	2	C	**3SB38 02-3AZK0Y**		1	1 unit	41J
	3	C	**3SB38 03-3AZK0Y**		1	1 unit	41J
	4	C	**3SB38 04-3AZK0Y**		1	1 unit	41J
	6	C	**3SB38 06-3AZK0Y**		1	1 unit	41J
							
Suspended pushbuttons With holding plate and handle, customized equipment[2]	max. 6	D	**3SB38 87-1AZK0Y**		1	1 unit	41J

⚙ For online configurator see www.siemens.com/sirius/configurators .

1) The prices depend on the equipment selected.

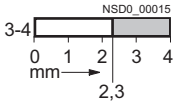
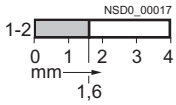
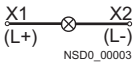
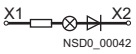
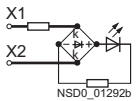
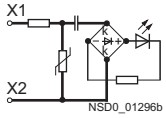
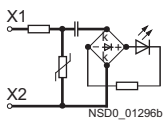
2) Order forms for customized orders are available from Technical Assistance.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Selection and ordering data

For self-equipping of the enclosures

Version	Rated voltage/ Diagram	Operating travel/color Contact closed Contact open	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Contact blocks for base mounting								
Contact blocks with one contact								
1 NO			▶	**3SB34 20-0B**		1	1 unit	41J
1 NO with gold-plated contacts			B	**3SB34 20-0BA**		1	1 unit	41J
1 NC ⊖			▶	**3SB34 20-0C**		1	1 unit	41J
1 NC with gold-plated contacts ⊖			C	**3SB34 20-0CA**		1	1 unit	41J
BA 9s lampholders								
Without lamp	Acc. to lamp 		▶	**3SB34 20-1A**		1	1 unit	41J
With integrated voltage reducer and with 130 V lamp (3SX1 731)[1]	230/240 V AC 	Clear	B	**3SB34 20-1C**		1	1 unit	41J
Lampholders with integrated LED	24 V AC/DC 	Yellow	B	**3SB34 20-1PA**		1	1 unit	41J
		Red	▶	**3SB34 20-1PB**		1	1 unit	41J
		Green	▶	**3SB34 20-1PC**		1	1 unit	41J
		Blue	B	**3SB34 20-1PD**		1	1 unit	41J
		White	▶	**3SB34 20-1PE**		1	1 unit	41J
	110 V AC 	Yellow	B	**3SB34 20-1QA**		1	1 unit	41J
		Red	B	**3SB34 20-1QB**		1	1 unit	41J
		Green	B	**3SB34 20-1QC**		1	1 unit	41J
		Blue	D	**3SB34 20-1QD**		1	1 unit	41J
		White	B	**3SB34 20-1QE**		1	1 unit	41J
	230 V AC 	Yellow	B	**3SB34 20-1RA**		1	1 unit	41J
		Red	B	**3SB34 20-1RB**		1	1 unit	41J
		Green	B	**3SB34 20-1RC**		1	1 unit	41J
		Blue	B	**3SB34 20-1RD**		1	1 unit	41J
		White	B	**3SB34 20-1RE**		1	1 unit	41J
Fixpoint terminals		Black	B	**3SB39 01-0AG**		1	1 unit	41J
		Blue	B	**3SB39 01-0AH**		1	1 unit	41J
		Green/Yellow	B	**3SB39 01-0AJ**		1	1 unit	41J


3SB34 20-0B


3SB34 20-1A


3SB34 20-1PE


3SB39 01-0AH

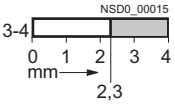
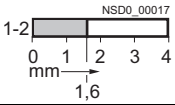
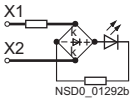
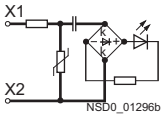
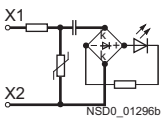
⊖ Positive opening according to IEC 60947-5-1, Appendix K.

[1] Only use with this lamp.

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Contact blocks and lampholders

Version	Rated voltage/ Diagram	Operating travel/color Contact closed Contact open	DT	Spring-type terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Contact blocks for base mounting								
 3SB34 23-0B	**Contact blocks with one contact**							
1 NO			B	**3SB34 23-0B**		1	1 unit	41J
1 NO with gold-plated contacts			D	**3SB34 23-0BA**		1	1 unit	41J
1 NC ➔			B	**3SB34 23-0C**		1	1 unit	41J
1 NC with gold-plated contacts ➔			B	**3SB34 23-0CA**		1	1 unit	41J
	Lampholders with integrated LED	24 V AC/DC 	Yellow	B	**3SB34 23-1PA**		1	1 unit	41J
			Red	B	**3SB34 23-1PB**		1	1 unit	41J
			Green	B	**3SB34 23-1PC**		1	1 unit	41J
			Blue	B	**3SB34 23-1PD**		1	1 unit	41J
			White	B	**3SB34 23-1PE**		1	1 unit	41J
		110 V AC 	Yellow	B	**3SB34 23-1QA**		1	1 unit	41J
			Red	D	**3SB34 23-1QB**		1	1 unit	41J
			Green	D	**3SB34 23-1QC**		1	1 unit	41J
			Blue	D	**3SB34 23-1QD**		1	1 unit	41J
			White	D	**3SB34 23-1QE**		1	1 unit	41J
		230 V AC 	Yellow	D	**3SB34 23-1RA**		1	1 unit	41J
			Red	B	**3SB34 23-1RB**		1	1 unit	41J
			Green	B	**3SB34 23-1RC**		1	1 unit	41J
			Blue	B	**3SB34 23-1RD**		1	1 unit	41J
			White	B	**3SB34 23-1RE**		1	1 unit	41J
 3SB34 23-2G	**Fixpoint terminals**		Black	B	**3SB34 23-2F**		1	1 unit	41J
			Blue	B	**3SB34 23-2G**		1	1 unit	41J
			Green/Yellow	B	**3SB34 23-2H**		1	1 unit	41J

➔ Positive opening according to IEC 60947-5-1, Appendix K.

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Accessories						
 3SB39 01-0AW	B	**3SB39 01-0AW**		100	10 units	41J

Pressure plates for selector switches and key-operated switches
For actuating the central contact block of 3 contact blocks

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Inscription labels

The inscription labels (black with white inscription or silver-colored with black print) have an adhesive layer on the back. The size of the labels is 22 mm × 22 mm.

Inscriptions

The inscriptions have upper case initial letters. The typeface is Arial. Graphic symbols, including those not listed in the catalog, are according to ISO 7000 or IEC 60417 (see page 13/94).

Selection and ordering data

PU (UNIT) = 1
PS* = 10 units (customized inscription: 1 unit)
PG = 41J



Inscriptions	DT	Black		DT	Silver-colored	
		Order No.	Price per PU		Order No.	Price per PU
Inscription labels, self-adhesive, 22 mm × 22 mm						
For self-inscription						
Blank	B	**3SB39 06-1AA**		B	**3SB19 01-3AA**	
With inscription						
Ein	B	**3SB39 06-1AB**		B	**3SB19 01-3AB**	
On	B	**3SB39 06-1EB**		B	**3SB19 01-3EB**	
Aus	B	**3SB39 06-1AC**		B	**3SB19 01-3AC**	
Off	B	**3SB39 06-1EC**		B	**3SB19 01-3EC**	
Auf	B	**3SB39 06-1AD**		B	**3SB19 01-3AD**	
Up	B	**3SB39 06-1ED**		B	**3SB19 01-3ED**	
Ab	B	**3SB39 06-1AE**		B	**3SB19 01-3AE**	
Down	B	**3SB39 06-1EE**		B	**3SB19 01-3EE**	
Auf	B	**3SB39 06-1AD**		B	**3SB19 01-3AD**	
Open	B	**3SB39 06-1EP**		B	**3SB19 01-3EP**	
Zu	B	**3SB39 06-1AL**		B	**3SB19 01-3AL**	
Close	B	**3SB39 06-1EQ**		B	**3SB19 01-3EQ**	
Vor	B	**3SB39 06-1AF**		B	**3SB19 01-3AF**	
Forward	B	**3SB39 06-1EF**		B	**3SB19 01-3EF**	
Zurück	B	**3SB39 06-1AG**		B	**3SB19 01-3AG**	
Reverse	B	**3SB39 06-1EG**		B	**3SB19 01-3EG**	
Rechts	B	**3SB39 06-1AH**		B	**3SB19 01-3AH**	
Right	B	**3SB39 06-1EH**			**--**	
Links	B	**3SB39 06-1AJ**		B	**3SB19 01-3AJ**	
Left	B	**3SB39 06-1EJ**			**--**	
Schnell	B	**3SB39 06-1AM**		B	**3SB19 01-3AM**	
Fast	B	**3SB39 06-1ER**			**--**	
Langsam	B	**3SB39 06-1AN**		B	**3SB19 01-3AN**	
Slow	B	**3SB39 06-1ES**			**--**	
Betrieb	B	**3SB39 06-1AP**		B	**3SB19 01-3AP**	
Running	B	**3SB39 06-1EV**		B	**3SB19 01-3EV**	
Störung	B	**3SB39 06-1AQ**		B	**3SB19 01-3AQ**	
Fault	B	**3SB39 06-1EW**			**--**	
Einrichten	B	**3SB39 06-1AR**		B	**3SB19 01-3AR**	
Start	B	**3SB39 06-1EL**		B	**3SB19 01-3EL**	
Reset	B	**3SB39 06-1EM**		B	**3SB19 01-3EM**	
Test	B	**3SB39 06-1EN**		B	**3SB19 01-3EN**	
Halt	B	**3SB39 06-1AK**		B	**3SB19 01-3AK**	
Stop	B	**3SB39 06-1EK**		B	**3SB19 01-3EK**	
NOT-HALT	B	**3SB39 06-1AS**		B	**3SB19 01-3AT**	
NOT-AUS	B	**3SB39 06-1AV**		B	**3SB19 01-3AS**	
EMERGENCY STOP	B	**3SB39 06-1EY**		B	**3SB19 01-3EY**	
Lüfter	B	**3SB39 06-1CA**			**--**	
Pumpe	B	**3SB39 06-1CB**		B	**3SB19 01-3CB**	
Kühlung	B	**3SB39 06-1CC**			**--**	
Heizung	B	**3SB39 06-1CD**			**--**	
Beleuchtung	B	**3SB39 06-1CE**		B	**3SB19 01-3CE**	
Filter	B	**3SB39 06-1CF**			**--**	
Motor	B	**3SB39 06-1CG**			**--**	
Kompressor	B	**3SB39 06-1CH**		B	**3SB19 01-3CH**	
With graphic symbol						
O	B	**3SB39 06-1MB**		B	**3SB19 01-3MB**	
I	B	**3SB39 06-1MC**		B	**3SB19 01-3MC**	
II	B	**3SB39 06-1MD**		B	**3SB19 01-3MD**	
III	B	**3SB39 06-1ME**		B	**3SB19 01-3ME**	
O I (horizontal)	B	**3SB39 06-1MF**		B	**3SB19 01-3MF**	
I O II (horizontal)	B	**3SB39 06-1MG**		B	**3SB19 01-3MG**	
I O (vertical)	B	**3SB39 06-1MH**		B	**3SB19 01-3MH**	
II O I (vertical)	B	**3SB39 06-1MW**		C	**3SB19 01-3MW**	
→	B	**3SB39 06-1NA**		B	**3SB19 01-3NA**	

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Inscription labels for enclosures

Inscriptions	DT	Black Order No.	Price per PU	DT	Silver-colored Order No.	Price per PU
Inscription labels, self-adhesive, 22 mm × 22 mm						
 ***With customized inscription***						
For inscriptions or symbols see "Options"		**3SB39 06-0XZ**			**3SB19 01-3XZ**	
• Text line(s)	B	**K0Y**		B	**K0Y**	
• Text line(s) or symbol with No.	B	**K1Y, K2Y, K3Y** or **K5Y**		B	**K1Y, K2Y, K3Y** or **K5Y**	
• Any inscription or symbol	B	**K9Y**		B	**K9Y**	

Options

Customized inscriptions

The labels can be inscribed with text and symbols not listed in the ordering data.

A letter height of 4 mm is used as standard for text inscriptions (1 to 3 lines)

Up to 11 characters per line are possible. The typeface used is Arial. Other letter heights and typefaces are possible, but must be specified when ordering.

Examples for customized inscription



Two-line inscription in upper/lower case lettering (K0Y)



Single-line inscription in upper case lettering (K1Y)



Three-line inscription in lower case letters (K2Y)



Symbol number 5011 according to IEC 60417 (K3Y)



Any symbol according to order form supplement (K9Y)

Ordering notes

Append the following codes to the Order No.:

- Text line in upper/lower case, always upper case for beginning of line (e.g. "Lift off"): **K0Y**
- Text line(s) in upper case (e.g. "LIFT OFF"): **K1Y**
- Text line(s) in lower case (e.g. "lift off"): **K2Y**
- Text line(s) in upper/lower case, all words begin with upper case letters (e.g. "Lift Off"): **K5Y**
- Symbol with number according to ISO 7000 or IEC 60417: **K3Y**
- Any inscription or symbol according to order form supplement: **K9Y**

When ordering, specify the required inscription in plain text in addition to the order number and order code. In the case of special inscriptions with words in languages other than German, give the exact spelling and specify the language.

In the case of multi-line inscriptions, the text must be assigned to the respective line, e.g. "Z1 = Lift, Z2 =Lower". For long words you can also specify the end-of-line division (see ordering example 1).

Symbols can also be ordered with numbers according to ISO 7000 or IEC 60417 (see ordering examples 2 and 3).

For special symbols (order code K9Y), a CAD drawing in DXF format should be submitted to:

sirius-attach.aud@siemens.com

Ordering example 1

A label with 2 lines of text is required:

3SB39 06–0XZ
K1Y
Z1 = LIFT
Z2 = LOWER

Ordering example 2

A label inscribed with symbol No. 5011 according to IEC 60417 is required:

3SB39 06–0XZ
K3Y
Z = 5011 IEC

Ordering example 3

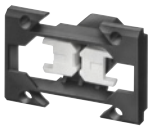
A label inscribed with symbol No. 1118 according to ISO 7000 is required:

3SB39 06–0XZ
K3Y
Z = 1118 ISO

Illustrations are approximate

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Selection and ordering data

	Version	Color/ inscription	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Blanking plugs for spare command points								
 3SB39 21-0AA	**Blanking plugs** For plastic version, round	Black	►	**3SB39 21-0AA**		1	10 units	41J
 3SB19 02-0AQ	**Blanking plugs** (plastic) For metal version, round	Aluminized	B	**3SB19 02-0AQ**		1	10 units	41J
Holders and pressure plates								
 3SB39 01-0AB	**Holders for pushbuttons and switches** For snapping on 3 blocks,[1] for front plate mounting		►	**3SB39 01-0AB**		100	20 units	41J
 3SB39 01-0AC	**Holders for selector switches and key-operated switches with pressure plate** For actuating a central contact block, for front plate mounting[2]		►	**3SB39 01-0AC**		100	10 units	41J
 3SB39 01-0AW	**Pressure plates for selector switches and key-operated switches** For actuating a central contact block, for base mounting[2]		B	**3SB39 01-0AW**		100	10 units	41J
Accessories for enclosures								
	**Yellow name plates** As backing plate for EMERGENCY-STOP, self-adhesive	Without inscription	D	**3SB19 02-1AQ**		1	1 unit	41J
		With inscription						
		• NOT-HALT	B	**3SB19 02-2AQ**		1	1 unit	41J
		• NOT-AUS	B	**3SB39 21-0CJ**		1	1 unit	41J
		With recess for inscription label	B	**3SB39 21-0BV**		1	1 unit	41J
 3SB39 01-0CK	**M20 cable gland** incl. hexagonal nut		B	**3SB39 01-0CK**		1	1 unit	41J
	M25 cable gland incl. hexagonal nut		B	**3SB39 01-0CM**		1	1 unit	41J
 3SB39 01-0CL	**M20 hexagonal nuts** For cable glands		B	**3SB39 01-0CL**		100	10 units	41J
	M25 hexagonal nuts For cable glands		B	**3SB39 01-0CN**		100	10 units	41J
 3SB39 01-0CS	**Connecting pieces** For connecting 2 plastic enclosures							
	• M20/M20		B	**3SB39 01-0CS**		1	1 unit	41J
	• M20/M25[3]		B	**3SB39 01-0CT**		1	1 unit	41J
	• M25/M25		B	**3SB39 01-0CU**		1	1 unit	41J
 3SB39 01-0CP	**Connecting pieces** For connecting 2 metal enclosures							
	• M20/M20		B	**3SB39 01-0CP**		1	1 unit	41J
	• M20/M25		B	**3SB39 01-0CQ**		1	1 unit	41J

1) The holder for illuminated commanding devices is included in the scope of supply.

2) The pressure plates can be removed one by one to meet individual requirements.

3) Not suitable for plastic enclosures with 6 command points.

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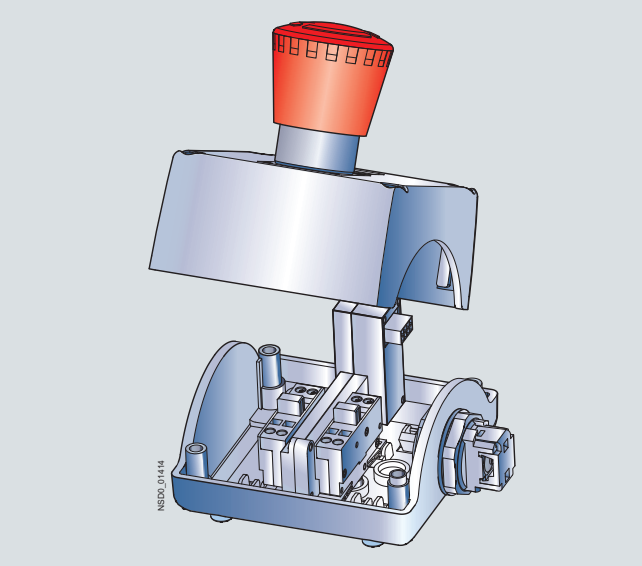
General data

Overview



AS-Interface enclosure with customized equipment

Distributed command devices of the 3SB3 series can be quickly connected to the AS-Interface using AS-Interface enclosures. Using suitable components you can make your own enclosures with integrated AS-Interface or flexibly modify existing enclosures.



EMERGENCY-STOP enclosure

Enclosures

Color of enclosure cover:

- Gray, RAL 7035, or
- Yellow, RAL 1004, for EMERGENCY-STOP.

Color of enclosure base:

- Black, RAL 9005

Installation of AS-Interface slaves

The following slave types are available for connecting the command points:

- Slave in A/B technology with 4 inputs and 3 outputs
- Slave with 4 inputs and 4 outputs
- F Slave with two secure inputs for EMERGENCY-STOP mushroom pushbutton

The following table shows the maximum number of equippable slaves:

Enclosures for	Number of slaves for enclosures without EMERGENCY-STOP	Number of slaves for enclosures with EMERGENCY-STOP
1 command point	Not available	1 x F slave
2 command points	1 x slave 4I/4O or 4I/3O	Not available
3 command points	1 x slave 4I/4O or 4I/3O	1 x slave 4I/4O or 4I/3O + 1 x F slave
4 command points	2 x slave 4I/4O or 4I/3O[1)]	2 x slave 4I/4O or 4I/3O + 1 x F slave[1)]
6 command points	2 x slave 4I/4O or 4I/3O	2 x slave 4I/4O or 4I/3O + 1 x F slave

[1)] For metal enclosures with 4 command points, only 1 x slave 4I/4O or 4I/3O is possible.

Connection

One set of links is required in each case to connect a slave to contact blocks, to lampholders and to the connection element.

The connection elements are mounted in the front-end cable glands and are used for connection of the AS-Interface or for bringing unused inputs or outputs out of the enclosure.

For connection to AS-Interface it can be selected between:

- Terminal for shaped AS-Interface cable. The cable is contacted by the insulation piercing method and routed past the enclosure on the outside (possible only with plastic enclosure).
- Cable gland for the shaped AS-Interface cable or round cable. The cable is routed into the enclosure (preferable for metal enclosure).
- Connection using M12 plug.

If less than all inputs/outputs of the installed slaves in an enclosure are used for connecting the command devices, free inputs and outputs can be routed on request to the outside through an M12 socket on the top or bottom side of the enclosure.

To supply inputs with power, the S+ connection of the slave must be assigned to the socket, for outputs the OUT– connection must be assigned.

Addressing is performed using the AS-Interface connections or the integrated addressing socket. An external power supply is not required.

Customized enclosures (selection by configurator)

To order customized 3SF58 AS-Interface enclosures with the 3SB3 control devices, use the 3SB3/3SF5 configurator to select the blocks for equipping. An electronic order form will be generated for the additional options.

For related ordering notes see page 13/90.

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Overview

Enclosures with standard fittings are available with:

- 1 to 3 command points
- Operational voltage through AS-Interface (approx. 30 V)
- Vertical mounting type
- Plastic enclosures are equipped with plastic actuators and indicators, metal enclosures are equipped with metal actuators and indicators

The enclosures without EMERGENCY-STOP each have one user module with 4I/3O; the enclosures with EMERGENCY-STOP mushroom pushbuttons have a safe AS-Interface slave integrated in the enclosure.

Enclosures with EMERGENCY-STOP mushroom pushbuttons are fitted with two NC contact blocks, which are wired to the safe slave. The contact blocks and lampholders (with spring-type terminals) of the control device, and the AS-Interface slaves, are mounted in the base of the enclosure and are cable-connected.

The plastic enclosures are designed with a connection for the AS-Interface flat cable (the cable is run passed the outside of the enclosure). For metal enclosures, the AS-Interface cable is run inside the enclosure.

The housing with EMERGENCY-STOP mushroom pushbuttons with an M12 connector is also available.

Selection and ordering data

Equipping options (A, B, C = identification letters of the command points)	Number of command points	DT	Configurator Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
AS-Interface enclosures, plastic							
 3SF5 811-0AA08							
With M12 top connector							
A = EMERGENCY-STOP mushroom pushbuttons, with rotate-to-unlatch mechanism, 1 NC, 1 NC, yellow enclosure top	1	B	**3SF5 811-0AA10**		1	1 unit	42A
With terminal for insulation piercing method at top							
A = EMERGENCY-STOP mushroom pushbuttons, with rotate-to-unlatch mechanism, 1 NC, 1 NC							
• Yellow enclosure top	1	A	**3SF5 811-0AA08**		1	1 unit	42A
• Yellow enclosure top, with protective collar	1	A	**3SF5 811-0AB08**		1	1 unit	42A
 3SF5 812-0DA00							
B = Pushbutton green, label "I", 1 NO A = Pushbutton red, label "O", 1 NO	2	A	**3SF5 812-0DA00**		1	1 unit	42A
B = Pushbutton white, label "I", 1 NO A = Pushbutton black, label "O", 1 NO	2	A	**3SF5 812-0DB00**		1	1 unit	42A
C = Indicator lights clear, label without inscription B = Pushbutton green, label "I", 1 NO A = Pushbutton red, label "O", 1 NO	3	A	**3SF5 813-0DA00**		1	1 unit	42A
C = Indicator lights clear, label without inscription B = Pushbutton white, label "I", 1 NO A = Pushbutton black, label "O", 1 NO	3	A	**3SF5 813-0DC00**		1	1 unit	42A
C = Pushbutton black, label "II", 1 NO B = Pushbutton black, label "I", 1 NO A = Pushbutton red, label "O", 1 NO	3	A	**3SF5 813-0DB00**		1	1 unit	42A
AS-Interface enclosures, metal							
 3SF5 811-2AB08							
With M12 top connector							
A = EMERGENCY-STOP mushroom pushbuttons, with rotate-to-unlatch mechanism, 1 NC, 1 NC							
• Yellow enclosure top	1	C	**3SF58 11-2AA10**		1	1 unit	42A
• Yellow enclosure top, with protective collar	1	C	**3SF58 11-2AB10**		1	1 unit	42A
With cable gland at top							
A = EMERGENCY-STOP mushroom pushbuttons, with rotate-to-unlatch mechanism, 1 NC, 1 NC							
• Yellow enclosure top	1	A	**3SF5 811-2AA08**		1	1 unit	42A
• Yellow enclosure top, with protective collar	1	A	**3SF5 811-2AB08**		1	1 unit	42A
 3SF5 813-2DA00							
B = Pushbutton green, label "I", 1 NO A = Pushbutton red, label "O", 1 NO	2	A	**3SF5 812-2DA00**		1	1 unit	42A
B = Pushbutton white, label "I", 1 NO A = Pushbutton black, label "O", 1 NO	2	A	**3SF5 812-2DB00**		1	1 unit	42A
C = Indicator lights clear, label without inscription B = Pushbutton green, label "I", 1 NO A = Pushbutton red, label "O", 1 NO	3	A	**3SF5 813-2DA00**		1	1 unit	42A
C = Indicator lights clear, label without inscription B = Pushbutton white, label "I", 1 NO A = Pushbutton black, label "O", 1 NO	3	A	**3SF5 813-2DC00**		1	1 unit	42A
C = Pushbutton black, label "II", 1 NO B = Pushbutton black, label "I", 1 NO A = Pushbutton red, label "O", 1 NO	3	A	**3SF5 813-2DB00**		1	1 unit	42A

For online configurator see www.siemens.com/sirius/configurators .

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Selection and ordering data

For self-equipping of the enclosures

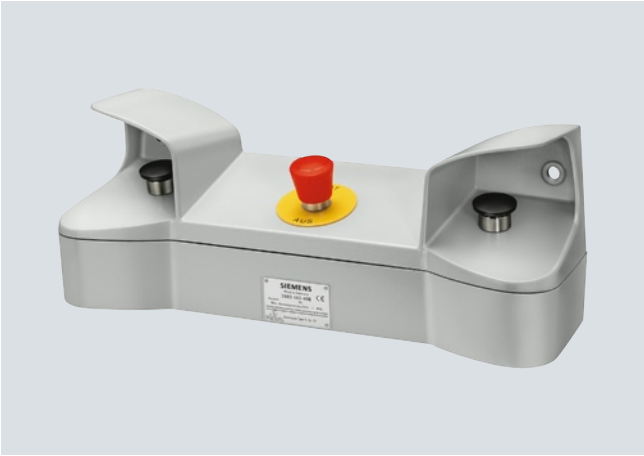
	Version	Number of command points	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
For plastic enclosures								
 3SF5 500-0BA	**AS-Interface slaves**							
	F slave, 2 safe inputs, for plastic enclosure, EMERGENCY-STOP, without protective collar	1 ... 6	A	**3SF5 500-0BA**		1	1 unit	42A
	F slave, 2 safe inputs, for plastic or metal enclosure, EMERGENCY-STOP, with protective collar	1	A	**3SF5 500-0DA**		1	1 unit	42A
 3SF5 500-0BB	A/B slave, 4I/3O for plastic enclosure	2 ... 6	A	**3SF5 500-0BB**		1	1 unit	42A
	Slave, 4I/4O, for plastic enclosure	2 ... 6	A	**3SF5 500-0BC**		1	1 unit	42A
 3SF5 900-0CA	**Sets of links**							
	For F slave		A	**3SF5 900-0BA**		1	1 unit	42A
	For slave 4I/4O or A/B slave 4I(3O)		A	**3SF5 900-0BB**		1	1 unit	42A
	Connection elements							
 3SF5 900-0CC	For AS-Interface shaped cable, connection by insulation piercing method, for plastic enclosure	1 ... 3	A	**3SF5 900-0CA**		1	1 unit	42A
		4 ... 6	B	**3SF5 900-0CB**		1	1 unit	42A
	For AS-Interface connection using M12 plug, for plastic enclosure	1 ... 3	B	**3SF5 900-0CC**		1	1 unit	42A
		4 ... 6	B	**3SF5 900-0CD**		1	1 unit	42A
	For bringing out unused inputs/outputs through an M12 socket, for plastic enclosure	1 ... 3	B	**3SF5 900-0CE**		1	1 unit	42A
		4 ... 6	B	**3SF5 900-0CF**		1	1 unit	42A
 3SF5 900-0CG	For AS-Interface shaped cable, cable is routed into the enclosure, for plastic or metal enclosure	1 ... 3	A	**3SF5 900-0CG**		1	1 unit	42A
		4 ... 6	A	**3SF5 900-0CH**		1	1 unit	42A
	For round cable, cable is routed into the enclosure, for plastic or metal enclosure	1 ... 3	A	**3SF5 900-0CJ**		1	1 unit	42A
		4 ... 6	A	**3SF5 900-0CK**		1	1 unit	42A
For metal enclosures								
 3SF5 500-0CB	**AS-Interface slaves**							
	F slave, 2 safe inputs, for metal enclosure, EMERGENCY-STOP, without protective collar	1 ... 6	A	**3SF5 500-0CA**		1	1 unit	42A
	F slave, 2 safe inputs, for plastic or metal enclosure, EMERGENCY-STOP, with protective collar	1	A	**3SF5 500-0DA**		1	1 unit	42A
	A/B slave, 4I/3O, for metal enclosure	2 ... 6	A	**3SF5 500-0CB**		1	1 unit	42A
	Slave, 4I/4O, for metal enclosure	2 ... 6	A	**3SF5 500-0CC**		1	1 unit	42A
 3SF5 900-0CG	**Sets of links**							
	For F slave		A	**3SF5 900-0BA**		1	1 unit	42A
	For slave 4I/4O or A/B slave 4I(3O)		A	**3SF5 900-0BB**		1	1 unit	42A
	Connection elements							
 3SF5 900-0CJ	For AS-Interface connection using M12 plug, for metal enclosure	1 ... 3	B	**3SF5 900-2CC**		1	1 unit	42A
		4 ... 6	B	**3SF5 900-2CD**		1	1 unit	42A
	For bringing out unused inputs/outputs through an M12 socket, for metal enclosure	1 ... 3	B	**3SF5 900-2CE**		1	1 unit	42A
		4 ... 6	B	**3SF5 900-2CF**		1	1 unit	42A
	For AS-Interface shaped cable, cable is routed into the enclosure, for plastic or metal enclosure	1 ... 3	A	**3SF5 900-0CG**		1	1 unit	42A
		4 ... 6	A	**3SF5 900-0CH**		1	1 unit	42A
	For round cable, cable is routed into the enclosure, for plastic or metal enclosure	1 ... 3	A	**3SF5 900-0CJ**		1	1 unit	42A
		4 ... 6	A	**3SF5 900-0CK**		1	1 unit	42A

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Plastic and metal enclosures

Overview



Two-hand operation console with metal enclosure

Equipment

The two-hand operation consoles are pre-equipped with 3SB3 command devices. In the case of plastic enclosures the command points are equipped as standard with actuators and indicators made of plastic, in the case of metal enclosures they are equipped with actuators and indicators made of metal.

The standard equipment comprises:

- 2 black mushroom pushbuttons, Ø 40 mm, 1 NO + 1 NC, Order No. 3SB30 00-1GA11 or 3SB35 00-1GA11
- 1 red EMERGENCY-STOP mushroom pushbutton according to ISO 13850, Ø 40 mm, with positive latching, 2 NC, Order No. 3SB30 00-1HA20 or 3SB35 00-1HA20

The plastic version can be retrofitted with up to 8 customized command points. The surface of the console has premachined breaking points for this purpose.

Application

The two-hand operation consoles are required for use with machines and systems that have hazardous areas, in order to direct both hands of the operator to one position.

Operator panels are primarily used on presses, stamping machines, printing presses and paper converting machines, in the chemical industry and in the rubber and plastics industries.

The control command is given by pressing the two mushroom pushbuttons on the sides simultaneously (within 0.5 s of each other) and must be maintained for as long as a hazard exists.

For the further processing of control commands, suitable evaluation units are used, e.g. 3TK28 3 safety relays (see "Safety Relays", Chapter 10).

Standards

The two-hand operation consoles comply with the requirements of EN 574.

Selection and ordering data

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Metal enclosures, degree of protection IP65							
 3SB38 63-4BB	**Two-hand operation consoles, metal enclosure**						
	• With standard fittings	B	**3SB38 63-4BB**		1	1 unit	41J
	• With standard fittings and 4 additional holes for 22.5 mm command devices[1]	B	**3SB38 63-4BA**		1	1 unit	41J
	• Empty enclosure, unequipped	B	**3SB38 63-4BC**		1	1 unit	41J
Plastic enclosures, degree of protection IP65							
 3SB38 63-1BB3	**Two-hand operation consoles, plastic enclosure** With standard fittings and premachined breaking points for 8 additional 22.5 mm[1] command devices, with holes for metric cable glands	B	**3SB38 63-1BB3**		1	1 unit	41J
Accessories							
 3SB39 01-0AQ	**Stands for two-hand operation consoles** With holes for metric cable glands	B	**3SB39 01-0AQ3**		1	1 unit	41J

[1] See 3SB3 Pushbuttons and Indicator Lights.

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3SE7 metal enclosures

Overview



Cable-operated switches

The cable-operated switches are used for monitoring or for EMERGENCY-STOP devices on particularly endangered system components.

As the effective range of a cable-operated switch is only limited by the length of the trip-wire, large systems can also be protected. Cable-operated switches (requiring pulling at both ends) and conveyor belt unbalance trackers are used primarily for monitoring very long belt systems.

Contact blocks

The switches for wire lengths up to 50 m are supplied with 1 NO + 1 NC or 2 NC contacts and those up to 75 m with 1 NO + 3 NC contacts. The switches for wire lengths from 2 × 75 m and the conveyor belt unbalance protection device are supplied with 2 NO + 2 NC contacts.

The NC contacts of the cable-break or cable-pull signaling are positive opening. The NO contact can be used, for example, for signaling purposes.

Free position and display

Cable-operated switches with one-side operation are held in free position by the pre-tension on the turnbuckle.

On switches with interlocking, with a pretensioned cable, the locking must be deactivated beforehand in order to return the cable-operated switch to its original position.

The cable-operated switch and the conveyor belt unbalance tracker can be supplied optionally with a factory-fitted LED (red, 24 V DC). This light in innovative chip-on-board technology allows the operating state of the switch to be visible at a distance of at least 50 m.

Application

Standards

The switches are equipped with positive latching and positive NC contacts and are thus suitable for operation in EMERGENCY-STOP devices according to EN ISO 13850.

Technical specifications

Type		3SE7 120	3SE7 150	3SE7 140	3SE7 141	3SE7 160	3SE7 310
General data							
Standards		IEC 60947-5-1, EN 60947-5-1; IEC 60204-1, EN 60204-1; EN ISO 13850					
Approvals		UL/CSA					
Electrical design		Contacts electrically isolated from each other					
Electrical load							
• 2-pole, at AC-15		400 V AC, 6 A		400 V AC, 6 A	250 V AC, 2 A	400 V AC, 6 A	--
• 3-pole, at AC-15		250 V AC, 2 A		--	--	--	--
• 4-pole, at AC-15		--		--	--	400 V AC, 6 A	400 V AC, 6 A
• Minimum		24 V AC/DC, 10 mA					
Short-circuit protection	A	6 (slow)					
Mechanical endurance		> 1 million operating cycles					
Contact material		Fine silver					
Operation		By pulling or breaking of wire					
Wire length, maximum	m	10	25	50	75	2 × 75	–
Distance between wire supports, max.	m	2.5	3	5			–
Enclosures							
Enclosure material		GD Al alloy, coated (color), dark black RAL 9005					
Cover		Shock-resistant thermoplast					
Degree of protection acc. to IEC 60529		IP65			IP67	IP65	
Ambient temperature	°C	–25 ... +70					
Mounting		Designed for M5					
Fixing spacing	mm	30 and 40					
Cable entry		2 × (M20 × 1.5)		1 × (M16 × 1.5)	3 × (M20 × 1.5)	2 × (M25 × 1.5)	
Connection type		Screw terminals M3.5, self-lifting clamp terminal					

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Selection and ordering data

Version	Wire length	Contacts		DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	m								
Cable-operated switches									
 3SE7 120-1BH00	**Metal enclosures, IP65** (cover made of molded plastic)	10							
• Without latching, only cable pull monitoring		1 NO + 1 NC	⊖	A	**3SE7 120-2DD01**		1	1 unit	41K
• With latching and button reset		2 NC	⊖	A	**3SE7 120-1BF00**		1	1 unit	41K
- With yellow lid		1 NO + 2 NC	⊖	A	**3SE7 120-1BH00**		1	1 unit	41K
 3SE7 150-1BD00 3SE7 150-1BH00	**Metal enclosures, IP65** (cover made of molded plastic), with alignment window	25							
• Without latching		1 NO + 1 NC	⊖	A	**3SE7 150-2DD00**		1	1 unit	41K
• With latching and button reset		1 NO + 1 NC	⊖	A	**3SE7 150-1BD00**		1	1 unit	41K
		2 NC	⊖	A	**3SE7 150-1BF00**		1	1 unit	41K
- With yellow lid		1 NO + 2 NC	⊖	B	**3SE7 150-1BH00**		1	1 unit	41K
• With latching and key unlatching		1 NO + 1 NC	⊖	B	**3SE7 150-1CD00**		1	1 unit	41K
 3SE7 150-1BD04	**Metal enclosures, IP65** (cover made of molded plastic), with alignment window, with LED, red, 24 V DC	25							
• Without latching		1 NO + 1 NC	⊖	B	**3SE7 150-2DD04**		1	1 unit	41K
• With latching and button reset		1 NO + 1 NC	⊖	B	**3SE7 150-1BD04**		1	1 unit	41K
 3SE7 140-1B.00	**Metal enclosures, IP65** (cover made of molded plastic)	50							
• With latching and button reset		1 NO + 1 NC	⊖	A	**3SE7 140-1BD00**		1	1 unit	41K
		2 NC	⊖	B	**3SE7 140-1BF00**		1	1 unit	41K
• In addition with LED, red, 24 V DC		1 NO + 1 NC	⊖	B	**3SE7 140-1BD04**		1	1 unit	41K
• With latching and key unlatching		1 NO + 1 NC	⊖	B	**3SE7 140-1CD00**		1	1 unit	41K
 3SE7 141-1EG10	**Metal enclosures, IP67** (cover made of molded plastic), with EMERGENCY-STOP mushroom, with rotate-to-unlatch mechanism	75	1 NO + 3 NC	⊖	A	**3SE7 141-1EG10**		1	1 unit	41K
 3SE7 160-1AE00	**Metal enclosures, IP65** with actuation on both sides	2 × 75							
• With latching and button reset		2 NO + 2 NC	⊖	A	**3SE7 160-1AE00**		1	1 unit	41K
		1 NO + 1 NC	⊖	B	**3SE7 160-1BD00**		1	1 unit	41K
• In addition with LED, red, 24 V DC		2 NO + 2 NC	⊖	B	**3SE7 160-1AE04**		1	1 unit	41K

⊖ Positive opening according to IEC 60947-5-1, Appendix K.

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3SE7, 3SF2 Cable-Operated Switches

3SE7 metal enclosures

Version	Contacts	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Conveyor belt unbalance trackers							
Metal enclosures, IP65							
• With latching and button reset	2 NO + 2 NC ➔	B	**3SE7 310-1AE00**		1	1 unit	41K
• In addition with LED, red, 24 V DC	2 NO + 2 NC ➔	B	**3SE7 310-1AE04**		1	1 unit	41K



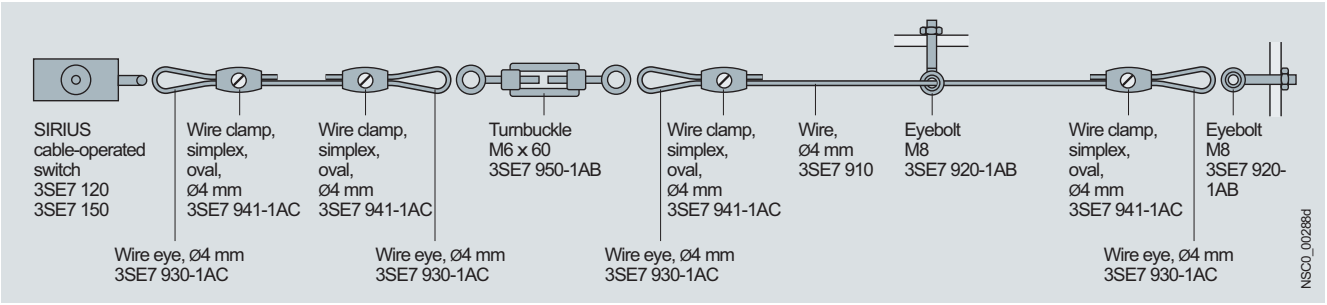
3SE7 310-1AE00

➔ Positive opening according to IEC 60947-5-1, Appendix K.

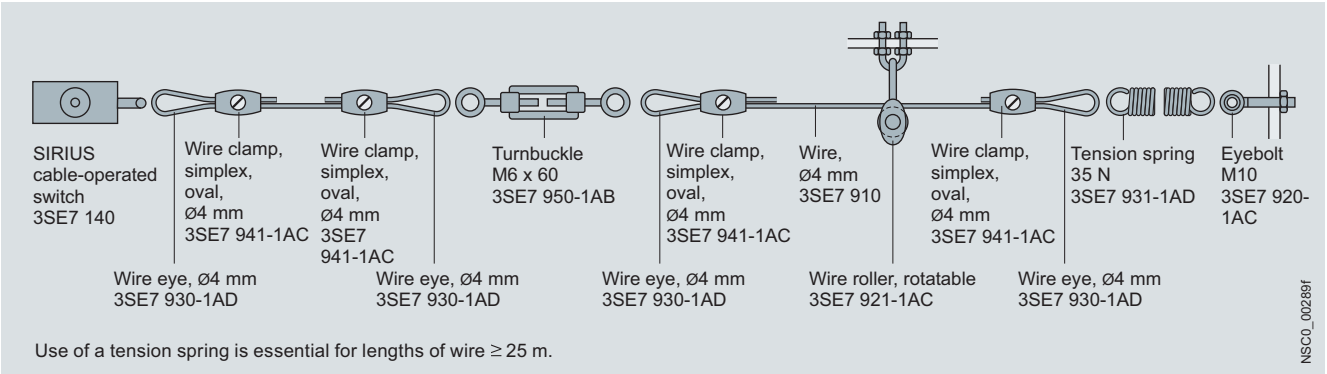
Accessories

Configuration of the cable-operated switches

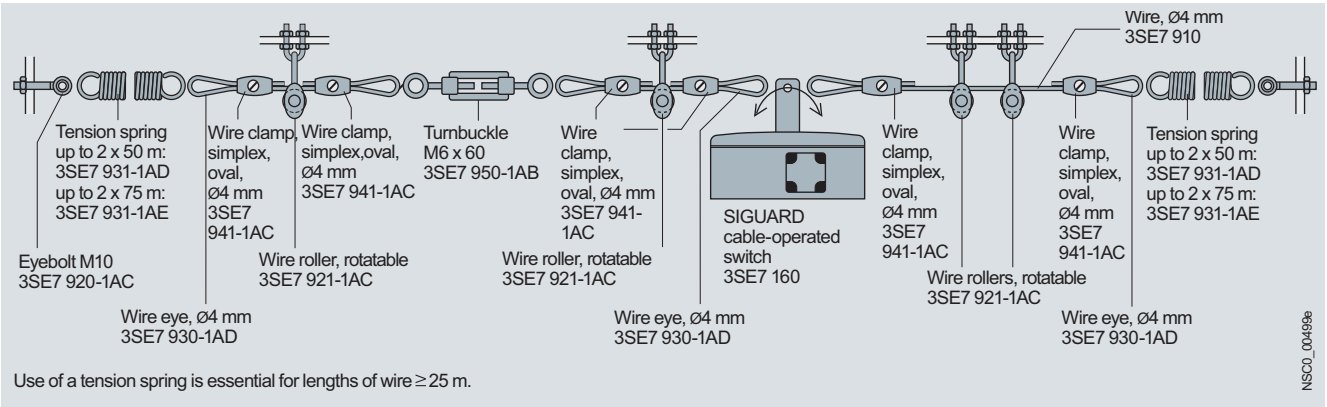
Short lengths of wire up to 25 m



Long lengths of wire up to 50 m



Pulling from both sides up to 2 x 75 m



Note:

Large temperature fluctuations require corresponding compensation springs. For reliable connection the PVC sheath must be removed from the clamping area of the steel trip-wire. Wire supports must be used at the recommended intervals.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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3SE7 metal enclosures

	Version	Wire length/ diameter	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Trip-wire with fixing								
	**Steel wires**, with red plastic sheath, Ø 4 mm[1)]	10 m	A	**3SE7 910-3AA**		1	1 unit	41K
		15 m	A	**3SE7 910-3AB**		1	1 unit	41K
		20 m	A	**3SE7 910-3AC**		1	1 unit	41K
		50 m	A	**3SE7 910-3AH**		1	1 unit	41K
	**Wire clamps**, galvanized white							
	• Oval	2 × Ø 4 mm	A	**3SE7 941-1AC**		1	1 unit	41K
	• Simplex (1 set = 4 units)	2 × Ø 4 mm	A	**3SE7 943-1AC**		1	4 units	41K
	• Duplex (1 set = 4 units)	2 × Ø 4 mm	A	**3SE7 944-1AC**		1	4 units	41K
	• Single (1 set = 4 units)	2 × Ø 4 mm	A	**3SE7 942-1AA**		1	4 units	41K
	**Tension springs** (zinc-plated) to maintain the counter tension							
	• 13 N		A	**3SE7 931-1AB**		1	1 unit	41K
	• 35 N, for trip-wires up to 50 m		A	**3SE7 931-1AD**		1	1 unit	41K
	• > 35 N, for trip-wires up to 2 × 75 m		B	**3SE7 931-1AE**		1	1 unit	41K
	**Wire rollers** for changing the direction of the wire, rotatable	Ø 4 mm	A	**3SE7 921-1AC**		1	1 unit	41K
	**Fixtures for the wire rollers** (incl. fixing nuts)		A	**3SE7 921-1AA**		1	1 unit	41K
	**Wire eyes** for changes in wire direction and improved power transmission at the fixing points (1 set = 4 units)	Ø 4 mm	A	**3SE7 930-1AD**		1	4 units	41K
	**Eyebolts** for fixing the wire							
	• Including M8 nut		A	**3SE7 920-1AB**		1	1 unit	41K
	• Including M10 nut		A	**3SE7 920-1AC**		1	1 unit	41K
	**Turnbuckles** for precise adjustment of the pretension							
	• M6 x 60		A	**3SE7 950-1AB**		1	1 unit	41K
	• M6 x 110		A	**3SE7 950-1AD**		1	1 unit	41K
Spare parts								
	**LED lamps,** red 24 V DC 25 mm diameter; for M20 x 1.5 connection		D	**3SX3 235**		1	1 unit	41J

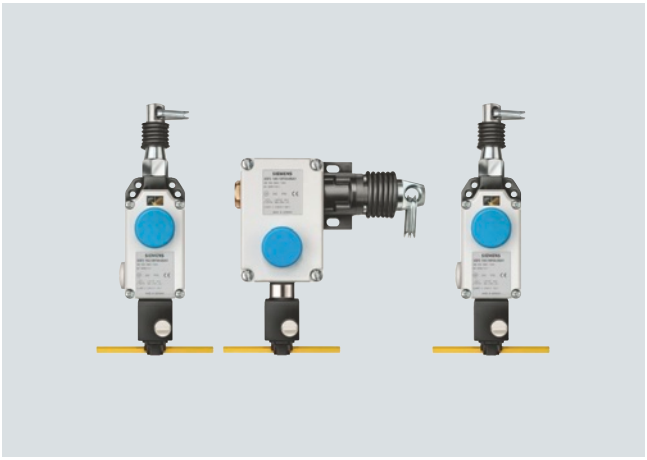
1) Diameter including casing; the diameter of the steel wire is 3.2 mm.

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3SF2 cable-operated switches for AS-Interface

Overview



Cable-operated switches with AS-Interface adapter

AS-Interface cable-operated switches can be directly connected via the bus system AS-Interface with safety-oriented communication.

The safety functions no longer have to be conventionally wired up.

Application

SIRIUS cable-operated switches are used for monitoring or for EMERGENCY-STOP devices on particularly endangered system components.

As the effective range of a cable-operated switch is only limited by the length of the trip-wire, large systems can also be protected.

Standards

The switches with positive latching are suitable for operation in EMERGENCY-STOP devices according to EN ISO 13850. They can achieve up to category 4 according to EN ISO 13849-1 (EN 954-1) or SIL 3 according to IEC 61508.

Selection and ordering data

Version	Basic switches	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
ASIsafe cable-operated switches							
Metal enclosures, IP65 (cover made of molded plastic), with dust protection, latching acc. to ISO 13850, with button reset, 2 NC contacts							
• For wire lengths up to 10 m, with alignment window	*3SE7 120-1BF00* ➔	C	**3SF2 120-1BF00-0BA1**		1	1 unit	42A
 3SF2 120-1BF00-0BA1							
• For wire lengths up to 25 m, with alignment window	*3SE7 150-1BF00* ➔	C	**3SF2 150-1BF00-0BA1**		1	1 unit	42A
 3SF2 150-1BF00-0BA1							
• For wire lengths up to 50 m	*3SE7 140-1BF00* ➔	B	**3SF2 140-1BF00-0BA1**		1	1 unit	42A
 3SF2 140-1BF00-0BA1							

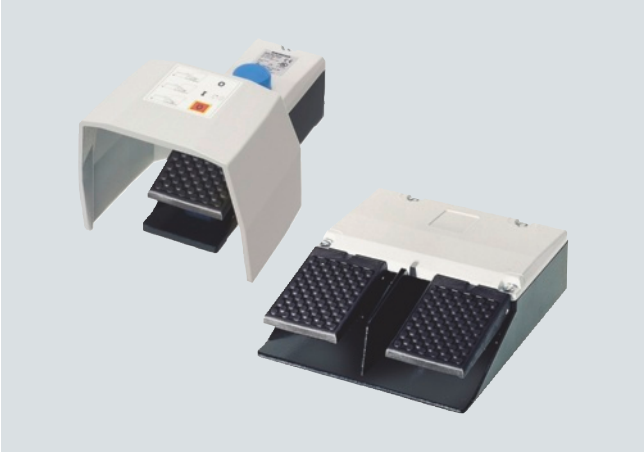
➔ Positive opening according to IEC 60947-5-1, Appendix K.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Plastic and metal enclosures

Overview



Foot switches with metal enclosures

Standard switches

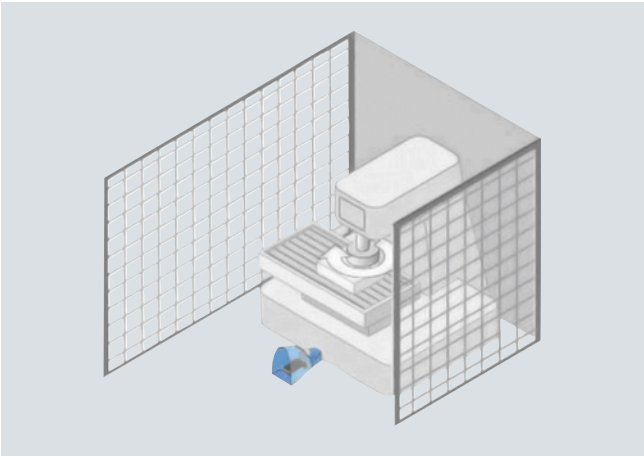
The 3SE2 9 and 3SE3 9 foot switch range encompasses versions in a metal enclosure for rugged applications as well as versions with plastic enclosure for less harsh environments. The devices can be supplied with or without a cover and have fixing holes for them to be screwed to the floor.

Depending on the particular application, the metal enclosures can be ordered in latching or momentary-contact versions. The momentary-contact pedal switch in the plastic enclosure has one microswitch (changeover contact) per actuating pedal.

Safety foot switches

The 3SE2 924-3AA20 single-pedal safety foot switches are used on machines and plants as OK switches when operation by hand is not possible and the EMERGENCY-STOP function must be available if a hazardous status arises. The switches are interlocked according to EN ISO 13850 and bear the CE mark in accordance with the machinery directive.

The safety foot switches are protected by a guard hood against accidental operation.



Application example

The switches have two contact blocks, each with one NO contact and one NC contact. The NO contacts and NC contacts of the two contact blocks are connected for easy connection of a single-phase motor. The normal workflow is initiated by pressing down the pedal as far as the pressure point so that the two NO contacts close and the motor starts to run.

If in the event of danger the pedal is pressed beyond the resistance of the pressure point, the positively driven NC contacts will open and the motor is stopped. At the same time the independent latching takes effect and holds the NC contacts in open position. This prevents the machine parts from continuing to run out of control or from being restarted.

After the hazard is eliminated, the machine can only be restarted after manually releasing the switch using a pushbutton on the top of the enclosure. The contacts are then released again and return to their initial position (the NO contacts are open and the NC contacts are closed).

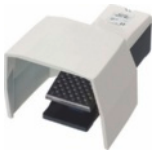
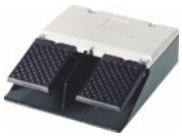
Technical specifications

Type		3SE29	3SE39
Metal and plastic enclosures			
Standards		IEC 60947-5-1	
Electrical load			
• At AC-15, 400 V			
- 1 NO + 1 NC	A	16	--
- 2 NO + 2 NC	A	6	--
- 3SE2 924-3AA20 (2 NO + 2 NC)	A	16	--
• At 250 V AC	A	–	5
Short-circuit protection			
- 1 NO + 1 NC / 3SE2 924-3AA20	A	16 (slow)	--
- 2 NO + 2 NC	A	6 (slow)	--
- 1 CO contact	A	--	5 (slow)
Mechanical endurance		> 10^6 operating cycles	
Material			
• Enclosures		Aluminum casting	Impact-resistant thermoplast, self-extinguishing according to UL 94 VO
• Covers		Thermoplast	–
• Guard hoods		Aluminum casting	Metal
Degree of protection		IP65	IP65
Ambient temperature	°C	-25 ... +80	-10 ... +75
Connection		Cable entry, metric	Cable AWG20, UL Style 2464, length 3 m

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Plastic and metal enclosures

Selection and ordering data

	Version	Slow-action contacts for each pedal		DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Metal enclosures, degree of protection IP65									
 3SE2 90.-.AA20 3SE2 91.-.AA20	**Momentary-contact foot switches, single pedal** M20 x 1.5 cable entry								
	• Without hood	1 NO + 1 NC	⊖	A	**3SE2 902-0AB20**		1	1 unit	41K
		2 NO + 2 NC	⊖	A	**3SE2 903-1AB20**		1	1 unit	41K
	• With hood	1 NO + 1 NC	⊖	A	**3SE2 902-0AA20**		1	1 unit	41K
		2 NO + 2 NC	⊖	A	**3SE2 903-1AA20**		1	1 unit	41K
	Momentary-contact foot switches, single pedal M20 x 1.5 cable entry								
	• Without hood	1 NO + 1 NC	⊖	C	**3SE2 912-2AB20**		1	1 unit	41K
	• With hood	1 NO + 1 NC	⊖	C	**3SE2 912-2AA20**		1	1 unit	41K
 3SE2 932-.AB20	**Momentary-contact foot switches, two pedals** M25 x 1.5 cable entry								
	• Without hood	1 NO + 1 NC	⊖	B	**3SE2 932-0AB20**		1	1 unit	41K
		2 NO + 2 NC	⊖	B	**3SE2 932-1AB20**		1	1 unit	41K
 3SE2 932-.AA20	• With hood	1 NO + 1 NC	⊖	B	**3SE2 932-0AA20**		1	1 unit	41K
		2 NO + 2 NC	⊖	B	**3SE2 932-1AA20**		1	1 unit	41K
 3SE2 924-3AA20	**Safety foot switches, single pedal,** with hood, M20 x 1.5 cable entry, with interlock according to ISO 13850, NO closes as momentary contact type, NC opens with latching	2 NO + 2 NC	⊖	C	**3SE2 924-3AA20**		1	1 unit	41K
Plastic enclosures, degree of protection IP65									
 3SE3 902-4CA20	**Momentary-contact pedal switches**, 3 m cable	Microswitch							
	• Single pedal								
	- Without hood	1 CO contact		B	**3SE3 902-4CB20**		1	1 unit	41K
	- With hood	1 CO contact		B	**3SE3 902-4CA20**		1	1 unit	41K
 3SE3 934-5CB20	• Two pedals, without hood	2 × 1 CO		B	**3SE3 934-5CB20**		1	1 unit	41K

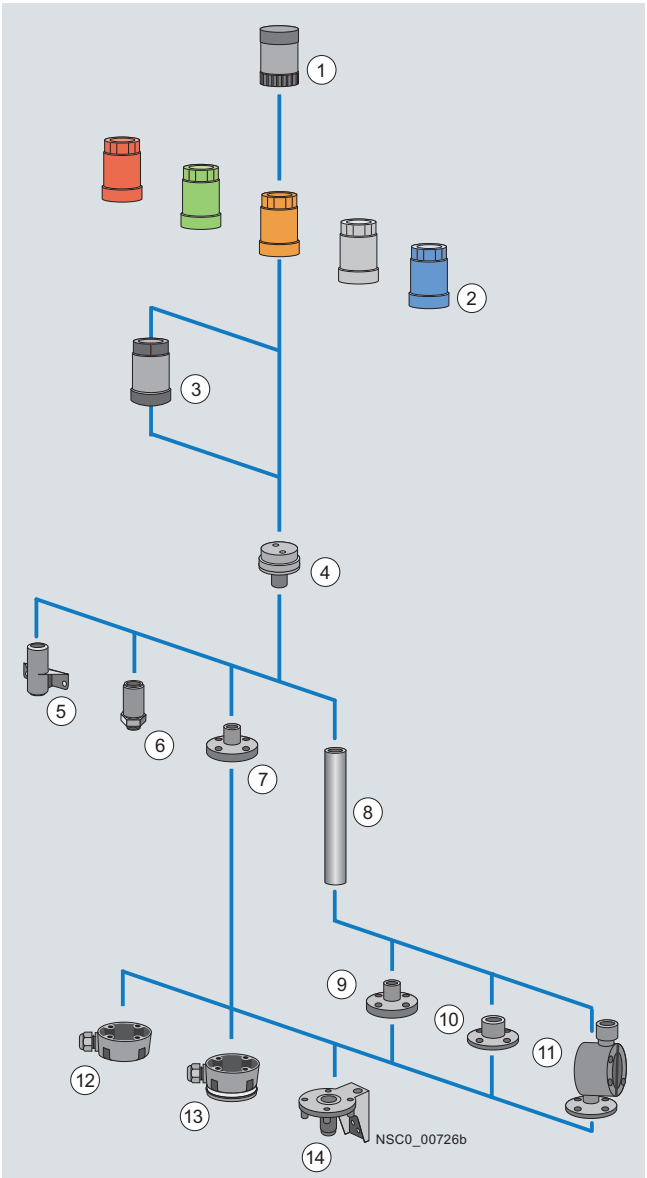
⊖ Positive opening according to IEC 60947-5-1, Appendix K.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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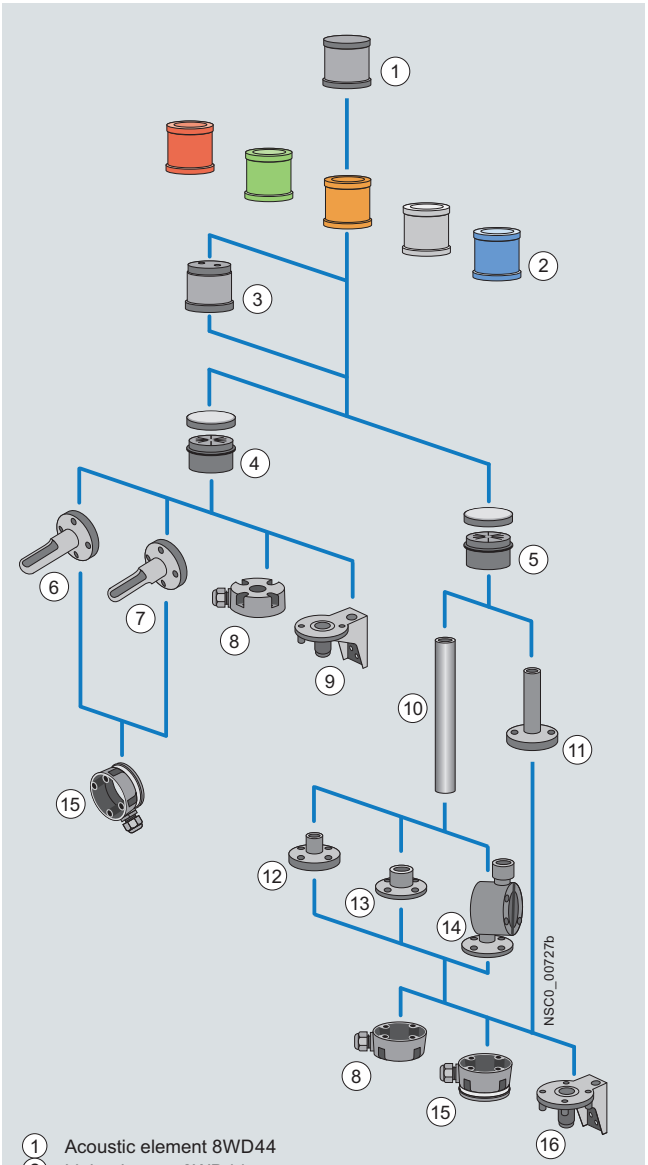
Overview

The 8WD4 signaling columns are flexible in design and versatile in use.



1 Acoustic element 8WD42 .0-0FA
2 Light element 8WD42
3 AS-Interface adapter element 8WD42 28-0BB
4 Connection element 8WD42 08-0AA
5 Bracket for wall mounting 8WD42 08-0CD
6 Adapter for single-hole mounting 8WD42 08-0EH
7 Foot for mounting 8WD42 08-0DE
8 Pipe 8WD42 08-0EF/8WD43 08-0E.
9 Foot for mounting with pipe 8WD43 08-0DB
10 Foot for mounting with pipe (> 400 mm) 8WD43 08-0DC
11 Adjustable-angle foot for mounting on pipes 8WD44 08-0DF
12 Socket 8WD43 08-0DD
13 Socket (magnetic fixing) 8WD43 08-0DE
14 Bracket for mounting with foot 8WD44 08-0CC

8WD42 signaling columns (width 50 mm) with up to 4 elements



1 Acoustic element 8WD44
2 Light element 8WD44
3 AS-Interface adapter element 8WD44 28-0BD/8WD44 28-0BE
4 Connection element for mounting on bracket, base and floor 8WD44 08-0AB/8WD44 08-0AE
5 Connection element for mounting on pipe 8WD44 08-0AA/8WD44 08-0AD
6 Bracket for wall mounting 8WD43 08-0CA
7 Bracket for wall mounting (two-sided) 8WD43 08-0CB
8 Socket 8WD43 08-0DD
9 Bracket for base mounting 8WD44 08-0CD
10 Pipe 8WD42 08-0EF/8WD43 08-0E.
11 Foot with pipe 8WD43 08-0DA
12 Foot for mounting with pipe 8WD43 08-0DB
13 Foot for mounting with pipe (> 400 mm) 8WD43 08-0DC
14 Adjustable-angle foot for mounting on pipes 8WD44 08-0DF
15 Socket (magnetic fixing) 8WD43 08-0DE
16 Bracket for mounting with foot 8WD44 08-0CC

8WD44 signaling columns (width 70 mm) with up to 5 elements

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General data

Two product series are available:

- 8WD42
  - Thermoplast enclosure, diameter 50 mm
  - Degree of protection IP54
  - Up to 4 elements can be mounted between the connection element and the cover
- 8WD44
  - Thermoplast enclosure, diameter 70 mm
  - Advanced design and significantly improved illumination
  - Faster and more flexible connection using spring-type terminals
  - Integrated degree of protection IP65
  - Up to 5 elements can be mounted between the connection element and the cover



Signaling columns, mounting examples

The illustrated examples are from the left:

- 8WD42: Cover (no No.), 4 light elements ②, connection element ④, pipe ⑧, foot ⑨
- 8WD44: Acoustic element with integral cover ①, 2 light elements ②, connection element ⑤, foot with pipe ⑪
- 8WD44: Cover (no No.), 4 light elements ②, AS-Interface adapter element ③, connection element ④, bracket for wall mounting ⑥
- 8WD44: Cover (no No.), 3 light elements ②, AS-Interface adapter element ③, connection element ⑤, foot with pipe ⑪

Note:

The cover is supplied with the connection element; it is not needed with the acoustic element.

Benefits

- Choice of various light and acoustic elements with different functions:
  continuous light, blinklight, flashlight and rotating light; buzzer and siren
- Light elements with particularly long-lasting LEDs
- Variety of colors: red, yellow, green, white or blue
- Optimized illumination through improved prism technology with the 8WD44
- Acoustic elements can be adjusted in tone and volume
- Extremely resistant to shock and vibrations
- Easy connection and quick lamp change with secure bayonet mechanism
- Communication capability through connection to AS-Interface

Application

8WD4 signaling columns are used in machines or in automatic processes for monitoring complex procedures or as visual or acoustic warning devices in emergency situations, e.g. for displaying individual assembly stages.

Communication capability

Connection to AS-Interface

The 8WD4 signaling columns can be directly connected to the AS-Interface bus system through an adapter element that can be integrated in the column. Wiring outlay is reduced as the result. The two-wire bus cable is fixed to the terminals in the connection element. Up to four signaling elements can be mounted on it using an adapter element.

A/B technology enables the connection of up to 62 slaves on one AS-Interface system.

Connection

The signaling elements are wired up using the screw terminals in the connection element, screw terminals on the 8WD42 and screw or spring-type terminals on the 8WD44.

Cable outlet

The connecting cables can be guided either downwards or sideways through the cable gland using an adapter that can be screwed under the foot. This makes wiring easier if there is no access from below.

Connection to AS-Interface

8WD42:

The two-wire bus cable is fixed to the screw terminals in the connection element. The adapter element must be the first module to be mounted on the connection element. A maximum of 4 signaling elements can then be mounted on it.

The adapter element 8WD42 28-0BB is a standard slave.

8WD44:

The two-wire bus cable is fixed to the screw or spring-type terminals in the connection element. The adapter element must be the first module to be mounted on the connection element. The signaling elements can then be mounted on it.

The adapter element 8WD44 28-0BE is a standard slave. A maximum of 4 signaling elements can be mounted on it.

The adapter element 8WD44 28-0BD with A/B technology enables the connection of up to 62 slaves on one AS-Interface system. The addressing socket provides user-friendly parameterization of the AS-Interface elements. A maximum of 3 signaling elements can be mounted on it.

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Technical specifications

Type		8WD42	8WD44
General data			
Approvals		UL, CSA	UL, CSA
Light and acoustic elements			
Rated voltage, power consumption			
Light elements with incandescent lamp		(AC values for 50/60 Hz)	(AC values for 50/60 Hz)
• Continuous light		12 V, 24 V, 115 V, 230 V AC/DC	12 V, 24 V, 115 V, 230 V AC/DC
• Blinklight		24 V AC/DC/125 mA; 115 V AC/20 mA; 230 V AC/15 mA	24 V AC/DC/125 mA; 115 V AC/20 mA; 230 V AC/15 mA
• Flashlights		--	24 V DC/125 mA; 115 V AC/20 mA; 230 V AC/35 mA
• Max. inrush current, blinklight/flashlight		--	500 mA
Light elements with integrated LED			
• Continuous light		24 V AC/DC/60 mA	24 V AC/DC/45 mA; 115 V AC/DC/25 mA; 230 V AC/25 mA
• Blinklight		--	24 V AC/DC/40 mA
• Rotating light		--	24 V AC/DC/70 mA
Acoustic elements			
• Buzzer element (tone: pulsating or continuous, 85 dB)		24 V AC/DC/25 mA; 115 V AC/DC/25 mA; 230 V AC/25 mA	24 V AC/DC/25 mA; 115 V AC/DC/25 mA; 230 V AC/25 mA
• Siren element (8 tones + amplification can be set, 100 dB)		--	24 V AC/DC/80 mA; 115 V AC/30 mA; 230 V AC/16 mA
• Siren element (108 dB)		--	24 V DC/100 mA
Power consumption			
• Incandescent lamps, base BA 15d	W	max. 5	7
• Flashlight, flash energy	Ws	–	2
Endurance			
• Flashlights		4×10^6 flashes	4×10^6 flashes
AS-Interface adapter elements			
IO code/ID code		8/F	8/E
Power supply		Through bus cable	Through bus cable
• Operational voltage	V	18.5 ... 31.6	18.5 ... 31.6
• Power consumption I_{max}	mA	50	100
Protective measures			
• Watchdog		✓	✓
• Short-circuit/overload protection		External back-up fuse M 1.6 A	✓
• Reverse polarity protection		✓	✓
• Induction protection		N/A	✓
Outputs		4 Relay outputs	3 solid-state outputs
• Load voltage		External auxiliary voltage	through bus cable or external auxiliary voltage, switch-selectable
	V	0 ... 30 DC	
	V	0 ... 230 AC	
• Current carrying capacity ΣI_{max}			
- With external auxiliary voltage	A	1.5	0.3
- Without external auxiliary voltage	A	--	0.2
Operating temperature	°C	–20 ... +50	–20 ... +50
Enclosures			
Enclosure material		Thermoplast (polyamide), impact-resistant, black	Thermoplast (polyamide), impact-resistant, black
Light elements		Thermoplast (polycarbonate)	Thermoplast (polycarbonate)
Mounting			
• Horizontal (floor mounting, foot with 25 mm Ø pipe)		✓	✓
• Horizontal (single-hole mounting)		✓	--
• Vertical with bracket		✓	✓
Degree of protection			
• Light elements		IP54	IP65 (seal premounted with every module)
• Acoustic elements, AS-i adapter elements		IP54	IP65
Operating temperature	°C	–20 ... +50	–20 ... +50
Connection		M3 screw terminal	Spring-type terminals/M3 screw terminals
• Conductor cross-sections	mm^2	Max. 2.5	Max. 2.5
• Tightening torque	Nm	Max. 0.5	– / Max. 0.5

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8WD42 signaling columns, 50 mm diameter

Overview

Features:
- Thermoplast enclosure, diameter 50 mm
- Degree of protection IP54
- Up to 4 elements can be mounted

Selection and ordering data

	Version	Rated voltage	Color	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		V							
Acoustic elements[1]									
	**Buzzer elements** 80 dB, pulsating or continuous tone, adjustable by means of a wire jumper	24 AC/DC	Black	A	**8WD42 20-0FA**		1	1 unit	41J
		115 AC		A	**8WD42 40-0FA**		1	1 unit	41J
		230 AC		A	**8WD42 50-0FA**		1	1 unit	41J
Light elements for incandescent lamps/LEDs, BA 15d bases[2]									
	**Continuous light elements**	24 ... 230 AC/DC	Red	A	**8WD42 00-1AB**		1	1 unit	41J
			Green	A	**8WD42 00-1AC**		1	1 unit	41J
			Yellow	A	**8WD42 00-1AD**		1	1 unit	41J
			Clear	A	**8WD42 00-1AE**		1	1 unit	41J
			Blue	A	**8WD42 00-1AF**		1	1 unit	41J
Light elements with integrated LED									
	**Continuous light elements**	24 AC/DC	Red	A	**8WD42 20-5AB**		1	1 unit	41J
			Green	A	**8WD42 20-5AC**		1	1 unit	41J
			Yellow	A	**8WD42 20-5AD**		1	1 unit	41J
			Clear	X	**8WD42 20-5AE**		1	1 unit	41J
			Blue	X	**8WD42 20-5AF**		1	1 unit	41J
	**Blinklight elements**	24 AC/DC	Red	A	**8WD42 20-5BB**		1	1 unit	41J
			Green	A	**8WD42 20-5BC**		1	1 unit	41J
			Yellow	A	**8WD42 20-5BD**		1	1 unit	41J
			Clear	A	**8WD42 20-5BE**		1	1 unit	41J
			Blue	A	**8WD42 20-5BF**		1	1 unit	41J
		115 AC	Red	A	**8WD42 40-5BB**		1	1 unit	41J
			Green	A	**8WD42 40-5BC**		1	1 unit	41J
			Yellow	A	**8WD42 40-5BD**		1	1 unit	41J
			Clear	D	**8WD42 40-5BE**		1	1 unit	41J
			Blue	D	**8WD42 40-5BF**		1	1 unit	41J
		230 AC	Red	A	**8WD42 50-5BB**		1	1 unit	41J
			Green	A	**8WD42 50-5BC**		1	1 unit	41J
			Yellow	A	**8WD42 50-5BD**		1	1 unit	41J
			Clear	A	**8WD42 50-5BE**		1	1 unit	41J
			Blue	A	**8WD42 50-5BF**		1	1 unit	41J
Adapter elements for AS-Interface									
	**AS-Interface adapter elements** with external auxiliary voltage	For 4 signaling elements 24 V DC	Black	A	**8WD42 28-0BB**		1	1 unit	41J
Connection elements[3]									
	**Connection elements with cover** For mounting on pipes, floors and angles		Black	A	**8WD42 08-0AA**		1	1 unit	41J

[1] One acoustic element can be mounted per signaling column. The cover is included in the scope of supply of the acoustic elements and fixed in place.

[2] The lamp is not included in the scope of supply. Please order separately.

[3] The connection element with cover is an essential part for assembling the signaling columns.

Note:

For mounting and configuring aid see the publication "Versatile, robust, communication-capable: SIRIUS signaling columns and integrated signal lamps", Order No. E20001-A670-P305.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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8WD42 signaling columns, 50 mm diameter

	Version	Rated voltage	Color	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		V							
Lamps									
	**Incandescent lamps, 5 W**								
	Base BA 15d	24 AC/DC		A	**8WD43 28-1XX**		1	10 units	41J
		115 AC		A	**8WD43 48-1XX**		1	10 units	41J
		230 AC		A	**8WD43 58-1XX**		1	10 units	41J
	**LEDs**								
	Base BA 15d	24 AC/DC	Red	A	**8WD44 28-6XB**		1	1 unit	41J
			Green	A	**8WD44 28-6XC**		1	1 unit	41J
			Yellow	A	**8WD44 28-6XD**		1	1 unit	41J
			Clear	A	**8WD44 28-6XE**		1	1 unit	41J
			Blue	A	**8WD44 28-6XF**		1	1 unit	41J
		115 AC	Red	A	**8WD44 48-6XB**		1	1 unit	41J
			Green	A	**8WD44 48-6XC**		1	1 unit	41J
			Yellow	A	**8WD44 48-6XD**		1	1 unit	41J
			Clear	A	**8WD44 48-6XE**		1	1 unit	41J
			Blue	A	**8WD44 48-6XF**		1	1 unit	41J
		230 AC	Red	A	**8WD44 58-6XB**		1	1 unit	41J
			Green	A	**8WD44 58-6XC**		1	1 unit	41J
			Yellow	A	**8WD44 58-6XD**		1	1 unit	41J
			Clear	A	**8WD44 58-6XE**		1	1 unit	41J
			Blue	A	**8WD44 58-6XF**		1	1 unit	41J
Mounting									
	**Feet, single**	Plastic, for mounting on pipes		A	**8WD43 08-0DB**		1	1 unit	41J
		Metal, for pipe lengths > 400 mm		A	**8WD43 08-0DC**		1	1 unit	41J
		Plastic, for floor mounting (without pipe)		A	**8WD42 08-0DE**		1	1 unit	41J
	**Adjustable-angle feet** for positioning in 7.5° increments[1]	Plastic, for mounting on pipes, incl. rubber seal		X	**8WD44 08-0DF**		1	1 unit	41J
	**Pipes, single**	Length 100 mm		A	**8WD42 08-0EF**		1	1 unit	41J
		Length 150 mm		A	**8WD43 08-0EE**		1	1 unit	41J
		Length 250 mm		A	**8WD43 08-0EA**		1	1 unit	41J
		Length 400 mm		A	**8WD43 08-0EB**		1	1 unit	41J
		Length 1000 mm		A	**8WD43 08-0ED**		1	1 unit	41J
	**Sockets for feet**	Side cable outlet		A	**8WD43 08-0DD**		1	1 unit	41J
		Side cable outlet, with magnetic fixing[2]		A	**8WD43 08-0DE**		1	1 unit	41J
	**Brackets for mounting with foot**			A	**8WD44 08-0CC**		1	1 unit	41J
	**Brackets for wall mounting** (plastic)	Mounting without feet and pipe		A	**8WD42 08-0CD**		1	1 unit	41J
	**Adapters for single-hole mounting**	Mounting without feet and pipe, with M18 thread and fixing nut		A	**8WD42 08-0EH**		1	1 unit	41J

For labeling panels see 8WD44, page 13/115.

1) Markings for 30°, 45°, 60° and 90°.

2) For horizontal mounting, only 1 element is recommended.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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8WD44 signaling columns, 70 mm diameter

Overview

Features:

- Thermoplast enclosure, diameter 70 mm
- Advanced design and significantly improved illumination
- Fast and flexible connection using spring-type terminals
- Integrated degree of protection IP65
- Up to 5 elements can be mounted

Selection and ordering data

	Version	Rated voltage	Color	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		V							
Acoustic elements[1]									
	**Buzzer elements** 85 dB, pulsating or continuous tone, adjustable by means of a wire jumper	24 AC/DC	Black	A	**8WD44 20-0FA**		1	1 unit	41J
		115 AC		A	**8WD44 40-0FA**		1	1 unit	41J
		230 AC		A	**8WD44 50-0FA**		1	1 unit	41J
	Siren elements, multi-tone, 100 dB, 8 tones and volume are adjustable	24 AC/DC	Black	A	**8WD44 20-0EA2**		1	1 unit	41J
		115 AC		A	**8WD44 40-0EA2**		1	1 unit	41J
		230 AC		A	**8WD44 50-0EA2**		1	1 unit	41J
	Siren elements 108 dB, IP40	24 DC	Black	A	**8WD44 20-0EA**		1	1 unit	41J
Light elements for incandescent lamps/LEDs, BA 15d bases[2]									
	**Continuous light elements**	12 ... 230 AC/DC	Red	A	**8WD44 00-1AB**		1	1 unit	41J
			Green	A	**8WD44 00-1AC**		1	1 unit	41J
			Yellow	A	**8WD44 00-1AD**		1	1 unit	41J
			Clear	A	**8WD44 00-1AE**		1	1 unit	41J
			Blue	A	**8WD44 00-1AF**		1	1 unit	41J
	**Blinklight elements**	24 AC/DC	Red	A	**8WD44 20-1BB**		1	1 unit	41J
			Green	A	**8WD44 20-1BC**		1	1 unit	41J
			Yellow	A	**8WD44 20-1BD**		1	1 unit	41J
			Clear	A	**8WD44 20-1BE**		1	1 unit	41J
			Blue	A	**8WD44 20-1BF**		1	1 unit	41J
		115 AC	Red	A	**8WD44 40-1BB**		1	1 unit	41J
			Green	A	**8WD44 40-1BC**		1	1 unit	41J
			Yellow	A	**8WD44 40-1BD**		1	1 unit	41J
			Clear	A	**8WD44 40-1BE**		1	1 unit	41J
			Blue	A	**8WD44 40-1BF**		1	1 unit	41J
		230 AC	Red	A	**8WD44 50-1BB**		1	1 unit	41J
			Green	A	**8WD44 50-1BC**		1	1 unit	41J
			Yellow	A	**8WD44 50-1BD**		1	1 unit	41J
			Clear	A	**8WD44 50-1BE**		1	1 unit	41J
			Blue	A	**8WD44 50-1BF**		1	1 unit	41J
Light elements with integrated flash lamps[3]									
	**Flashlight elements** with integrated electronic flash	24 DC	Red	A	**8WD44 20-0CB**		1	1 unit	41J
			Green	A	**8WD44 20-0CC**		1	1 unit	41J
			Yellow	A	**8WD44 20-0CD**		1	1 unit	41J
			Clear	A	**8WD44 20-0CE**		1	1 unit	41J
			Blue	A	**8WD44 20-0CF**		1	1 unit	41J
		115 AC	Red	A	**8WD44 40-0CB**		1	1 unit	41J
			Green	D	**8WD44 40-0CC**		1	1 unit	41J
			Yellow	A	**8WD44 40-0CD**		1	1 unit	41J
			Clear	D	**8WD44 40-0CE**		1	1 unit	41J
			Blue	D	**8WD44 40-0CF**		1	1 unit	41J
		230 AC	Red	A	**8WD44 50-0CB**		1	1 unit	41J
			Green	A	**8WD44 50-0CC**		1	1 unit	41J
			Yellow	A	**8WD44 50-0CD**		1	1 unit	41J
			Clear	A	**8WD44 50-0CE**		1	1 unit	41J
			Blue	A	**8WD44 50-0CF**		1	1 unit	41J

1) One acoustic element can be mounted per signaling column. The cover is included in the scope of supply of the acoustic elements and fixed in place.

2) The lamp is not included in the scope of supply. Please order separately.

3) The lamp is included in the scope of supply.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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8WD44 signaling columns, 70 mm diameter

	Version	Rated voltage	Color	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		V							
Light elements with integrated LED									
	**Continuous light elements**	24 AC/DC	Red	A	**8WD44 20-5AB**		1	1 unit	41J
			Green	A	**8WD44 20-5AC**		1	1 unit	41J
			Yellow	A	**8WD44 20-5AD**		1	1 unit	41J
			Clear	A	**8WD44 20-5AE**		1	1 unit	41J
			Blue	A	**8WD44 20-5AF**		1	1 unit	41J
		115 AC	Red	A	**8WD44 40-5AB**		1	1 unit	41J
			Green	A	**8WD44 40-5AC**		1	1 unit	41J
			Yellow	A	**8WD44 40-5AD**		1	1 unit	41J
			Clear	A	**8WD44 40-5AE**		1	1 unit	41J
			Blue	A	**8WD44 40-5AF**		1	1 unit	41J
		230 AC	Red	A	**8WD44 50-5AB**		1	1 unit	41J
			Green	A	**8WD44 50-5AC**		1	1 unit	41J
			Yellow	A	**8WD44 50-5AD**		1	1 unit	41J
			Clear	A	**8WD44 50-5AE**		1	1 unit	41J
			Blue	A	**8WD44 50-5AF**		1	1 unit	41J
	**Blinklight elements**	24 AC/DC	Red	A	**8WD44 20-5BB**		1	1 unit	41J
			Green	A	**8WD44 20-5BC**		1	1 unit	41J
			Yellow	A	**8WD44 20-5BD**		1	1 unit	41J
			Clear	X	**8WD44 20-5BE**		1	1 unit	41J
			Blue	A	**8WD44 20-5BF**		1	1 unit	41J
		115 AC	Red	A	**8WD44 40-5BB**		1	1 unit	41J
			Green	A	**8WD44 40-5BC**		1	1 unit	41J
			Yellow	A	**8WD44 40-5BD**		1	1 unit	41J
			Clear	A	**8WD44 40-5BE**		1	1 unit	41J
			Blue	A	**8WD44 40-5BF**		1	1 unit	41J
		230 AC	Red	A	**8WD44 50-5BB**		1	1 unit	41J
			Green	A	**8WD44 50-5BC**		1	1 unit	41J
			Yellow	A	**8WD44 50-5BD**		1	1 unit	41J
			Clear	A	**8WD44 50-5BE**		1	1 unit	41J
			Blue	A	**8WD44 50-5BF**		1	1 unit	41J
	**Rotating light elements**	24 AC/DC	Red	A	**8WD44 20-5DB**		1	1 unit	41J
			Green	A	**8WD44 20-5DC**		1	1 unit	41J
			Yellow	A	**8WD44 20-5DD**		1	1 unit	41J
Adapter elements for AS-Interface									
	**AS-Interface adapter elements**								
	With/without external auxiliary voltage, switchable								
	• A/B technology	For 3 signaling elements 24 V DC	Black	A	**8WD44 28-0BD**		1	1 unit	41J
	• Standard AS-i	For 4 signaling elements 24 V DC	Black	A	**8WD44 28-0BE**		1	1 unit	41J
Connection elements[1)]									
	**Connection elements with cover**		Black						
	Screw terminals								
	• For mounting on pipes			A	**8WD44 08-0AA**		1	1 unit	41J
	• For mounting on brackets and floors			A	**8WD44 08-0AB**		1	1 unit	41J
	Spring-type terminals								
	• For mounting on pipes			A	**8WD44 08-0AD**		1	1 unit	41J
	• For mounting on brackets and floors			A	**8WD44 08-0AE**		1	1 unit	41J
	Cover (replacement)			A	**8WD44 08-0XA**		1	1 unit	41J

[1)] The connection element with cover is an essential part for assembling the signaling columns.

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8WD44 signaling columns, 70 mm diameter

	Version		DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Mounting								
	**Foot with pipe**	Pipe length 100 mm	A	**8WD43 08-0DA**		1	1 unit	41J
	**Feet, single**	Plastic, for mounting on pipes	A	**8WD43 08-0DB**		1	1 unit	41J
		Metal, for pipe lengths > 400 mm	A	**8WD43 08-0DC**		1	1 unit	41J
	**Adjustable-angle feet** for positioning in 7.5° increments[1]	Plastic, for mounting on pipes, incl. rubber seal	X	**8WD44 08-0DF**		1	1 unit	41J
	**Pipes, single**	Length 100 mm	A	**8WD42 08-0EF**		1	1 unit	41J
		Length 150 mm	A	**8WD43 08-0EE**		1	1 unit	41J
		Length 250 mm	A	**8WD43 08-0EA**		1	1 unit	41J
		Length 400 mm	A	**8WD43 08-0EB**		1	1 unit	41J
		Length 1000 mm	A	**8WD43 08-0ED**		1	1 unit	41J
	**Sockets for feet**	Side cable outlet (can also be used without feet)	A	**8WD43 08-0DD**		1	1 unit	41J
		Side cable outlet, with magnetic fixing[2]	A	**8WD43 08-0DE**		1	1 unit	41J
	**Brackets for wall mounting** (mounting without feet and pipe)	For single-sided mounting	A	**8WD43 08-0CA**		1	1 unit	41J
		For double-sided mounting	A	**8WD43 08-0CB**		1	1 unit	41J
	**Brackets for mounting with foot**		A	**8WD44 08-0CC**		1	1 unit	41J
	**Brackets for base mounting**	Mounting without feet and pipe	A	**8WD44 08-0CD**		1	1 unit	41J
	Adapter for mounting on pipes according to NPT	Mounting on pipes, ∅ 25 mm, with NPT 1/2" thread	A	**8WD43 08-0DF**		1	1 unit	41J

[1] Markings for 30°, 45°, 60° and 90°.

[2] For horizontal mounting, only 1 element is recommended.

Note:

For mounting and configuring aid see the publication "Versatile, robust, communication-capable: SIRIUS signaling columns and integrated signal lamps", Order No. E20001-A670-P305.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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8WD44 signaling columns, 70 mm diameter

	Version	Rated voltage	Color	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		V							
Lamps									
	**Incandescent lamps, 5 W**								
	Base BA 15d	24 AC/DC		A	**8WD43 28-1XX**		1	10 units	41J
		115 AC		A	**8WD43 48-1XX**		1	10 units	41J
		230 AC		A	**8WD43 58-1XX**		1	10 units	41J
	**LEDs**								
	Base BA 15d	24 AC/DC	Red	A	**8WD44 28-6XB**		1	1 unit	41J
			Green	A	**8WD44 28-6XC**		1	1 unit	41J
			Yellow	A	**8WD44 28-6XD**		1	1 unit	41J
			Clear	A	**8WD44 28-6XE**		1	1 unit	41J
			Blue	A	**8WD44 28-6XF**		1	1 unit	41J
		115 AC	Red	A	**8WD44 48-6XB**		1	1 unit	41J
			Green	A	**8WD44 48-6XC**		1	1 unit	41J
			Yellow	A	**8WD44 48-6XD**		1	1 unit	41J
			Clear	A	**8WD44 48-6XE**		1	1 unit	41J
			Blue	A	**8WD44 48-6XF**		1	1 unit	41J
		230 AC	Red	A	**8WD44 58-6XB**		1	1 unit	41J
			Green	A	**8WD44 58-6XC**		1	1 unit	41J
			Yellow	A	**8WD44 58-6XD**		1	1 unit	41J
			Clear	A	**8WD44 58-6XE**		1	1 unit	41J
			Blue	A	**8WD44 58-6XF**		1	1 unit	41J
Inscriptions									
	**Labeling panels** With fixing accessories for mounting on pipe ∅ 25 mm Inscription area/ step 50 mm x 140 mm Suitable for standard labels, e.g. • Zweckform 3425 • Herma 4457			A	**8WD44 08-0FA**		1	1 unit	41J

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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8WD53 integrated signal lamps, 70 mm diameter

Overview



Integrated signal lamps

Design

Features:

- Thermoplast enclosures, diameter 70 mm
- Degree of protection IP65
- Rated voltage 24 V, 115 V, 230 V AC/DC
- Ambient temperature -20 to +50 °C, incandescent lamp up to 60 °C

The special shape of the integrated signal lamps means that the light is emitted optimally in every direction (to the sides and upwards). Continuous lights (with incandescent lamp or LED) and single-flash lights are available in five colors.

The LED versions of the integrated signal lamps offer a considerably longer endurance than the incandescent lamp versions.

All integrated signal lamps have a high degree of protection IP65 and are made of a material highly resistant to impact.

Mounting

8WD53 integrated signal lamps can be mounted directly at any point of the machine for the purpose of giving visual signals. They are mounted by means of a PG29 screw base with nut.

Selection and ordering data

	Version	Rated voltage	Color	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		V							
Luminaires for incandescent lamps/LED, BA 15d base									
	**Continuous light**[1]	12 ... 230 AC/DC	Red	A	**8WD53 00-1AB**		1	1 unit	41J
			Green	A	**8WD53 00-1AC**		1	1 unit	41J
			Yellow	A	**8WD53 00-1AD**		1	1 unit	41J
			Clear	A	**8WD53 00-1AE**		1	1 unit	41J
			Blue	A	**8WD53 00-1AF**		1	1 unit	41J
Luminaires with integrated flash lamp									
	**Single-flash light** with integrated electronic flash	24 AC/DC	Red	A	**8WD53 20-0CB**		1	1 unit	41J
			Green	D	**8WD53 20-0CC**		1	1 unit	41J
			Yellow	A	**8WD53 20-0CD**		1	1 unit	41J
			Clear	A	**8WD53 20-0CE**		1	1 unit	41J
			Blue	A	**8WD53 20-0CF**		1	1 unit	41J
		115 AC	Red	A	**8WD53 40-0CB**		1	1 unit	41J
			Green	D	**8WD53 40-0CC**		1	1 unit	41J
			Yellow	D	**8WD53 40-0CD**		1	1 unit	41J
			Clear	D	**8WD53 40-0CE**		1	1 unit	41J
			Blue	D	**8WD53 40-0CF**		1	1 unit	41J
		230 AC	Red	A	**8WD53 50-0CB**		1	1 unit	41J
			Green	D	**8WD53 50-0CC**		1	1 unit	41J
			Yellow	A	**8WD53 50-0CD**		1	1 unit	41J
			Clear	A	**8WD53 50-0CE**		1	1 unit	41J
			Blue	D	**8WD53 50-0CF**		1	1 unit	41J
Luminaires with integrated LED									
	**Continuous light**	24 AC/DC	Red	A	**8WD53 20-5AB**		1	1 unit	41J
			Green	A	**8WD53 20-5AC**		1	1 unit	41J
			Yellow	A	**8WD53 20-5AD**		1	1 unit	41J
	Blinklight lamps	24 AC/DC	Red	A	**8WD53 20-5BB**		1	1 unit	41J
			Green	D	**8WD53 20-5BC**		1	1 unit	41J
			Yellow	A	**8WD53 20-5BD**		1	1 unit	41J
	Rotating light	24 AC/DC	Red	A	**8WD53 20-5DB**		1	1 unit	41J
			Green	A	**8WD53 20-5DC**		1	1 unit	41J
			Yellow	A	**8WD53 20-5DD**		1	1 unit	41J

For incandescent lamps and LEDs see "Signaling Columns", page 13/115.

[1] Lamp not included in scope of supply. Please order separately.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Parametrization, Configuration and Visualization with SIRIUS

14



Price Groups
PG 42B, 42C, 42D, 42H, 42J, 401

14/2 **Introduction**

14/5 **Soft Starter ES**

14/9 **SIRIUS 3RW44 soft starter block library for SIMATIC PCS 7**

14/11 **Motor Starter ES**

14/15 **SIRIUS motor starter block library for SIMATIC PCS 7**

14/17 **SIMOCODE ES**

14/21 **SIMOCODE pro block library for SIMATIC PCS 7**

14/22 **AS-Interface block library for SIMATIC PCS 7** new

14/23 **Modular Safety System ES** new

14/27 **ECOFAST ES**

More information can be found on the Internet: see opening information, page 13

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Introduction

Overview

Engineering software



SIRIUS ES engineering software (E-SW)

The programs of the SIRIUS ES software family enable:

- Clearly arranged configuration of device functions and their parameters – online and offline
- Efficient diagnostics functions and display of the most important measured values
- Time savings through shorter startup times

The SIRIUS ES programs such as Motor Starter ES, Soft Starter ES and SIMOCODE ES are available in three versions which differ in user-friendliness, scope of functions and price (for details see the descriptions of the individual products).

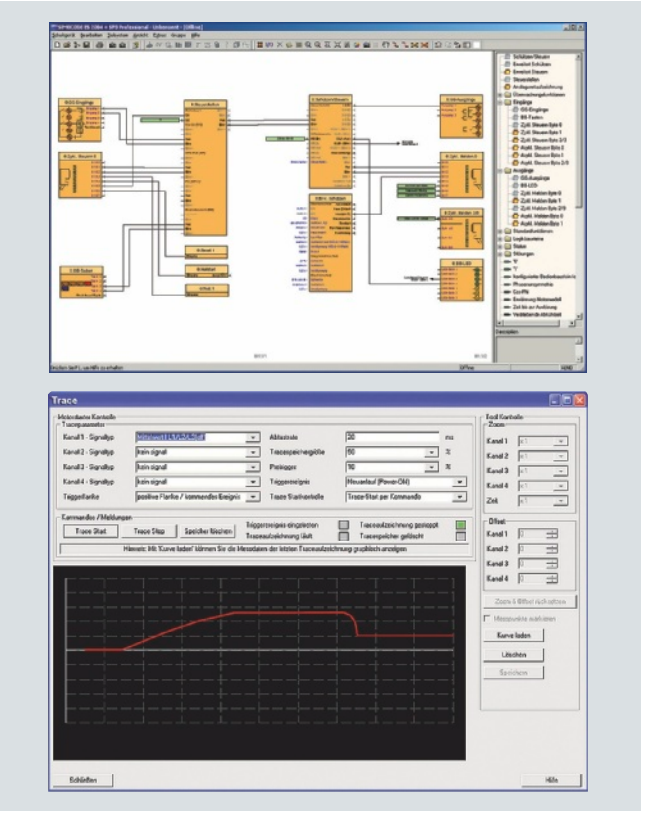
SIRIUS ES	Basic	Standard	Premium
Local interface on the device (system interface)	✓	✓	✓
Basic functions for parameterizing the devices			
• Parameter assignment	✓	✓	✓
• Operating	✓	✓	✓
• Diagnostics	✓	✓	✓
• Test	✓	✓	✓
Standard functionality			
• Parameterizing with the integrated graphics editor[1)]	--	✓	✓
• Creating typicals	--	✓	✓
• Exporting parameters	--	✓	✓
Complete functionality			
• Group functions	--	--	✓
• S7 Routing	--	--	✓
• Teleservice through MPI	--	--	✓
• STEP 7 object manager	--	--	✓
• PROFIBUS interface	--	--	✓

✓ Function available
-- Function not available

1) Depending on SIRIUS ES program.

In addition to device-specific parameterization, the programs of the SIRIUS ES software family also offer the following functionality in a uniform look and feel. These functions are available without difference in many SIRIUS ES programs.

- Standards-conform printouts
  The programs of the SIRIUS ES software family make machine documentation far easier. They enable parameterization printouts according to EN ISO 7200. The elements to be printed are easy to select and group as required.
- Easy creation of typicals
  Typicals can be created for devices and applications with only minimum differences in their parameters. These typicals contain all the parameters which are needed for the parameterization. In addition it is possible to specify which of these parameters are fixed and which can be adapted, e.g. by the startup engineer.
- Group function
  For the user-friendly parameterization of numerous devices or applications of the same type, the programs of the SIRIUS ES software family offer a group function which enables the parameterization of several devices to be read out or written through PROFIBUS. In conjunction with typicals it is even possible to selectively adapt the same parameters in any number of parameterizations.
- Teleservice through MPI
  The Premium versions of the SIRIUS ES software families support the use of MPI Teleservice (comprising the Teleservice software and various Teleservice adapters) for remote diagnostics of the devices. This facilitates diagnostics and maintenance, and it shortens response times for service purposes.



Efficient engineering and startup with graphic interfaces and diagnostics options

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Introduction

Types of delivery and license

The programs of the SIRIUS ES software family are available as follows:

- Floating license – the license for any one user at any one time
  - Authorizes any one user
  - Independent of the number of installations (unlike the single license which is allowed to be installed once only)
  - Only the actual use of the program has to be licensed
  - Trial license (free use of all program functions for 14 days for test and evaluation purposes, included on every product CD, available in the download file of the SIRIUS ES program in the Service&Support portal)

Following delivery versions are available in addition for the programs of the SIRIUS ES software family:

- Upgrade
  Switching from an old to a new version with expanded functions, e.g. upgrade from Motor Starter ES 2006 to Motor Starter ES 2007
- Powerpack
  Special pack for switching within the same software version to a more powerful version with more functionality, e.g. Powerpack Motor Starter ES 2007 for switching from Standard to Premium
- Software Update Service
  To keep you up to date at all times, we offer a special service which supplies you automatically with all service packs and upgrades.
- License Download
  User-friendly license key download from our Mall (currently only for customers from Germany) as an easy and quick way for you to receive additional licenses for your software.

Order No. scheme for the engineering software

Digit of the Order No.	1st - 4th	5th	6th	7th		8th	9th	10th	11th	12th		13th	14th	15th	16th
	□□□□	□	□	□	–	□	□	□	□	□	–	□	□	□	□
SIRIUS Engineering software	**3 Z S 1**														
Software type		□													
Package designation 1			□												
Package designation 2				□											
Package designation 3						□									
Hardware, operating system							□								
Data carriers								□							
Serial number									□						
Function status										□					
Product category												**0**			
Language													□		
Delivery versions														□	
License type															□
Example	**3 Z S 1**	**3**	**1**	**3**	**–**	**4**	**C**	**C**	**1**	**0**	**–**	**0**	**Y**	**A**	**5**

Note:

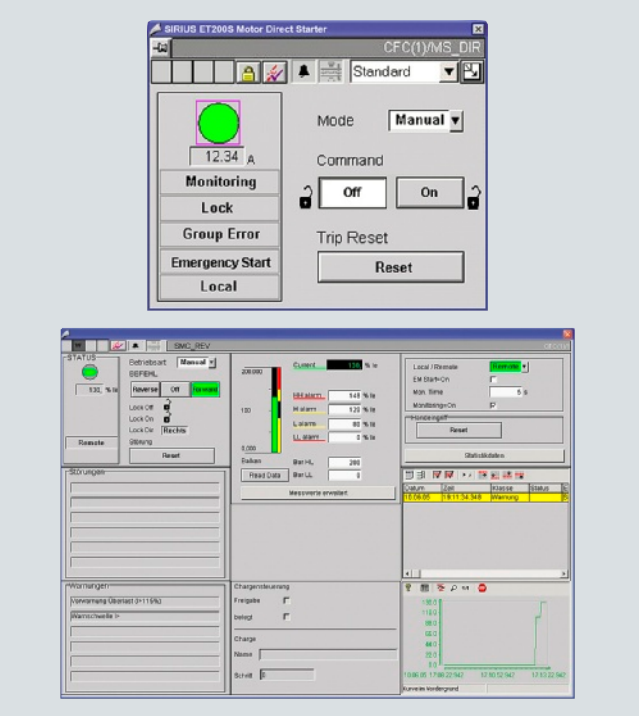
The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quote in the catalog in the Selection and ordering data.

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Introduction

Block libraries for SIMATIC PCS 7



Motor block faceplate and SIMOCODE pro block library for SIMATIC PCS 7

The PCS 7 block libraries for SIMOCODE, motor starters, soft starters and AS-Interface can be used for simple and easy integration of the corresponding units into the SIMATIC PCS 7 process control system. PCS 7 block libraries contain the diagnostics and driver blocks corresponding with the diagnostics and driver concept of SIMATIC PCS 7 as well as the elements (symbols and faceplate) required for operator control and process monitoring.

Types of delivery and license

The PCS 7 block libraries supplied on CD-ROM allow the user to run the required engineering software on the engineering station (single license) including the runtime software for executing the AS modules in an automation system (single license). If the AS modules are to be used in additional automation systems, the corresponding number of runtime licenses are required which are supplied without a data carrier.

Order No. scheme for the block libraries for SIMATIC PCS 7

Digit of the Order No.	1st - 4th	5th	6th	7th		8th	9th	10th	11th	12th		13th	14th	15th	16th
	□□□□	□	□	□	–	□	X	X	□	□	–	□	□	□	□
SIRIUS Engineering software	**3 Z S 1**														
Software type, standard FB/FC		□													
Package designation 1			□												
Package designation 2				□											
Type						□									
Function status, start of delivery									□	□					
Product category												**0**			
Language (multilingual)													**Y**		
Delivery versions														□	
License type															□
Example	**3 Z S 1**	**6**	**3**	**3**	**–**	**1**	**X**	**X**	**0**	**0**	**–**	**0**	**Y**	**A**	**0**

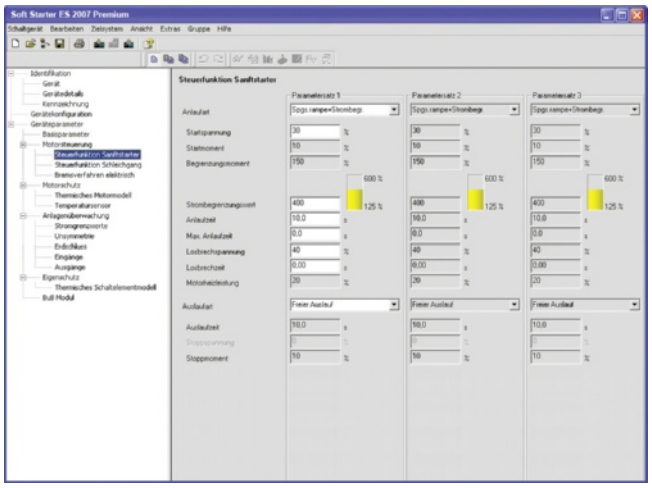
Note:

The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

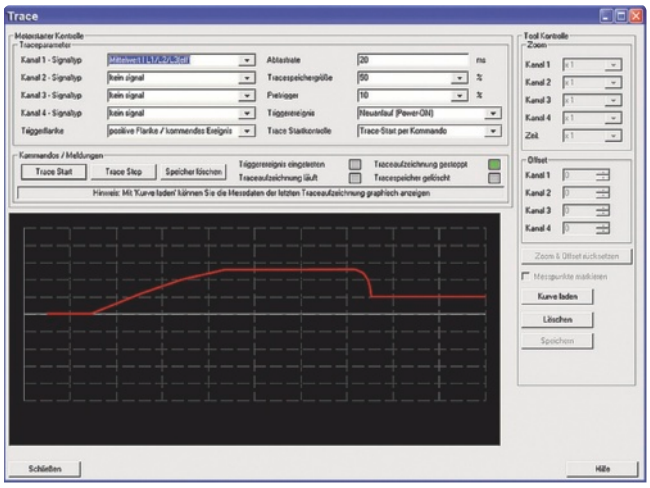
For your orders, please use the order numbers quote in the catalog in the Selection and ordering data.

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Overview



Easy and clearly arranged parameter setting of the 3RW44 soft starter with Soft Starter ES 2007



Graphic presentation of measured values with the trace function (oscilloscope function) of Soft Starter ES 2007 Standard and Premium

The Soft Starter ES software permits the quick and easy parameterization, monitoring and diagnostics of SIRIUS 3RW44 High-Feature soft starters for service purposes. The device parameters can be configured directly on the PC and transferred to the soft starter through a serial cable or an optional PROFIBUS interface.

Efficient engineering with three program versions

The Soft Starter ES software program is available in three versions which differ in their user-friendliness, scope of functions and price.

Soft Starter ES	Basic	Standard	Premium
Access through the local interface on the device	✓	✓	✓
Parameter assignment	✓	✓	✓
Operating	✓	✓	✓
Diagnostics	✓	✓	✓
Creating typicals	--	✓[1)]	✓
Exporting parameters	--	✓	✓
Comparison functions	--	✓	✓
Standards-conform printout according to EN ISO 7200	--	✓	✓
Service data (slave pointer, statistics data)	--	✓	✓
Access through PROFIBUS	--	--	✓
Group functions	--	--	✓
Teleservice through MPI	--	--	✓
S7 Routing	--	--	✓
STEP7 Object Manager	--	--	✓

✓ Function available

-- Function not available

1) Typicals with Service Pack 1 and higher.

More functions

- Standards-conform printouts
  The software tool greatly simplifies machine documentation. It enables parameterization printouts according to EN ISO 7200. The elements to be printed are easy to select and group as required.
- Easy creation of typicals
  Typicals can be created for devices and applications with only minimum differences in their parameters. These typicals contain all the parameters which are needed for the parameterization. In addition, it is possible to specify which of these parameters are fixed and which can be adapted, e.g. by the startup engineer.
- Group function
  For the user-friendly parameterization of numerous devices or applications of the same type, the programs of the SIRIUS ES software family offer a group function which enables the parameterization of several devices to be read out or written through PROFIBUS. In conjunction with typicals it is even possible to selectively adapt the same parameters in any number of parameterizations.
- Teleservice through MPI
  The Soft Starter ES Premium version supports the use of MPI Teleservice (comprising the Teleservice software and various Teleservice adapters) for remote diagnostics of the devices. This facilitates diagnostics and maintenance, and it shortens response times for service purposes.

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Soft Starter ES

Types of delivery and license

Soft Starter ES is available as follows:

- Floating license – the license for any one user at any one time
  - Authorizes any one user
  - Independent of the number of installations (unlike the single license which is allowed to be installed once only)
  - Only the actual use of the program has to be licensed
  - Trial license (free use of all program functions for 14 days for test and evaluation purposes, included on every product CD, available in the download file of the SIRIUS ES program in the Service&Support portal).

Following delivery versions are available in addition for Soft Starter ES 2007:

- Upgrade
  Switching from an old to a new version with expanded functions, e.g. upgrade from Soft Starter ES 2006 to Soft Starter ES 2007.
- Powerpack
  Special pack for switching within the same software version to a more powerful version with more functionality, e.g. Powerpack Soft Starter ES 2007 for switching from Standard to Premium.
- Software Update Service
  To keep you up to date at all times, we offer a special service which supplies you automatically with all service packs and upgrades.
- License Download
  User-friendly license key download from our Mall (currently only for customers from Germany) as an easy and quick way for you to receive additional licenses for your software.

Licensing procedure

To make licensing easier, the three versions of Soft Starter ES are available with the following license:

14 day trial license for Premium functions:
for test and evaluation purposes, included on every product CD, available also in the download file of the SIRIUS Soft Starter ES 2007 program in the Service&Support portal.

System requirements

Soft Starter ES 2007 parameterization, start-up and diagnostics software for SIRIUS 3RW44 soft starters	**Basic/Standard**	**Premium**
	Firmware version ≥ *E04*[1)]	**Firmware version ≥ *E06*[2)]**
Operating system	Windows XP Professional (Service Pack 2 or 3), Windows 7 32 Bit Professional/Ultimate/Enterprise	
Processor	≥ Pentium 800 MHz/≥ 1 GHz (Windows 7)	
RAM	≥ 512 Mbyte/≥ 1 GB (Windows 7)	
Free space on hard disk	≥ 150 MB	
CD-ROM/DVD drive	Yes (only when installing from CD)	
Serial interface (COM)	Yes	
PC cable/parameterization cable/connection cable	Yes	
PROFIBUS communication module (optional)	--	Yes

1) SIRIUS 3RW44 with firmware version ≥ *E04*. Installed in starters delivered from December 2005.

2) SIRIUS 3RW44 with firmware version ≥ *E06*. Installed in starters delivered from May 2006.

Benefits

- Clearly arranged configuring of device functions and their parameters – online and offline
- Effective diagnostics functions on the soft starter and display of the most important measured values
- Trace function (oscilloscope function) for recording measured values and events (in the Soft Starter ES Standard and Premium versions)
- Complete transparency thanks to printout, logbook and event memory
- High user-friendliness – comfortable user interface, with German and English as possible operating languages
- Time savings through shorter startup times
- Fast, low-cost licensing using a simple licensing procedure (available online too)

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Selection and ordering data

Soft Starter ES parameterization and service software for SIRIUS 3RW44 soft starters

- Delivered without PC cable

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Soft Starter ES 2007 Basic						
 3ZS1 313-4CC10-0YA5						
Floating license for one user Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through system interface						
• License key on USB stick, Class A, including CD	B	**3ZS1 313-4CC10-0YA5**		1	1 unit	42H
• License key download, Class A, without CD	►	**3ZS1 313-4CE10-0YB5**		1	1 unit	42H
Soft Starter ES 2007 Standard						
Floating license for one user Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through system interface						
• License key on USB stick, Class A, including CD	B	**3ZS1 313-5CC10-0YA5**		1	1 unit	42H
• License key download, Class A, without CD	►	**3ZS1 313-5CE10-0YB5**		1	1 unit	42H
Upgrade for Soft Starter ES 2006 Floating license for one user, engineering software, software and documentation on CD, license key on USB stick, Class A, 3 languages (German/English/French), communication through the system interface	B	**3ZS1 313-5CC10-0YE5**		1	1 unit	42H
Powerpack for Soft Starter ES 2007 Basic Floating license for one user, engineering software, license key on USB stick, Class A, 3 languages (German/English/French), communication through the system interface	B	**3ZS1 313-5CC10-0YD5**		1	1 unit	42H
Software Update Service For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through the system interface	►	**3ZS1 313-5CC10-0YL5**		1	1 unit	42H

Notes:

Please order PC cable separately, see page 14/8.

For description of the software versions see page 14/5.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Soft Starter ES

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Soft Starter ES 2007 Premium						
Floating license for one user Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through system interface or PROFIBUS						
• License key on USB stick, Class A, including CD	B	**3ZS1 313-6CC10-0YA5**		1	1 unit	42H
• License key download, Class A, without CD	▶	**3ZS1 313-6CE10-0YB5**		1	1 unit	42H
Upgrade for Soft Starter ES 2006 Floating license for one user, engineering software, software and documentation on CD, license key on USB stick, Class A, 3 languages (German/English/French), communication through the system interface or PROFIBUS	B	**3ZS1 313-6CC10-0YE5**		1	1 unit	42H
Powerpack for Soft Starter ES 2007 Standard Floating license for one user, engineering software, license key on USB stick, Class A, 3 languages (German/English/French), communication through the system interface or PROFIBUS	B	**3ZS1 313-6CC10-0YD5**		1	1 unit	42H
Software Update Service For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through the system interface or PROFIBUS	▶	**3ZS1 313-6CC10-0YL5**		1	1 unit	42H

Notes:

Please order PC cable separately, see below.

For description of the software versions see page 14/5.

Accessories

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Optional accessories						
 3UF7 940-0AA00-0						
PC cables for PC/PG communication Through the system interface on the device, for connecting to the serial interface on the PC/PG	▶	**3UF7 940-0AA00-0**		1	1 unit	42J
Optional PROFIBUS communication module for SIRIUS 3RW44	A	**3RW4 900-0KC00**		1	1 unit	42H
USB/serial adapters To connect a serial PC cable (for connection to the serial PC interface / RS 232), we recommend using 3RK3 modular safety system, 3RW44 soft starter, ET 200S/ECOFAST/ET 200pro motor starter, AS-i safety monitor and AS-i analyzer in conjunction with SIMOCODE pro 3UF7	B	**3UF7 946-0AA00-0**		1	1 unit	42J

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Overview

The SIRIUS 3RW44 soft starter PCS 7 block library can be used for simple and easy integration of SIRIUS 3RW44 soft starters into the SIMATIC PCS 7 process control system. The SIRIUS 3RW44 soft starter PCS 7 block library contains the diagnostics and driver blocks corresponding with the SIMATIC PCS 7 diagnostics and driver concept as well as the elements (symbols and faceplates) required for operator control and process monitoring.

Integrated functionality for optimal process control for all process control systems

In addition to the general sensor technology, the motor feeder data is increasingly being integrated into the process control system. By integrating the SIRIUS 3RW44 soft starters into the process control system it becomes possible to prevent errors in the motor feeder simply and reliably, or to detect these errors quickly and rectify them. Downtimes are reduced to a minimum or can be prevented before they happen.

For example, the output and display of the key measured values calculated by the 3RW44 is also a good aid for being able to assess and monitor the current system status.

Easy integration with the PCS 7 block library

The PCS 7 block library can be used for simple and easy integration of SIRIUS 3RW44 soft starters into the SIMATIC PCS 7 process control system. The focus here is simple configuration. The function of the modules is based on the PCS 7 standard libraries and is optimally harmonized with the functions of the SIRIUS 3RW44.

Users who have previously integrated motor feeders into conventional technology via signal blocks and motor or valve blocks or, for example, already have experience with SIMOCODE modules, are easily able to switch to SIRIUS 3RW44.

All blocks required for the automation systems are provided by the PCS 7 block library – as are the block symbols and faceplates for the operator station required for monitoring and control.

With the integration of the SIRIUS 3RW44 into SIMATIC PDM, the system-wide device parameterization and diagnostics of the SIRIUS 3RW44 soft starters are possible from a central point.

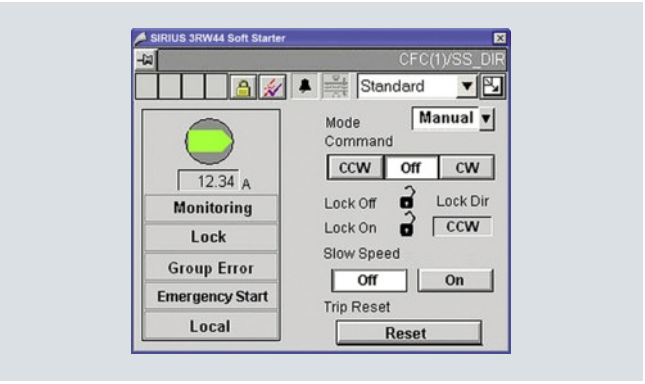
Motor block for the direct control of the drive

The low-voltage motors started and protected by SIRIUS 3RW44 soft starters can be integrated into the process automation via the motor blocks. This means that they form the interface between the process control system and the motors controlled by the SIRIUS 3RW44.

To reduce the amount of configuring work required, functions for signal processing and technological functions are integrated into one motor block.

The important measured value – the current in the motor feeder – is recorded via the 3RW44 and monitored for motor protection. The motor current is accessible from the I&C system via the motor blocks.

The block symbols and faceplates for the motor blocks display the motor feeders on the operator station and provide all the required information for monitoring and control as well as detailed diagnostics.



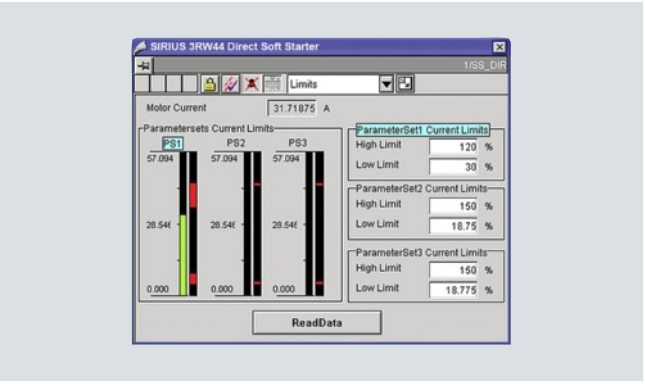
Faceplate of the motor block

Evaluation of additional motor feeder measurements

All measured values calculated by the soft starter, such as current, voltage and output of the feeder, are displayed and output via the measured value blocks. A key advantage here is that where required, a wide range of information on important motor feeder measurements is available, e.g. for load monitoring.

The 3RW44 is not only able to detect measured values here, but also to react if these values are exceeded or undershot, for example, via custom settings – e.g. with a motor disconnection or with a warning.

The faceplate for the measured values is accessed from the motor block faceplate.



Faceplate for measured values

Evaluation of maintenance-related motor feeder data

The 3RW44 has powerful functions to detect and monitor maintenance-related motor feeder data. For example, the operating and downtimes of the motor, operating cycles and overload tripping events are detected and stored directly on the device. If required, the information already on the device is available via the statistics block in the I&C system. The display is provided on a separate faceplate for the statistics block on the operator station.

Types of delivery and license

The SIRIUS 3RW44 soft starter PCS 7 block library supplied on CD-ROM allows the user to run the required engineering software on the engineering station (single license) including the runtime software for executing the AS modules in an automation system (single license). If the AS modules are to be used in additional automation systems, the corresponding number of runtime licenses are required which are supplied without a data carrier.

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SIRIUS 3RW44 soft starter block library for SIMATIC PCS 7

Benefits

- Uniform and continuous integration into SIMATIC PCS 7
- Standardized function blocks for simple integration and optimal operation
- Greater process transparency due to greater information density in the I&C system
- System-wide device parameterization and diagnostics with SIMATIC PDM

Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIRIUS 3RW44 soft starter block library for SIMATIC PCS 7						
 3ZS1 633-1XX00-0YA0	Scope of supply: AS modules and faceplates for integrating SIRIUS 3RW44 into the PCS 7 process control system, for PCS 7 version V 6.1/V 7.0 (V 7.1[1])					
Engineering software for one engineering station (single license) including runtime software for execution of the AS module in an automation system (single license), German/English/French, type of delivery: on CD incl. electronic documentation in German/English/Portuguese	►	**3ZS1 633-1XX00-0YA0**		1	1 unit	42H
Runtime software For execution of the AS module in an automation system (single license), Type of delivery: License without software and documentation	►	**3ZS1 633-2XX00-0YB0**		1	1 unit	42H

[1] The engineering software is supplied together with a service pack (SP1) which also enables it to be used under PCS 7 version V 7.1. For earlier versions of the engineering software you can download SP1 from www.siemens.com/sirius-engineering.

Accessories

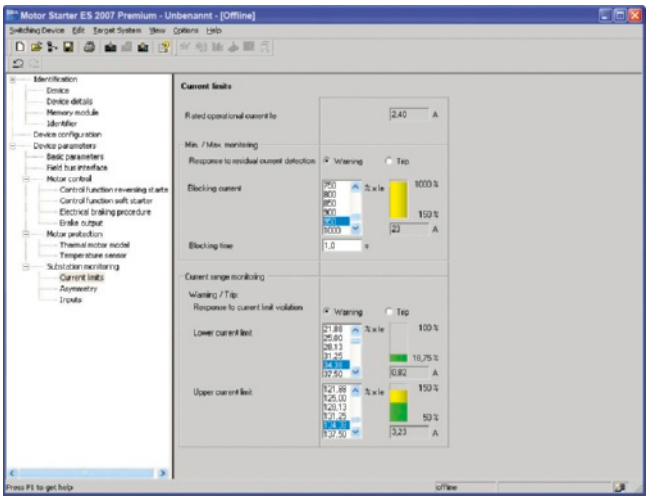
Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Optional accessories						
 3ZX1 012-0CS16-1AB1	**Manual for block library SIRIUS 3RW44 soft starters for SIMATIC PCS 7** For PCS 7 version V 6.1/V 7.0/V 7.1[1]					
• German	C	**3ZX1 012-0CS16-1AB1**		1	1 unit	401
• English	C	**3ZX1 012-0CS16-1AC1**		1	1 unit	401
• Portuguese	C	**3ZX1 012-0CS16-1AG1**		1	1 unit	401
GETTING STARTED for block library SIRIUS 3RW44 soft starters for SIMATIC PCS 7 For PCS 7 version V 6.1/V 7.0/V 7.1[1])						
• German	C	**3ZX1 012-0CS16-8AB1**		1	1 unit	401
• English	C	**3ZX1 012-0CS16-8AC1**		1	1 unit	401

[1] The engineering software is supplied together with a service pack (SP1) which also enables it to be used under PCS 7 version V 7.1. For earlier versions of the engineering software you can download SP1 from www.siemens.com/sirius-engineering.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



Motor Starter ES for parameterization, monitoring, diagnostics and testing of motor starters

Motor Starter ES is used for start-up, parameterization, diagnostics, documentation and the preventative maintenance of the motor starters in the SIMATIC ET 200S, ET 200pro, ECOFAST and M200D product families.

Interfacing is performed

- through the local interface on the device
- with PROFIBUS DP V1 capable motor starters from any point in PROFIBUS or in PROFINET (applies for ET 200pro/ ECOFAST/M200D)
- with PROFINET capable motor starters from any point in PROFINET or in PROFIBUS (applies to M200D).

Using Motor Starter ES, the communication-capable motor starters are easily parameterized during start-up, monitored during normal operation and successfully diagnosed for service purposes. Preventative maintenance is supported by a function for reading out diverse statistical data (e. g.operating hours, operating cycles, cut-off currents, etc.). The user is supported during these procedures with comprehensive Help functions and plain text displays.

Motor Starter ES can either be used as a stand-alone program or it can be integrated into STEP 7 via an object manager.

Efficient engineering with three program versions

The Motor Starter ES software program is available in three versions which differ in their user-friendliness, scope of functions and price.

Motor Starter ES	Basic	Standard	Premium
ET 200S High Feature PROFIBUS IM	✓	✓	--
ET 200S High Feature PROFINET IM	✓	✓	--
ECOFAST AS-Interface High Feature	✓	✓	--
ECOFAST PROFIBUS	✓	✓	✓
ET 200pro PROFIBUS IM	✓	✓	✓
ET 200pro PROFINET IM	✓	✓	✓
M200D AS-Interface Standard	✓	✓	--
M200D PROFIBUS	✓	✓	✓
M200D PROFINET	✓	✓	✓

✓ Function available -- Function not available

Motor Starter ES	Basic	Standard	Premium
Access through the local interface on the device	✓	✓	✓
Parameter assignment	✓	✓	✓
Operating	✓	✓	✓
Diagnostics	--	✓	✓
Creating typicals	--	✓	✓
Comparison functions	--	✓	✓
Standards-conform printout according to EN ISO 7200	--	✓	✓
Service data (slave pointer, statistics data)	--	✓	✓
Access through PROFIBUS	--	--	✓
Access through PROFINET	--	--	✓
S7 Routing	--	--	✓
Teleservice through MPI	--	--	✓
STEP 7 object manager	--	--	✓
Trace function	--	✓	✓

✓ Function available -- Function not available

More functions

- Standards-conform printouts
  The software tool greatly simplifies machine documentation. It enables parameterization printouts according to EN ISO 7200. The elements to be printed are easy to select and group as required.
- Easy creation of typicals
  Typicals can be created for devices and applications with only minimum differences in their parameters. These typicals contain all the parameters which are needed for the parameterization. In addition, it is possible to specify which of these parameters are fixed and which can be adapted, e.g. by the startup engineer.
- Teleservice through MPI
  The Motor Starter ES Premium version supports the use of MPI Teleservice (comprising the Teleservice software and various Teleservice adapters) for remote diagnostics of the devices. This facilitates diagnostics and maintenance, and it shortens response times for service purposes.

Types of delivery and license

Motor Starter ES is available as follows:

- Floating license – the license for any one user at any one time
  - Authorizes any one user
  - Independent of the number of installations (unlike the single license which is allowed to be installed once only)
  - Only the actual use of the program has to be licensed
  - Trial license (free use of all program functions for 14 days for test and evaluation purposes, included on every product CD, available in the download file of the SIRIUS ES program in the Service&Support portal).

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Motor Starter ES

Following delivery versions are also available for Motor Starter ES 2007:

- Upgrade
  Switching from an old to a new version with expanded functions, e.g. upgrade from Motor Starter ES 2006 to Motor Starter ES 2007
- Powerpack
  Special pack for switching within the same software version to a more powerful version with more functionality, e.g. Powerpack Motor Starter ES 2007 for switching from Standard to Premium.
- Software Update Service
  To keep you up to date at all times, we offer a special service which supplies you automatically with all service packs and upgrades.
- License Download
  User-friendly license key download from our Mall (currently only for customers from Germany) as an easy and quick way for you to receive additional licenses for your software.

System requirements

Parameterization, start-up and diagnostics software Motor Starter ES 2007 For ECOFAST Motor Starter, SIMATIC ET 200S High-Feature Starter, SIMATIC ET 200pro Starter and M200D (AS-I Standard, PROFIBUS, PROFINET)	
Operating system	Windows XP Professional (Service Pack 2 or 3), Windows 7 32 Bit Professional/Ultimate/Enterprise
Processor	≥ Pentium 800 MHz/≥ 1 GHz (Windows 7)
RAM	≥ 512 Mbyte/≥ 1 GB (Windows 7)
Monitor resolution	≥ 1 024 x 768
Free space on hard disk[1)]	≥ 400 MB
CD-ROM/DVD drive	Yes (only when installing from CD)
Serial interface (COM)	Yes
PC cable/parameterization cable/connection cable	Yes
PROFIBUS card/PROFIBUS processor	Optional, for parameterization and diagnostics through PROFIBUS
Ethernet interface/PROFINET card	Optional, for parameterization and diagnostics through PROFINET

1) Additional free space recommended, e.g. for swap-out file.

Benefits

- Fast, error-free configuration and startup of motor starters even without extensive previous knowledge
- Clearly arranged configuring of device functions and their parameters – online and offline
- Effective diagnostics functions on the soft starter and display of the most important measured values
- Trace function (oscilloscope function) for recording measured values and events (included in the Motor Starter ES Standard and Premium software version for M200D PROFIBUS and PROFINET).

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Selection and ordering data

Parameterization, start-up and diagnostics software
Motor Starter ES 2007

For ECOFAST Motor Starter, SIMATIC ET 200S High-Feature Starter, SIMATIC ET 200pro Starter and M200D (AS-I Standard, PROFIBUS, PROFINET)

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Motor Starter ES 2007 Basic						
 3ZS1 310-4CC10-0YA5						
Floating license for one user Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through system interface						
• License key on USB stick, Class A, including CD	B	**3ZS1 310-4CC10-0YA5**		1	1 unit	42D
• License key download, Class A, without CD	B	**3ZS1 310-4CE10-0YB5**		1	1 unit	42D
Motor Starter ES 2007 Standard						
Floating license for one user Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through system interface						
• License key on USB stick, Class A, including CD	B	**3ZS1 310-5CC10-0YA5**		1	1 unit	42D
• License key download, Class A, without CD	B	**3ZS1 310-5CE10-0YB5**		1	1 unit	42D
Upgrade for Motor Starter ES 2006 Floating license for one user, engineering software, software and documentation on CD, license key on USB stick, Class A, 3 languages (German/English/French), communication through the system interface	B	**3ZS1 310-5CC10-0YE5**		1	1 unit	42D
Powerpack for Motor Starter ES 2007 Basic Floating license for one user, engineering software, software and documentation on CD, license key on USB stick, Class A, 3 languages (German/English/French), communication through the system interface	B	**3ZS1 310-5CC10-0YD5**		1	1 unit	42D
Software Update Service For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through the system interface	B	**3ZS1 310-5CC10-0YL5**		1	1 unit	42D

Notes:

Please order PC cable separately, see page 14/14.

For description of the software versions see page 14/11.

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Motor Starter ES

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Motor Starter ES 2007 Premium						
Floating license for one user Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through system interface or PROFIBUS						
• License key on USB stick, Class A, including CD	B	**3ZS1 310-6CC10-0YA5**		1	1 unit	42D
• License key download, Class A, without CD	B	**3ZS1 310-6CE10-0YB5**		1	1 unit	42D
Upgrade for Motor Starter ES 2006 Floating license for one user, engineering software, software and documentation on CD, license key on USB stick, Class A, 3 languages (German/English/French), communication through the system interface or PROFIBUS	B	**3ZS1 310-6CC10-0YE5**		1	1 unit	42D
Powerpack for Motor Starter ES 2007 Standard Floating license for one user, engineering software, software and documentation on CD, license key on USB stick, Class A, 3 languages (German/English/French), communication through the system interface or PROFIBUS	B	**3ZS1 310-6CC10-0YD5**		1	1 unit	42D
Software Update Service For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through the system interface or PROFIBUS	B	**3ZS1 310-6CC10-0YL5**		1	1 unit	42D

Notes:

Please order PC cable separately, see below.

For description of the software versions see page 14/11.

Accessories

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Optional accessories						
For ET 200S High-Feature motor starters						
2DI 24 V DC COM control module For ET 200S High-Feature starter, Failsafe starter A	A	**3RK1 903-0CH10**		1	1 unit	42D
LOGO! PC cables	A	**6ED1 057-1AA00-0BA0**		1	1 unit	200
For ET 200pro and MD200D motor starters						
RS232 interface cables Serial data connection between ET 200pro MS/FC, M200D and laptop/PC/PG or MS	B	**3RK1 922-2BP00**		1	1 unit	42D
For ECOFAST High-Feature motor starters (interface cable)						
PC cables	B	**3RK1 911-0BN20**		1	1 unit	42D
USB/serial adapters To connect a serial PC cable (for connection to the serial PC interface / RS 232), we recommend using 3RK3 modular safety system, 3RW44 soft starter, ET 200S/ECOFAST/ET 200pro motor starter, AS-i safety monitor and AS-i analyzer in conjunction with SIMOCODE pro 3UF7	B	**3UF7 946-0AA00-0**		1	1 unit	42J



3RK1 903-0CH10

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

With the SIRIUS motor starter PCS 7 block library, SIRIUS ET 200S motor starters (direct and reversing starters, direct-on-line soft starters) can be easily and simply integrated into the SIMATIC PCS 7 process control system. The SIRIUS motor starter PCS 7 block library contains the diagnostics and driver blocks corresponding to the SIMATIC PCS 7 diagnostics and driver concept as well as the elements (symbols and faceplates) required for operator control and process monitoring.

Integrated functionality for optimal process control for all process control systems

In addition to the general sensor technology, the motor feeder data is increasingly being integrated into the process control system. By integrating the SIRIUS ET 200S motor starter into the process control system, it becomes possible to prevent errors in the motor feeder simply and reliably, or to detect these errors quickly and rectify them. Downtimes are reduced to a minimum or can be prevented before they happen.

For example, the output and display of the key measured values calculated by the motor starter is also a good aid for being able to assess and monitor the current system status.

Easy integration with the PCS 7 block library

The PCS 7 block library can be used for simple and easy integration of ET 200S motor starters into the SIMATIC PCS 7 process control system. The focus here is simple configuration. The function of the modules is based on the PCS 7 standard libraries and is optimally harmonized with the functions of the ET 200S motor starters.

Users who have previously integrated motor feeders into conventional technology via signal blocks and motor or valve blocks or, for example, already have experience with SIMOCODE modules, are easily able to switch to ET 200S motor starters.

All blocks required for the automation systems are provided by the PCS 7 block library – as are the block symbols and faceplates for the operator station required for monitoring and control.

Motor block for the direct control of the drive

The low-voltage motors started and protected by ET 200S motor starters (direct and reversing starters, direct-on-line soft starters) can be integrated into the process automation via the motor blocks. This means that they form the interface between the process control system and the motors controlled by the ET 200S motor starters.

To reduce the amount of configuring work required, functions for signal processing and technological functions are integrated into one motor block.

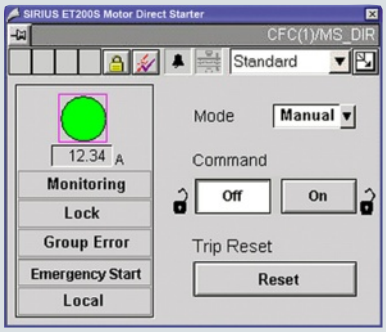
The current in the motor feeder is detected by the ET 200S motor starter and monitored by the motor protection. The motor current is accessible from the I&C system via the motor blocks.

The block symbols and faceplates for the motor blocks display the motor feeders on the operator station and provide all the required information for monitoring and control as well as detailed diagnostics.

Diagnostics blocks for motor starters

The diagnostics blocks are made visible by the message and errors supplied by the motor starter. A key advantage of this is that the motor feeder can be analyzed in a specific way as required.

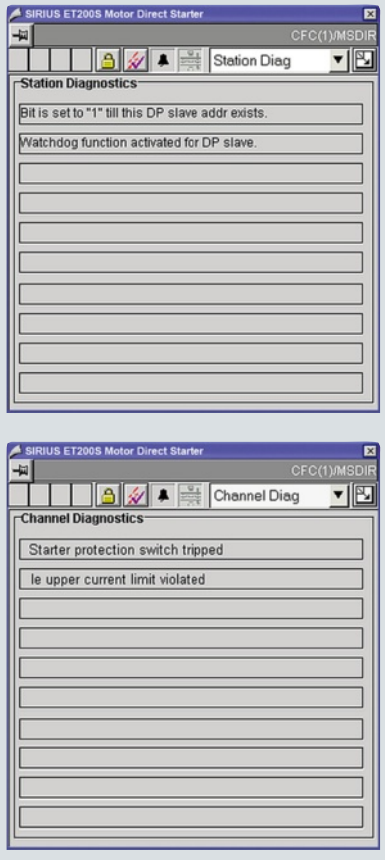
The faceplate for the diagnostics is opened from the motor block faceplate.



Faceplate of the motor block

Types of delivery and license

The SIRIUS Motor Starter PCS 7 block library supplied on CD-ROM allows the user to run the required engineering software on the engineering station (single license) including the runtime software for executing the AS modules in an automation system (single license). If the AS modules are to be used in additional automation systems, the corresponding number of runtime licenses are required which are supplied without a data carrier.



Faceplates for diagnostics

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SIRIUS motor starter block library for SIMATIC PCS 7

Benefits

- Uniform and continuous integration into SIMATIC PCS 7
- Standardized function blocks for simple integration and optimal operation
- Greater process transparency due to greater information density in the I&C system

Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIRIUS motor starter block library for SIMATIC PCS 7						
 3ZS1 630-1XX00-0YA0	Scope of supply: AS modules and faceplates for integrating SIRIUS motor starters into the PCS 7 process control system, for PCS 7 version V 6.1/V 7.0/V 7.1					
Engineering software for one engineering station (single license) including runtime software for execution of the AS module in an automation system (single license), German/English, type of delivery: on CD incl. electronic documentation in German/English	►	**3ZS1 630-1XX00-0YA0**		1	1 unit	42H
Runtime software For execution of the AS module in an automation system (single license), Type of delivery: License without software and documentation	►	**3ZS1 630-2XX00-0YB0**		1	1 unit	42H

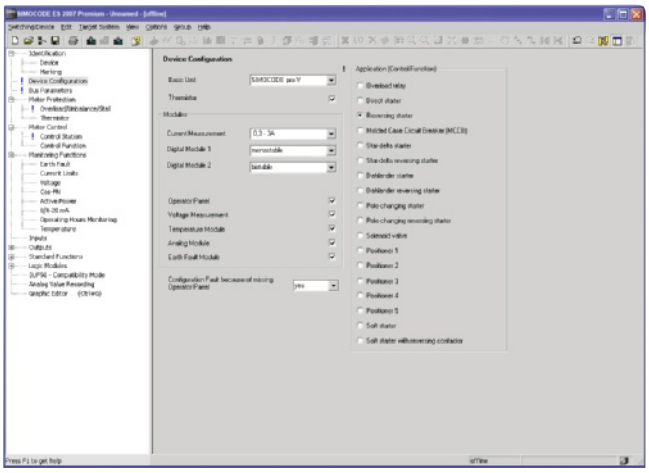
Accessories

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Optional accessories						
 3ZX1 012-0CS16-0AB0	**Manual for block library SIRIUS motor starters for SIMATIC PCS 7** For PCS 7 version V 6.1/V 7.0/V 7.1					
• German	C	**3ZX1 012-0CS16-0AB0**		1	1 unit	401
• English	C	**3ZX1 012-0CS16-0AC0**		1	1 unit	401
GETTING STARTED for block library SIRIUS motor starters for SIMATIC PCS 7 For PCS 7 version V 6.1/V 7.0/V 7.1						
• German	C	**3ZX1 012-0CS16-5AB1**		1	1 unit	401
• English	C	**3ZX1 012-0CS16-5AC1**		1	1 unit	401

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



Selection of predefined control functions SIMOCODE ES

SIMOCODE ES is the central software for SIMOCODE pro start-up, operation and diagnostics. Unnecessary plant downtimes can be consistently prevented, for example by changing parameters online during operation. Control functions, protection functions and the wiring of the control circuit are implemented in SIMOCODE pro by predefined control functions and can be readily configured using SIMOCODE ES.

Three program versions

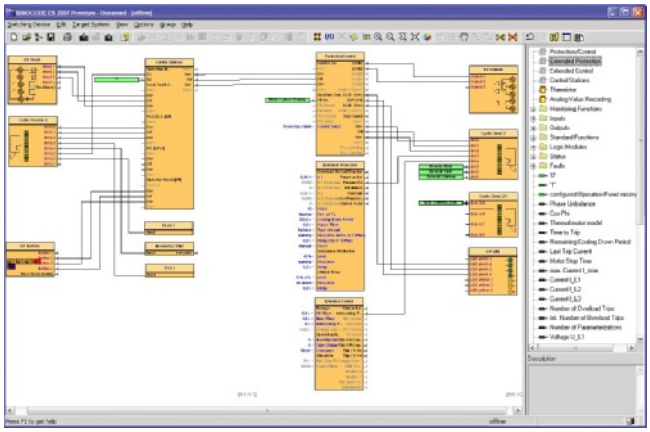
The user can choose between three different versions of SIMOCODE ES: SIMOCODE ES Basic, SIMOCODE ES Standard and SIMOCODE ES Premium. While SIMOCODE ES Basic is a powerful tool for startup or maintenance personnel, SIMOCODE ES Standard and Premium are the perfect tools for engineers or configurers on account of their larger scope of functions and integrated graphics editor. Unlike the Standard version, SIMOCODE ES Premium also permits parameterization and diagnostics through PROFIBUS. Display of all operating, service and diagnostics data supplies important information about the current state of the motor and plant at all times – everywhere on the PROFIBUS.

Object manager for SIMATIC S7

The object manager is a component of SIMOCODE ES Premium. Thanks to this software tool, SIMOCODE ES is totally integrated in SIMATIC S7. If the two software packages are installed on the PG/PC with which the SIMATIC S7 hardware configuration is performed, then SIMOCODE ES can be called up directly from STEP 7.

Integrated graphics editor

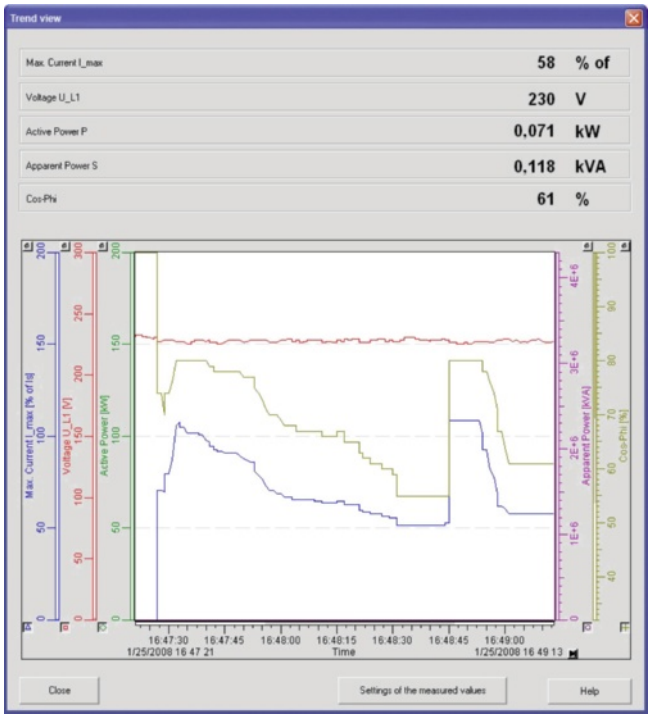
The graphics editor is a part of SIMOCODE ES Standard and SIMOCODE ES Premium. It adds to the parameterizing interface a powerful tool which enables the easy parameterization of devices by Drag&Drop. The extremely compact documentation of all configured parameters is possible, as is the graphic online presentation of the configured device functions including all signal states during operation.



Easy and ergonomic parameterizing with the graphics editor

Trend display of measured values

With this online function, SIMOCODE ES Standard or Premium can present the trend of up to five different measured values. It is thus possible for example to record and evaluate the start-up characteristic of a motor or its behavior in different load conditions.



Trend displays of measured values in SIMOCODE ES

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SIMOCODE ES

Efficient engineering with three program versions

SIMOCODE ES	Basic	Standard	Premium
Access through the local interface on the device	✓	✓	✓
Parameter assignment	✓	✓	✓
Operating	✓	✓	✓
Diagnostics	✓	✓	✓
Test	✓	✓	✓
Service data	✓	✓	✓
Parameterizing with the integrated graphics editor	--	✓	✓
Creating typicals	--	✓	✓
Exporting parameters	--	✓	✓
Comparison functions	--	✓	✓
Trend display of measured values	--	✓	✓
Parameter comparison	--	✓	✓
Analog value recording[1)]	--	✓	✓
Standards-conform printout according to EN ISO 7200	--	✓	✓
Group functions	--	--	✓
Access through PROFIBUS	--	--	✓
Teleservice through MPI	--	--	✓
S7 Routing	--	--	✓
STEP7 Object Manager	--	--	✓

✓ Function available

-- Function not available

[1)] For SIMOCODE pro V.

More functions

In addition to device-specific parameterization, SIMOCODE ES 2007 also offers the following functionality in a uniform look and feel. These functions are available in many SIRIUS ES programs.

- Standards-conform printouts
  The software tool greatly simplifies machine documentation. It enables parameterization printouts according to EN ISO 7200. The elements to be printed are easy to select and group as required.
- Easy creation of typicals
  Typicals can be created for devices and applications with only minimum differences in their parameters. These typicals contain all the parameters which are needed for the parameterization. In addition, it is possible to specify which of these parameters are fixed and which can be adapted, e.g. by the startup engineer.
- Group function
  For the user-friendly parameterization of numerous devices or applications of the same type, the programs of the SIRIUS ES software family offer a group function which enables the parameterization of several devices to be read out or written through PROFIBUS. In conjunction with typicals it is even possible to selectively adapt the same parameters in any number of parameterizations.
- Teleservice through MPI
  The Motor Starter ES Premium version supports the use of MPI Teleservice (comprising the Teleservice software and various Teleservice adapters) for remote diagnostics of the devices. This facilitates diagnostics and maintenance, and it shortens response times for service purposes.

Types of delivery and license

SIMOCODE ES is available as follows:

- Floating license – the license for any one user at any one time
  - Authorizes any one user
  - Independent of the number of installations (unlike the single license which is allowed to be installed once only)
  - Only the actual use of the program has to be licensed
  - Trial license (free use of all program functions for 14 days for test and evaluation purposes, included on every product CD, available in the download file of the SIRIUS ES program in the Service&Support portal)

Following delivery versions are available in addition for SIMOCODE ES 2007:

- Upgrade
  Switching from an old to a new version with expanded functions, e.g. upgrade from SIMOCODE ES 2004 to SIMOCODE ES 2007
- Powerpack
  Special pack for switching within the same software version to a more powerful version with more functionality, e.g. Powerpack SIMOCODE ES 2007 for switching from Standard to Premium
- Software Update Service
  To keep you up to date at all times, we offer a special service which supplies you automatically with all service packs and upgrades.
- License Download
  User-friendly license key download from our Mall (currently only for customers from Germany) as an easy and quick way for you to receive additional licenses for your software.

System requirements

SIMOCODE ES 2007 parameterization, start-up and diagnostics software for SIMOCODE pro	
Operating system	Windows XP Professional (Service Pack 2 or 3), Windows 7 32 Bit Professional/Ultimate/Enterprise
Processor	≥ Pentium 800 MHz/≥ 1 GHz (Windows 7)
RAM	≥ 512 Mbyte/≥ 1 GB (Windows 7)
Monitor resolution	≥ 1024 x 768
Free space on hard disk	≥ 280 MB
CD-ROM/DVD drive	Yes (only when installing from CD)
Serial interface (COM)	Yes
PC cable/parameterization cable/connection cable	Yes
PROFIBUS card/PROFIBUS processor	Optional, for parameterization and diagnostics through PROFIBUS

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Benefits

- Easy parameterization reduces the amount of engineering work and shortens start-up times
- Clear plant documentation by means of graphic presentation
- Detailed information, also when there are faults, is a help for maintenance personnel and shortens plant downtimes
- Stand-alone version and integration in SIMATIC STEP 7 enable universal use
- Parameters can be changed even during operation
- Consistent data storage and easy configuration by means of integration in TIA (Totally Integrated Automation)

Selection and ordering data

Parameterization and service software for SIMOCODE pro 3UF7

- Delivered without PC cable

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIMOCODE ES 2007 Basic						
 3ZS1 312-4CC10-0YA5 **Floating license for one user** Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through system interface						
• License key on USB stick, Class A	►	**3ZS1 312-4CC10-0YA5**		1	1 unit	42J
• License key download, Class A	►	**3ZS1 312-4CE10-0YB5**		1	1 unit	42J
SIMOCODE ES 2007 Standard						
Floating license for one user Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through system interface, integrated graphics editor						
• License key on USB stick, Class A	►	**3ZS1 312-5CC10-0YA5**		1	1 unit	42J
• License key download, Class A	►	**3ZS1 312-5CE10-0YB5**		1	1 unit	42J
Upgrade for SIMOCODE ES from 2004 Floating license for one user, engineering software, software and documentation on CD, license key on USB stick, Class A, 3 languages (German/English/French), communication through the system interface, integrated graphics editor	A	**3ZS1 312-5CC10-0YE5**		1	1 unit	42J
Powerpack for SIMOCODE ES 2007 Basic Floating license for one user, engineering software, license key on USB stick, Class A, 3 languages (German/English/French), communication through the system interface integrated grphics editor	A	**3ZS1 312-5CC10-0YD5**		1	1 unit	42J
Software Update Service For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through the system interface, integrated graphics editor	►	**3ZS1 312-5CC10-0YL5**		1	1 unit	42J

Note:

Please order PC cable separately, see page 14/20.

For description of the software versions see page 14/18.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIMOCODE ES

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIMOCODE ES 2007 Premium						
Floating license for one user Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through system interface or PROFIBUS, integrated graphics editor, STEP7 Object Manager						
• License key on USB stick, Class A	►	**3ZS1 312-6CC10-0YA5**		1	1 unit	42J
• License key download, Class A	►	**3ZS1 312-6CE10-0YB5**		1	1 unit	42J
Upgrade for SIMOCODE ES from 2004 Floating license for one user, engineering software, software and documentation on CD, license key on USB stick, Class A, 3 languages (German/English/French), communication through PROFIBUS or the system interface, integrated graphics editor, STEP7 Object Manager	A	**3ZS1 312-6CC10-0YE5**		1	1 unit	42J
Powerpack for SIMOCODE ES 2007 Standard Floating license for one user, engineering software, license key on USB stick, Class A, 3 languages (German/English/French), communication through PROFIBUS or the system interface, integrated graphics editor, STEP7 Object Manager	A	**3ZS1 312-6CC10-0YD5**		1	1 unit	42J
Software Update Service For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through PROFIBUS or the system interface, integrated graphics editor, STEP7 Object Manager	►	**3ZS1 312-6CC10-0YL5**		1	1 unit	42J

Notes:

Please order PC cable separately, see below.

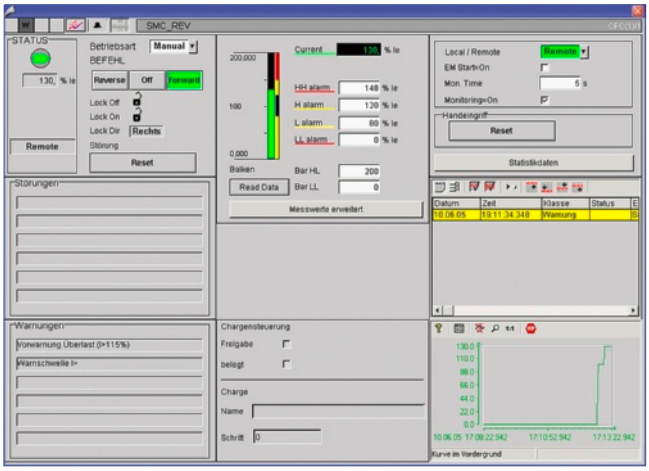
For description of the software versions see page 14/18.

Accessories

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Optional accessories						
 3UF7 940-0AA00-0						
PC cables for PC/PG communication Through the system interface on the device, for connecting to the serial interface on the PC/PG	►	**3UF7 940-0AA00-0**		1	1 unit	42J
USB/serial adapters To connect a serial PC cable (for connection to the serial PC interface / RS 232), we recommend using 3RK3 modular safety system, 3RW44 soft starter, ET 200S/ECOFAST/ET 200pro motor starter, AS-i safety monitor and AS-i analyzer in conjunction with SIMOCODE pro 3UF7	B	**3UF7 946-0AA00-0**		1	1 unit	42J

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Overview



SIMOCODE pro block library for SIMATIC PCS 7

The SIMOCODE pro PCS 7 block library can be used for simple and easy integration of SIMOCODE pro into the SIMATIC PCS 7 process control system. The SIMOCODE pro PCS 7 block library contains the diagnostics and driver blocks corresponding with the diagnostics and driver concept of SIMATIC PCS 7 as well as the elements (symbols and faceplate) required for operator control and process monitoring.

The application is integrated by graphic interconnection using the CFC Editor. The technological and signal processing functions of the SIMOCODE pro PCS 7 block library are based on the SIMATIC PCS 7 standard libraries (driver blocks, technological blocks) and are optimally tailored to SIMOCODE pro.

Users who previously configured motor feeder circuits using conventional technology by means of signal blocks and motor or valve blocks, can now easily switch to the SIMOCODE pro PCS 7 block library.

Types of delivery and license

The SIMOCODE pro PCS 7 block library supplied on CD-ROM allows the user to run the required engineering software on the engineering station (single license) including the runtime software for executing the AS modules in an automation system (single license). If the AS modules are to be used in additional automation systems, the corresponding number of runtime licenses are required which are supplied without a data carrier.

Benefits

- Uniform and continuous integration into SIMATIC PCS 7
- Standardized function blocks for simple integration and optimal operation
- Greater process transparency due to greater information density in the I&C system

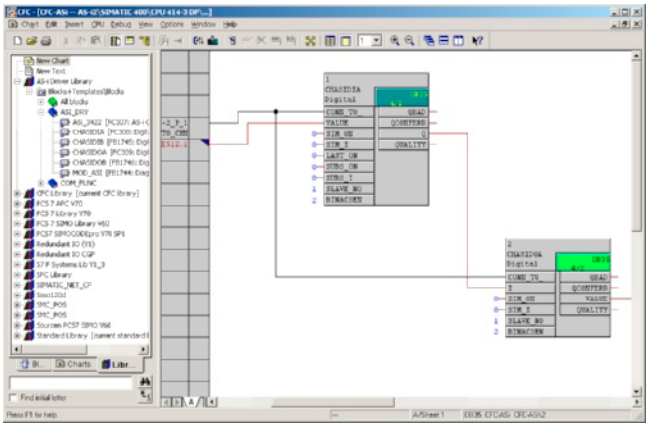
Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SIMOCODE pro block library for SIMATIC PCS 7						
 3UF7 982-0AA00-0	Scope of supply: AS modules and faceplates for integrating SIMOCODE pro into the PCS 7 process control system					
	Engineering software for one engineering station (single license) including runtime software for execution of the AS module in an automation system (single license), German/English/French, type of delivery: CD incl. electronic documentation					
	• For PCS 7 Version V 7.0/V 7.1	►	**3UF7 982-0AA10-0**	1	1 unit	42J
	Runtime software For execution of the AS module in an automation system (single license), Type of delivery: License without software and documentation					
	• For PCS 7 Version V 7.x	►	**3UF7 982-0AA11-0**	1	1 unit	42J
	Upgrade for the PCS 7 block library SIMOCODE pro, V 6.0 or V 6.1 to version SIMOCODE pro V 7.0/V 7.1 for integrating SIMOCODE pro into the PCS 7 process control system, for PCS 7 Version V 7.0/V 7.1 (single license), German/English/French, type of delivery: CD incl. electronic documentation	A	**3UF7 982-0AA13-0**	1	1 unit	42J

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AS-Interface block library for SIMATIC PCS 7

Overview



AS-Interface block library for SIMATIC PCS 7: User interfaces

The AS-Interface block library for PCS 7 is integrated in the SIMATIC PCS 7 process control system and expands it for integration of the AS-Interface system.

As the result, the advantages of AS-Interface such as the considerable reduction of wiring outlay for distributed actuators/sensors and very simple installation can also be used in a system based on PCS 7.

The library contains modules for accessing the I/O data of AS-i slaves, modules for diagnostics of the AS-i system, and a faceplate for the PCS 7 Maintenance Station.

The AS-i CP 343-2 / CP 343-2P masters are supported within an ET 200M station connected through PROFIBUS.

For direct connection to PROFIBUS it is possible to use DP/AS-i Link Advanced as an AS-i single master and double master.

Digital AS-i standard slaves and A/B slaves (according to AS-Interface Specification V 3.0) can be used on the CP 343-2 and CP 343-2P.

In combination with DP/AS-i LINK Advanced it is also possible to integrate analog AS-i slaves.

Hardware and software requirements

The library requires PCS 7 Version V 6.1, V 7.0 or V 7.1

Types of delivery and license

The block library supplied on CD-ROM allows the user to run the required engineering software on the engineering station (single license) including the runtime software for executing the AS modules in an automation system (single license).

If the AS modules are to be used in additional automation systems, the corresponding number of runtime licenses are required which are supplied without a data carrier.

Benefits

- Easy connection of AS-Interface to PCS 7
- Engineering work reduced to positioning and connecting the function blocks in the CFC
- With no additional configuring steps required for connection to the PCS 7 Maintenance Station, diagnostics for the AS-i system is optimally guaranteed

Application

The AS-Interface block library for PCS 7 is used in systems based on PCS 7 where the actuators and sensors are to be connected using AS-Interface.

Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
AS-Interface block library for PCS 7						
 3ZS1 635-1XX01-0YA0	Scope of supply AS modules and faceplates for integrating AS-Interface into the PCS 7 process control system, for PCS 7 version V 6.1 V 7.0 or V 7.1					
	Engineering software for one engineering station (single license) including runtime software for execution of the AS module in an automation system (single license), German/English, type of delivery: CD incl. electronic documentation	►	**3ZS1 635-1XX01-0YA0**	1	1 unit	42C
	Runtime software For execution of the AS module in an automation system (single license), type of delivery: License without software and documentation	►	**3ZS1 635-2XX01-0YB0**	1	1 unit	42C

* You can order this quantity or a multiple thereof.
Illustrations are approximate

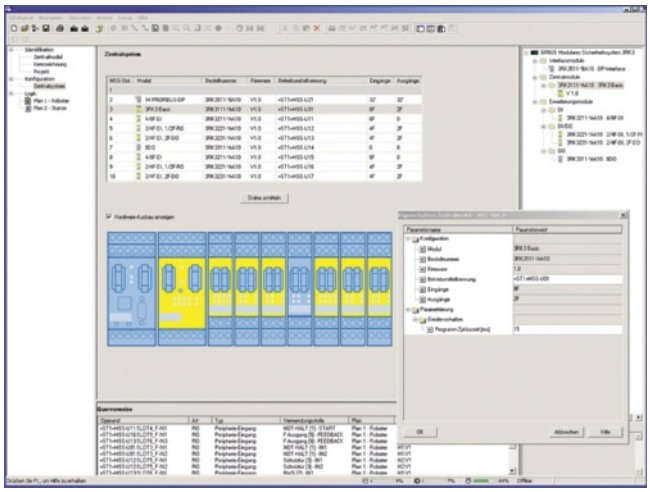
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Overview

Modular Safety System ES is the engineering software for the configuration, start-up and diagnostics of the 3RK3 modular safety system. The software combines the configuring of the hardware, the programming of the safety functions, and the testing and diagnostics of the safety system.

Hardware configuration

The configuration defines the system's hardware layout. It lays down which modules are used in the system: A central module as a safe control system including onboard peripherals, expansion modules with inputs and outputs, an interface module for connecting to PROFIBUS. For better clarity the layout is shown in a graphic presentation. In addition, the project data on the AS-i Bus can be obtained online or configured from the AS-i Library. For each module, it is optionally possible to issue an equipment ID which is shown in the logic diagram for identification of the inputs and outputs.



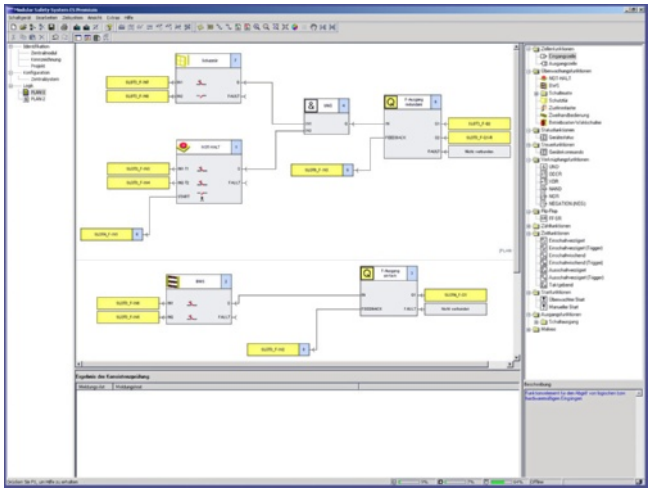
Definition of the hardware layout

Graphic parameterizing of the safety logic by Drag & Drop

The functionality of the safety logic is laid down with a graphics editor designed for intuitive operation. Safe monitoring functions (EMERGENCY-STOP, non-contact protective devices/light arrays, protective doors, etc.), output functions and logic functions (AND/OR operations, counting function, time functions, etc.), non-safety-orientated input/output functions, device status functions and control functions can be dragged from the extensive functions catalog onto the work interface by Drag&Drop. Depending on the version, each function has several input and output connecting points through which the functions can be interconnected by simple mouse clicks. Double-clicking on a function symbol opens the related features dialog window in which all the parameters can be displayed and configured: Scope of the function's inputs and outputs, configuring the channel type (one/two-channel, NC contact/NO contact), activating the crossover monitoring, defining start options, assigning the hardware inputs and outputs, etc. Of course, each function can be issued with an individual name so that e. g. the position of a safety switch in the plant can be documented.

The safety logic can be divided into several diagrams in order to enable structured processing of the entire plant. The user can freely position the functions on a quasi infinitely large drawing board, whereby the connecting lines are drawn automatically. If there is not enough space, more pages are automatically added to the diagram in horizontal or vertical direction. Connecting lines extending over several pages are automatically issued with cross-references during print-out. If required in the interest of clarity, the user can divide a connecting line manually into two segments, whereby the mutual reference is marked by reference arrows. For further documentation, freely compilable comment texts can be placed at any point in the diagram. Every point in the logic diagram can be processed with ease by dragging and zooming.

Every project can be saved as a file and be password-protected from unauthorized access.



Processing the safety functions with the graphics editor

User prompting during start-up and maintenance

To start up the 3RK3 modular safety system, the created project file is loaded into the device. There are two ways of doing this:

- connect the serial interface (COM) of the PC to the device using a special connection cable
- Using the DP interface allows the parameterization to be downloaded through any PROFIBUS node.

Access to the device can be password-protected.

After the project is loaded, the user switches the device by means of the software from configuring mode to test mode in which the safety functions are tested.

Activating the diagnostics shows the status of the individual functions in the graphic logic diagram by means of different colors and symbols. In addition, the signal status of each input and output can be manually overwritten ("forcing").

If the test is completed successfully, the user releases the configuration and switches the device to protection mode, in which case "forcing" is automatically deactivated.

Service personnel can activate the graphic diagnostics in protection mode as well. The I&M (Identification & Maintenance) data saved in the device facilitate maintenance.

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Modular Safety System ES

Efficient engineering with three program versions

Modular Safety System ES	Basic	Standard	Premium
Access through the local interface on the device	✓	✓	✓
Parameter assignment	✓	✓	✓
Operating	✓	✓	✓
Diagnostics	✓	✓	✓
Test	✓	✓	✓
Integrated graphics editor	✓	✓	✓
Importing/exporting parameters	--	✓	✓
Comparison functions	--	✓	✓
Comfort functions	--	✓	✓
Terminal designator	--	✓	✓
Work on sub-diagrams	--	✓	✓
Standards-conform printout according to EN ISO 7200	✓	✓	✓
Downloading parameterization through PROFIBUS	--	--	✓
Online diagnostics using PROFIBUS	--	--	✓
Creating, importing and exporting macros	--	--	✓

✓ Function available

-- Function not available

More functions

- The program interface language can be switched during use between German, English and French
- A context-sensitive help function provides useful assistance with questions concerning the use of the program
- A consistency check informs clearly about function assignment errors; Checks are carried out automatically when a project is saved and during the configuration test, but they can also be initially manually
- Lists of symbols and cross-references can be issued output for effective processing of the project file
- Standards-conform printouts:
  The programs of the SIRIUS ES software family make machine documentation far easier. They enable parameterization printouts according to EN ISO 7200. The elements to be printed are easy to select and group as required.

Types of delivery and license

Modular Safety System ES 2008 is available as follows:

- Floating license
  - Package contains the software on CD and a floating license on a USB stick
  - The software can be installed on any number of PCs
  - The floating license enables the software to be used by 1 user; after use, it can be transferred from the one PC to another
  - The CD also contains a trial license for test and evaluation purposes (free use of all program functions on any PC for a period of 14 days).

Following delivery versions are available in addition for Modular Safety System ES 2008:

- Powerpack
  Special pack for switching within the same software version to a more powerful version with more functionality, e. g. Powerpack Modular Safety System ES 2008 for switching from Basic to Standard and from Standard to Premium.
- Software Update Service
  To keep you up to date at all times we offer a special service which supplies you automatically with all service packs and upgrades on CD (floating license not included in delivery)
- License Download
  User-friendly license key download from our Mall (currently only for customers from Germany) as an easy and quick way for you to receive additional licenses for your software.

The software can be downloaded free from the Internet (without floating license) at:

http://support.automation.siemens.com/WW/view/en/30320790

The download file also contains a trial license for test and evaluation purposes, which allows free use of all program functions on any PC for a period of 14 days. A floating license is needed to use the software after the 14 days.

System requirements

Modular Safety System ES 2008 parameterization, start-up and diagnostics software for the 3RK3 modular safety system	
Operating system	Windows XP Professional (Service Pack 2 or 3), Windows 7 32 Bit Professional/Ultimate/Business
Processor	≥ Pentium 800 MHz/≥ 1 GHz (Windows 7)
RAM	≥ 512 Mbyte/≥ 1 GB (Windows 7)
Monitor resolution	≥ 1 024 x 768
Free space on hard disk	≥ 280 MB
CD-ROM/DVD drive	Yes (only when installing from CD)
Serial interface (COM)	Yes
PC cables for PC/PG communication	Yes

Benefits

- Convenient parameterization, operation, monitoring and testing by means of a user-friendly and clear-cut user interface
- Reliable diagnostic tool
- All functions, such as safety and logic functions, are available as modules, and are easy to link to one another.
- Comprehensive documentation of the safety function

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Selection and ordering data

Parameterization, start-up and diagnostics software for the 3RK3 modular safety system

- Delivered without PC cable

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Modular Safety System ES 2008 Basic						
 3ZS1 314-4CC10-0YA5						
Floating license for one user Engineering software in limited-function version for diagnostics purposes, software and documentation on CD, 3 languages (German/English/French), communication through the system interface						
• License key on USB stick, Class A	►	**3ZS1 314-4CC10-0YA5**		1	1 unit	42B
• License key download, Class A	►	**3ZS1 314-4CE10-0YB5**		1	1 unit	42B
Modular Safety System ES 2008 Standard						
 3ZS1 314-5CC10-0YA5						
Floating license for one user Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through system interface						
• License key on USB stick, Class A	B	**3ZS1 314-5CC10-0YA5**		1	1 unit	42B
• License key download, Class A	►	**3ZS1 314-5CE10-0YB5**		1	1 unit	42B
Powerpack for MSS ES 2008 Basic to Standard Floating license for one user, engineering software, software and documentation on CD, license key on USB stick, Class A, 3 languages (German/English/French), communication through the system interface	►	**3ZS1 314-5CC10-0YD5**		1	1 unit	42B
Software Update Service For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through the system interface	►	**3ZS1 314-5CC10-0YL5**		1	1 unit	42B
Modular Safety System ES 2008 Premium						
 3ZS1 314-6CC10-0YA5						
Floating license for one user Engineering software, software and documentation on CD, 3 languages (German/English/French), communication through PROFIBUS or the system interface, creating, importing and exporting macros						
• License key on USB stick, Class A	B	**3ZS1 314-6CC10-0YA5**		1	1 unit	42B
• License key download, Class A	►	**3ZS1 314-6CE10-0YB5**		1	1 unit	42B
Powerpack for MSS ES 2008 Standard to Premium Floating license for one user, engineering software, license key on USB stick, Class A, 3 languages (German/English/French), communication through PROFIBUS or the system interface, creating, importing and exporting macros	►	**3ZS1 314-6CC10-0YD5**		1	1 unit	42B
Software Update Service For 1 year with automatic extension, assuming the current software version is in use, engineering software, software and documentation on CD, communication through PROFIBUS or the system interface, creating, importing and exporting macros	►	**3ZS1 314-6CC10-0YL5**		1	1 unit	42B

Notes:

Please order PC cable separately, see page 14/26.

For description of the software versions see page 14/24.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Modular Safety System ES

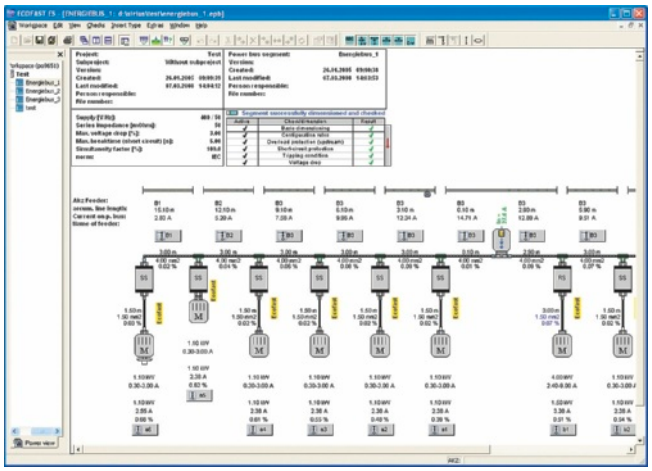
Accessories

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Optional accessories						
 3UF7 940-0AA00-0						
PC cables for PC/PG communication Through the system interface on the device, for connecting to the serial interface on the PC/PG	►	**3UF7 940-0AA00-0**		1	1 unit	42J
USB/serial adapters To connect a serial PC cable (for connection to the serial PC interface / RS 232), we recommend using 3RK3 modular safety system, 3RW44 soft starter, ET 200S/ECOFAST/ET 200pro motor starter, AS-i safety monitor and AS-i analyzer in conjunction with SIMOCODE pro 3UF7	B	**3UF7 946-0AA00-0**		1	1 unit	42J

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



ECOFAST ES for the configuration, calculating and documentation of applications with the ECOFAST motor starter

The ECOFAST system is an open and innovative system solution for distributed applications with standardized components when equipping machines and plants for automation, controls and drives. The system therefore offers a high degree of safety and availability during operation in addition to high time and cost savings during planning and commissioning/installation.

The ECOFAST system uses the ECOFAST motor starter (see Chapter 9 "Motor starters for use in the field, high degree of protection" → "ECOFAST motor starters"). The components are connected using the ECOFAST connection method (see Chapter 9 "Motor starters for use in the field, high degree of protection" → "Energy Communication Field Installation System").

The convenient ECOFAST ES configuring software reduces configuring times even further and enables reliable configuring right from the start. ECOFAST ES reduces errors and effort during configuring, calculating and documenting of applications.

System requirements

ECOFAST ES V 1.4 supports all standard PCs with the Windows operating system. Minimum hardware and software requirements need to be met to work with ECOFAST ES V 1.4; efficient operation is possible with the recommended values.

System requirements	Minimum	Recommended
Operating system (with service pack)	Windows 2000 or Windows XP Professional	
Processor	Pentium 800 MHz	Pentium 1 000 MHz[1]
Graphics cards		
• Resolution	1 024 x 768	1 280 x 1 024
• Colors, number	256	True Color
Main memory	512 MB RAM	> 512 MB RAM
Free space on hard disk	At least 50 MB[2]	
CD-ROM drive[3]	Yes, for the installation of ECOFAST ES V 1.4	

1) More powerful platforms may be necessary when working with options.
2) Additional free space recommended, e.g. for swap-out file.
3) CD-ROM drive not required for using ECOFAST ES V 1.4.

Benefits

- Graphic user interface for selecting and interconnecting stations on the power bus
- The components are identified down to the unique order number and entered in parts/quantity lists
- Automatic interface and function testing by means of logic rules (e.g. motor brakes, selectivity, etc.)
- Cable characteristics and laying specifications are taken into account in the calculation
- Plug-in connections are adapted automatically
- Division of projects into levels of hierarchy is possible
- The software finally calculates and checks the configuration according to currently valid standards and state of the art
- If necessary, an error list with hints for possible solutions (on-line help) can be output
- The configuration can be optimized automatically
- Choice of German, English and French as operating language
- User-friendly thanks to powerful visualization and clear-cut menu structures

Selection and ordering data

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
ECOFAST ES						
ECOFAST ES, basic package V 1.4 Graphic configuring tool for SIRIUS drive solutions • Operator prompting for selecting products • Configuring the supply system according to standards • Documentation, parts lists, quantity lists • Operating languages: German, English, French • Type of delivery: CD, single license	B	**3ZS1 200-0CC14-0YA0**		1	1 unit	42D



3ZS1 200-0CC14-0YA0

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Notes

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Products for Specific Requirements

15



Price groups
PG 4M1, 4ZZ, 050, 471, 477, 478, 581, 582, 583, 584, 585, 586, 588, 732

15/2 **Introduction**

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Safety, isolating, control and mains transformers
15/7 General data
15/14 SIRIUS 4AM safety, mains and control transformers
15/19 SIRIUS 4AM safety and mains transformers
15/20 SIRIUS 4AM, 4AT isolating, control and mains transformers
15/31 SIRIUS 4AT isolating transformers for the supply of medical premises

Three-phase transformers
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Power transformers
15/39 General data
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15/46 SIRIUS 4BU matching transformers with cURus approval
15/48 Transformers with selectable voltages

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15/49 General data
Filtered for supply of electronic controls
15/50 General data
15/52 SIRIUS 4AV2, 4AV4 power supplies, filtered, single-phase
15/54 SIRIUS 4AV3, 4AV5 power supplies, filtered, three-phase
Unfiltered for supply of general loads
15/56 SIRIUS 4AV98 power supplies, unfiltered, single-phase
15/57 SIRIUS 4AV96 power supplies, unfiltered, three-phase

Stabilized power supplies
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Electrical charging components
Components for electric vehicle charging stations
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15/94 SIPLUS ECC8000 prefabricated function units

More information can be found on the Internet: see opening information, page 13

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Introduction

Overview

Single-phase transformers


4AM


4AT


4AT
for supply of
medical premises

Version	Rated power kVA	Rated input voltage V AC	Rated output voltage V AC	Safety class	Page
Safety, isolating, control and mains transformers					
SIRIUS 4AM safety, mains and control transformers					
With one input voltage	0.063 ... 1.0	230 ± 5 %; 400 ± 5 %	24; 42	I	15/14
For European voltages	0.063 ... 1.0	400/230 ± 15 V	24; 42	I	15/16
In multi-voltage version	0.063 ... 1.0	550 ... 208; 600 ... 230	24; 42	I	15/17
SIRIUS 4AM safety and mains transformers					
With an input voltage	0.025 ... 0.04	230 ± 5 %; 400 ± 5 %	24; 42	I	15/19
SIRIUS 4AM, 4AT isolating, control and mains transformers					
4AM and 4AT with an input voltage	4AM: 0.063 ... 2.5; 4AT: 4 ... 10	230 ± 5 %; 400 ± 5 %; 440 ± 5 %; 500 ± 5 %	110; 230	I	15/20
4AM with an input voltage without cULus	4AM: 0.063 ... 2.5	660 ± 5 %; 690 ± 5 %	230	I	15/27
4AM and 4AT in European voltage design	4AM: 0.063 ... 2.5; 4AT: 4 ... 10	400/230 ± 15 V	2 × 115	I	15/28
4AM and 4AT in multi-voltage version	4AM: 0.063 ... 2.5; 4AT: 4 ... 10	550 ... 208; 600 ... 230	2 × 115	I	15/29
SIRIUS 4AT isolating transformers					
For supply of medical premises	2.5 ... 10	230	230-115	I	15/31

For more products see Industry Mall and Interactive Catalog CA 01 or www.mdexx.com.

Three-phase transformers


4AP20


4AU


4BU

Version	Rated power kVA	Rated input voltage V AC	Rated output voltage V AC	Safety class	Page
Safety, isolating, control and mains transformers					
SIRIUS 4AP, 4AU isolating, control and mains transformers					
4AP and 4AU in two-voltage version	0.63 ... 16	Y 500-400 /Δ 289-230	Y 400/Δ 230	I	15/37
4AP and 4AU in multi-voltage version	0.63 ... 16	Y 520 ... 360 /Δ 300 ... 208	Y 400/Δ 230	I	15/38
Power transformers					
SIRIUS 4BU matching transformers with an input voltage	18 ... 160	Δ 400, 400 ± 5 %/ Y 400, 400 ± 5 %	Y 400	I	15/42
SIRIUS 4BU matching transformers With cULus approval With an input voltage	18 ... 160	Δ 480 ± 5 %/ Y 480 ± 5 %	Y 400	I	15/46
Transformers with selectable voltages	18 ... 160	selectable; 100 … 1 000[1)]	selectable; 100 … 1 000[1)]	I	15/48

[1)] cULus max. 600 V.

For more products see Industry Mall and Interactive Catalog CA 01 or www.mdexx.com.

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4AV Non-Stabilized Power Supplies

						
		4AV21/23	**4AV20/22/24/26**	**4AV4**	**4AV3**	**4AV5**
Filtered for supply of electronic controls						
Ripple		< 5 %	< 5 %	< 5 %	< 5 %	< 5 %
Phase		1	1	1	3	3
Rated input voltage	V AC	115 ... 415	115 ... 415	230 ... 415	200 ... 600	400 ... 415
Rated output voltage according to EN 61131-2 suitable for SIMATIC systems	V DC	24	24	24	24	24
Rated output current	A	1 ... 4.2	2.5 ... 18	1.5 ... 10	15 ... 180	25, 35
Connection		Screw terminals/ flat connectors	Screw terminals/ flat connectors or Cage Clamp terminals	Screw terminals/ flat connectors or Cage Clamp terminals	Screw terminals/ flat connectors	Screw terminals/ flat connectors
Mounting		Standard rail mounting	Screw and/or standard rail mounting	Screw and/or standard rail mounting	Screw mounting	Screw mounting
cULus approval at 60 °C		Yes	Yes	No	Partially	No
Page		15/52	15/53	15/53	15/54, 15/55	15/54

			
		4AV98	**4AV96**
Unfiltered for supply of general loads			
Ripple		48.3 %	< 5 %
Phase		1	3
Rated input voltage	V AC	230 or 400	400
Rated output voltage	V DC	24	30-27-24
Rated output current/ rated power		50 ... 500 W	4 ... 25 A
Connection		Screw terminals/flat connectors	Screw terminals/flat connectors
Mounting		Screw mounting	Screw mounting
cULus approval		No	No
Page		15/56	15/57

For more products see Industry Mall and Interactive Catalog CA 01 or www.mdexx.com.

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Introduction

6EP stabilized power supplies

					
		6EP1 LOGO!Power	**6EP1 SITOP compact**	**6EP1 SITOP smart**	**6EP1 SITOP modular**
Phase		1	1	1, 3	1, 2, 3
Rated input voltage	V	100 ... 240 AC	100 ... 230 AC	120/230 AC, 3 AC 400 ... 500	120/230 ... 500 AC, 120/230 AC, 3 AC 400 ... 500
Rated output voltage	V DC	5, 12, 15, 24	24, 12	24	24, 48
Rated output current	A	1.3 ... 6.3	0.6 ... 6.5	2.5 ... 40	5 ... 40
Connection		Screw terminal connection	Screw terminal connection	Screw terminal connection	Screw terminal connection
Mounting		Standard rail mounting	Standard rail mounting	Standard rail mounting	Standard rail mounting
Approval		UL, cUL	UL, cUL	UL, cUL	UL, cUL
Page		15/58	15/59	15/60	15/61

				
		6EP1 Special designs and uses	**6EP1 Expansion modules**	**6EP1 DC-UPS uninterruptible power supplies**
Phase		1	1	1
Rated input voltage	V	120 / 230 AC	24 DC	24 DC
Rated output voltage	V DC	3 ... 52	U_e – approx. 1	24
Rated output current	A	10	40, 4 x 3, 4 x 10	6 ... 40
Connection		Screw terminal connection	Screw terminal connection	Screw terminal connection
Mounting		Standard rail mounting	Standard rail mounting	Standard rail mounting (except: wall mounting with SITOP UPS500P)
Approval		UL, cUL	UL, cUL	UL, cUL
Page		15/63	15/64	15/65, 15/66

For more power supply products see Catalog KT 10.1 or on the Internet at www.siemens.com/sitop.

For more information about SIPLUS extreme see www.siemens.com/siplus-extreme.

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Heating control systems



HCS716I



HCS724I



HCS300I

SIPLUS HCS716I heating control systems
• The central solution for power outputs up to 2.3 kW
• Three rack versions for up to 12 power output modules
• Communication with higher-level control system through PROFIBUS DP
• Three different power output modules available
• Compact design: 192 power channels on only 0.2 m^2
• Zero-point switching Triacs
• Protection of the outputs with fine fuses in fuse holders
• Easy connection of heat emitters by means of plugs
• Network supply through terminals or plugs
• Diagnostics functions for detecting external and internal faults
SIPLUS HCS724I heating control systems
• The central solution for power outputs up to 4 kW
• ZA724I central interface for up to 16 power output modules
• Communication with higher-level control system through PROFIBUS DP
• Three different power output modules available, including one for controlling solid-state switching relays (SSR)
• Compact design: 384 power channels on only 0.4 m^2
• Zero-point switching Triacs
• Protection of the outputs with fine fuses in fuse holders which can be reached from the front
• Easy connection of heat emitters by means of plugs
• Network supply through busbar system at the front
• Optional mains voltage measuring module for mains voltage compensation
• Extensive diagnostics functions for detecting external and internal faults
SIPLUS HCS300I heating control systems
• The central or distributed temperature control solution
• Basic unit for communicating with higher-level control system through PROFIBUS DP
• DM digital modules with six outputs
• TM temperature modules with four temperature inputs for Pt100/Pt1000 and thermoelements type J/K/L
• Three current measuring modules with measuring ranges of 2.5 ... 25 A, 10 ... 100 A and 20 ... 200 A
• Three current/voltage measuring modules with measuring ranges of 2.5 ... 25 A, 10 ... 100 A, 20 ... 200 A and voltages up to 690 V
• Optional TCP 3000 temperature control software available for SIMATIC

For more information see Industry Mall or on the Internet at www.siemens.com/siplus-hcs.

Electrical charging components







	SIPLUS ECC1000 (CM-100)	SIPLUS ECC2000 (CM-230)	SIPLUS ECC8000 (SYS-101A, SYS-102A, SYS-202A)
Version	Charging controllers for installing AC electric vehicle charging stations according to IEC 61851	Charging controllers for installing AC electric vehicle charging stations according to IEC 61851 with Ethernet connection	Function units (factory-wired and ready to install), comprising a charging controller and load feeder for installing electric vehicle charging stations according to IEC 61851

For more information see Industry Mall or on the Internet at www.siemens.com/siplus-ecc.

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Introduction

Options

Delivery time class DT

The delivery time classes are specified in the selection tables in front of the order numbers.

The standard transport time for Germany is 1 day (see "Ordering notes" on page 10).

The quoted delivery time class for the 4AM, 4AT, 4AP, 4AU, 4BU transformers and the 4AV power supplies is applicable to an order quantity of up to 5 units.

The quoted delivery time class for the SIPLUS extreme power supplies is applicable to an order quantity of up to 9 units.

The quoted delivery time class for the SIPLUS HCS heating control system is applicable to an order quantity of up to 9 units.

▶ Preferred type

This delivery time class applies with the degree of protection IP00, i.e. these units can be supplied immediately from stock[1)] and will be dispatched within 24 hours. The transport times depend on the destination and the mode of delivery.

Delivery time class B is applicable to an order quantity of 6 units and more.

Delivery time class A

The ordered units will be dispatched within 1 or 2 working days.

Delivery time class B is applicable to an order quantity of 6 units and more.

Delivery time class B

The ordered units will be dispatched within 3 to 5 working days.

Delivery time class C is applicable to an order quantity of 6 units and more.

Delivery time class C

The ordered units will be dispatched within 6 to 15 working days.

Delivery time class D is applicable to an order quantity of 6 units and more.

Delivery time class D

The ordered units, including enclosure and additional options, will be dispatched within 16 to 30 working days.

Delivery time class X

On request.

Orders for transformers and non-stabilized power supplies in customized versions or with special applications are handled exclusively by mdexx GmbH

For customized transformers and non-stabilized power supplies not listed in our Catalog IC 10 please send your enquiries to mdexx GmbH:

trafo@mdexx.com

or by fax to +49 (421) 5125-333.

mdexx GmbH will reply with all the data needed for you to place an order.

[1)] This is based on standard commercial orders – normal order!

More information

You will find more information about power supplies, transformers, reactors and filters on the Internet at www.siemens.com/sirius-supplying or www.mdexx.com.

Transformers for converter systems from Siemens see the following catalogs:

- Catalog NC 60, SINUMERIK & SIMODRIVE
- Catalog DA 65.10, SIMOVERT MASTERDRIVES Vector Control
- Catalog DA 65.11, SIMOVERT MASTERDRIVES Motion Control

For more information about SIPLUS extreme see Industry Mall or on the Internet at www.siemens.com/siplus-extreme.

For more information about the SIPLUS HCS heating control system see Industry Mall or on the Internet at www.siemens.com/siplus-hcs.

For more information about electrical charging components see Industry Mall or on the Internet at www.siemens.com/siplus-ecc.

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Overview

4AM../4AT.. transformers

With the right transformer, the right voltage will be available at any conditions.

Our transformers are the right choice for each application: They work reliably, safely and worldwide under a wide range of different conditions.

Transformers are summarized in a user-friendly manner as:

- Isolating, control and mains transformers according to EN 61558-2-4, -2-2, -2-1 or
- Safety, control and mains transformers according to EN 61558-2-6, -2-2, -2-1

Note:

Mains transformers with ≤ 50 V on the output side are, in the case of SIRIUS transformers, always designed as safety transformers.

Our transformers provide optimal protection through high permissible ambient temperatures up to 40 °C or 55 °C, a high short-time rating in the case of control transformers, fuseless construction and due to their safety standard "Safety inside" EN 61558.

Connection methods

4AM../4AT.. transformers are available with screw/flat connectors.

Screw terminals

Flat connectors

The terminals are indicated in the corresponding tables by the symbols shown on orange backgrounds.

Order No. scheme

Digit of the Order No.	1st	2nd	3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th		13th	14th	15th	16th
	□	□	□	□	□	□	□	–	□	□	□	□	□	–	□	□	□	□
Transformer product type	**4**	**A**																
Product group			□															
Rated power				□	□													
Power level						□												
Development status							□											
Rated input voltage									□	□								
Rated output voltage											□	□						
Version, e.g. coil form													□					
Application															□	□		
Degree of protection																	□	
Connection type																		□
Example	**4**	**A**	**M**	**4**	**0**	**4**	**2**	**–**	**5**	**A**	**T**	**1**	**0**	**–**	**0**	**F**	**A**	**0**

Note:

The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quoted in the catalog in the Selection and ordering data.

Benefits

- High short-time rating of the SIRIUS transformers: lower transformer rated power for a large number of contactors
- Suitable for "fuseless construction": The small inrush current means that "circuit breakers for motor protection" can also be used on the primary side
- cULus approvals for the USA and Canada: can be used worldwide without any problems
- Comprehensive type spectrum supplied from stock: rapid availability

Application

Transformers are used in industrial machines, process engineering, heating and air-conditioning equipment, etc., for supplying control and signaling circuits, when:

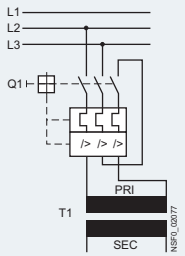
- Several electromagnetic loads (e.g. contactors) have to be controlled
- Control and signaling devices are used outside the control cabinet
- The operational voltage for the loads differs from the available voltage level
- Voltage matching for machines and installations with electrical isolation or as an autotransformer

Generally, our transformers are used for voltage matching of electrical devices, e.g. in communications, medical engineering and domestic appliances.

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General data

Technical specifications

General data			
Transformers	Type	**4AM**	**4AT**
• Version		EI core	UI core
• Performance range (with IP00)	kVA	0.025 ... 2.5	> 2.5 ... 16
• Approvals		cULus	
Voltage range	V	≤ 690	
• Approvals for USA, Canada	V	≤ 600	
Rated frequency	Hz	50 ... 60	
Thermal class		B	H
• Acc. to UL/CSA		CLASS 130	CLASS 180
Ambient conditions		Protection against harmful ambient conditions: Complete impregnation in polyester resin Climate-proof for installation in rooms with an external climate acc. to DIN 50010	
Rated ambient temperature			
• At rated power	°C	40	55
• Maximum value (after power reduction in accordance with load characteristic[1])	°C	80	
• Minimum value	°C	–25	
Relative air humidity			
• Mean value up to	%	80	
• Maximum value for 30 days/year	%	95	
• At 40 °C occasionally	%	100	
Protection class		I	
Degree of protection			
• Without enclosure		IP00	
• With protective enclosure (see "Selection and Ordering Data")		IP23 or IP54 Version: sheet-steel enclosure coated with epoxy resin, color gray RAL 7032	
Installation altitude		Up to 1 000m above sea level (above this, power reduction is necessary)	
Protective devices			
• External		The transformers can be protected against short circuits and overload on the primary and secondary side with circuit breakers, see diagram.	
			
		For reliable protection against short circuits, overload and touch, the cables between the output terminals of the transformer and the load must have a negligible line impedance. For more details see DIN VDE 0100 (Erection of low-voltage systems) Part 410, Part 520 particularly section 525 and Part 610.	
		Assigned protective devices (see "Primary-side short-circuit and overload protection with motor starter protectors")	
Connection methods		The permissible conductor cross-sections are assigned to the specified terminal types.	
• Terminal arrangement[1]		Refer to DIN VDE 0298-4 and EN 60204 for the permissible conductor cross-sections for the specified current according to the installation type. The terminals used are finger-safe according to EN 50274.	
• Terminal versions and connectable cross-sections[1]		Other terminal sizes than standard versions on request.	
Mounting position		The permissible mounting position for each version is shown in the "Project Planning Aids"[1].	

[1] See "Reference Manual for Single-Phase Transformers · Three-Phase Transformers".

For more technical specifications see www.siemens.com/sirius-supplying → "Technical Information"

or

www.siemens.com/sirius/support → "Transformers and Power Supplies" → "Manuals/Operating Instructions".

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Rated power outputs at different ambient temperatures

- With electrically separated windings
- Degree of protection IP00
- According to EN 61558, cULus

Transformer	Rated power P_n	Permissible transformer load depending on the ambient temperature							
		t_a = 60 °C	t_a = 55 °C	t_a = 50 °C	t_a = 45 °C	t_a = 40 °C	t_a = 35 °C	t_a = 30 °C	t_a = 25 °C
Type	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA
4AM transformers									
4AM23 4	0.025	0.021	0.022	0.023	0.024	0.025	0.026	0.027	0.0278
4AM26 4	0.04	0.0336	0.0352	0.0368	0.0384	0.04	0.0416	0.0432	0.0444
4AM32 4	0.063	0.0529	0.0554	0.058	0.0605	0.063	0.0655[1]	0.068[1]	0.0699[1]
4AM34 4	0.1	0.084	0.088	0.092	0.096	0.1	0.104[1]	0.108[1]	0.111[1]
4AM38 4	0.16	0.134	0.141	0.147	0.154	0.16	0.166[1]	0.173[1]	0.178[1]
4AM40 4	0.25	0.21	0.22	0.23	0.24	0.25	0.26	0.27	0.278
4AM43 4	0.315	0.265	0.277	0.29	0.302	0.315	0.328	0.34	0.35
4AM46 4	0.4	0.336	0.352	0.368	0.384	0.4	0.416	0.432	0.444
4AM48 4	0.5	0.42	0.44	0.46	0.48	0.5	0.52	0.54	0.555
4AM52 4	0.63	0.529	0.554	0.58	0.605	0.63	0.655	0.68	0.699
4AM55 4	0.8	0.672	0.704	0.736	0.768	0.8	0.832	0.864	0.888
4AM57 4	1	0.84	0.88	0.92	0.96	1	1.04	1.08	1.11
4AM61 4	1.6	1.34	1.41	1.47	1.54	1.6	1.66	1.73	1.78
4AM64 4	2	1.68	1.76	1.84	1.92	2	2.08	2.16	2.22
4AM65 4	2.5	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.78
4AT transformers									
4AT30 3	4	3.88	4	4.12	4.24	4.4	4.52	4.64	4.76
4AT36 1	5	4.85	5	5.15	5.3	5.5	5.65	5.8	5.95
4AT36 3	6.3	6.11	6.3	6.49	6.68	6.93	7.12	7.31	7.5
4AT39 1	8	7.76	8	8.24	8.48	8.8	9.04	9.28	9.52
4AT39 3	10	9.7	10	10.3	10.6	11	11.3	11.6	11.9
4AT43 0	11.2	10.9	11.2	11.5	11.9	12.3	12.7	13	13.3
4AT43 1	12.5	12.1	12.5	12.9	13.3	13.8	14.1	14.5	14.9
4AT43 2	14	13.6	14	14.4	14.8	15.4	15.8	16.2	16.7
4AT45 0	16	15.5	16	16.5	17	17.6	18.1	18.6	19

[1] For control transformers, the values t_a = 40 °C apply.

Operation characteristics

- According to EN 61558-2-6, EN 61558-2-4, EN 61558-2-2, EN 61558-2-1

Transformer	Rated power P_n 50 Hz ... 60 Hz 1 000 m above sea level Degree of protection IP00	Core size	Voltage rise in no-load operation (operating temperature) u_A approx.	Voltage drop on rated load[1] u_R approx.	Short-circuit voltage[1] u_Z approx.	Degree of efficiency η approx.
Type	kVA		%	%	%	%
4AM transformers: t_a = 40 °C/B						
4AM23 4	0.025	EI 60/20	26	17.6	17.6	74
4AM26 4	0.04	EI 66/22	23	15.3	15.3	76
4AM32 4	0.063	EI 84/28	10	8.4	8.4	85
4AM34 4	0.1	EI 84/42	10	7.7	7.7	86
4AM38 4	0.16	EI 96/44	10.4	7.6	7.7	86
4AM40 4	0.25	EI 96/58	7.2	5.4	5.4	89
4AM43 4	0.315	EI 105/60	6.6	4.9	5	90
4AM46 4	0.4	EI 120/52	5.7	4.3	4.4	91
4AM48 4	0.5	EI 120/72	5	3.8	3.8	91
4AM52 4	0.63	EI 150/48	4.7	3.6	3.7	92
4AM55 4	0.8	EI 150/65	4	3	3.1	92
4AM57 4	1	EI 150/90	3.2	2.5	2.5	93
4AM61 4	1.6	EI 174/82	2.4	1.9	2.1	96
4AM64 4	2	EI 174/102	2.1	1.7	1.9	96
4AM65 4	2.5	EI 192/110	1.6	1.3	1.6	96
4AT transformers: t_a = 55 °C/H						
4AT30 3	4	UI 150/75	3.8	2.7	2.9	95
4AT36 1	5	UI 180/75	5.5	3.8	3.9	94
4AT36 3	6.3	UI 180/75	4.3	3.1	3.3	95
4AT39 1	8	UI 210/70	4.3	3.1	3.3	95
4AT39 3	10	UI 210/70	3.5	2.5	3.3	96
4AT43 0	11.2	UI 240/80	3.9	2.8	2.8	95
4AT43 1	12.5	UI 240/80	3.5	2.5	2.6	96
4AT43 2	14	UI 240/80	3.1	2.2	2.4	96
4AT45 0	16	UI 240/107	2.9	2.1	2.1	96

[1] Winding reference temperature: 20 °C.

Calculation of power loss P_V

$$P_V = \frac{P_n\,(100 - \eta)}{\eta}\ [\text{kW}]$$

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General data

Primary-side short-circuit and overload protection with motor starter protectors

Version with one input voltage

Trans-former	Rated power P_n	Motor starter protector version: Motor protection[1]	Rated input voltage U_{1N} in V																		
Type	kVA	Type	690	660	600	575	550	525	500	480	460	440	415	400	380	240	230	220	208	200	190
4AM transformers																					
4AM23 4	0.025	3RV20 11-□□□10	0AA	0AA	0AA	0AA	0AA	0AA	0AA	0AA	0AA	0AA	0AA	0AA	0AA	0CA	0CA	0CA	0CA	0DA	0DA
		Set value in A	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.18	0.18	0.19	0.2	0.22	0.22
4AM26 4	0.04	3RV20 11-□□□10	0AA	0AA	0AA	0AA	0AA	0AA	0AA	0BA	0BA	0BA	0BA	0CA	0CA	0EA	0EA	0EA	0EA	0FA	0FA
		Set value in A	0.11	0.11	0.11	0.11	0.11	0.12	0.13	0.14	0.14	0.14	0.15	0.18	0.18	0.28	0.28	0.29	0.3	0.35	0.35
4AM32 4	0.063	3RV20 11-□□□10	0BA	0BA	0BA	0BA	0CA	0CA	0CA	0CA	0CA	0DA	0DA	0DA	0DA	0FA	0GA	0GA	0GA	0GA	0GA
		Set value in A	0.14	0.14	0.15	0.16	0.18	0.18	0.18	0.19	0.19	0.22	0.22	0.22	0.24	0.37	0.45	0.45	0.45	0.45	0.47
4AM34 4	0.1	3RV20 11-□□□10	0DA	0DA	0EA	0EA	0EA	0EA	0EA	0FA	0FA	0FA	0FA	0FA	0GA	0JA	0JA	0JA	0JA	0KA	0KA
		Set value in A	0.22	0.23	0.28	0.28	0.28	0.28	0.3	0.35	0.35	0.35	0.36	0.37	0.45	0.7	0.7	0.7	0.72	0.9	0.9
4AM38 4	0.16	3RV20 11-□□□10	0FA	0FA	0FA	0FA	0FA	0GA	0GA	0GA	0GA	0HA	0HA	0HA	0HA	0KA	0KA	1AA	1AA	1AA	1AA
		Set value in A	0.35	0.35	0.39	0.4	0.42	0.45	0.46	0.48	0.5	0.55	0.56	0.58	0.61	0.96	1	1.1	1.1	1.2	1.2
4AM40 4	0.25	3RV20 11-□□□10	0HA	0HA	0HA	0HA	0JA	0JA	0JA	0JA	0JA	0KA	0KA	0KA	0KA	1BA	1BA	1CA	1CA	1CA	1CA
		Set value in A	0.55	0.55	0.57	0.59	0.7	0.7	0.7	0.7	0.74	0.9	0.9	0.9	0.9	1.4	1.5	1.8	1.8	1.8	1.8
4AM43 4	0.315	3RV20 11-□□□10	0JA	0JA	0JA	0JA	0KA	0KA	0KA	0KA	1AA	1AA	1AA	1AA	1AA	1CA	1DA	1DA	1DA	1DA	1DA
		Set value in A	0.7	0.7	0.71	0.74	0.9	0.9	0.9	0.9	1.1	1.1	1.1	1.1	1.1	1.8	2.2	2.2	2.2	2.2	2.2
4AM46 4	0.4	3RV20 11-□□□10	0KA	0KA	0KA	0KA	1AA	1AA	1AA	1AA	1AA	1BA	1BA	1BA	1BA	1DA	1DA	1EA	1EA	1EA	1EA
		Set value in A	0.9	0.9	0.9	0.92	1.1	1.1	1.1	1.1	1.2	1.4	1.4	1.4	1.4	2.2	2.3	2.8	2.8	2.8	2.8
4AM48 4	0.5	3RV20 11-□□□10	1AA	1AA	1AA	1BA	1BA	1BA	1BA	1BA	1BA	1CA	1CA	1CA	1CA	1EA	1FA	1FA	1FA	1FA	1FA
		Set value in A	1.1	1.1	1.1	1.4	1.4	1.4	1.4	1.4	1.5	1.8	1.8	1.8	1.8	2.8	3.5	3.5	3.5	3.5	3.5
4AM52 4	0.63	3RV20 11-□□□10	1AA	1BA	1BA	1BA	1BA	1BA	1CA	1CA	1CA	1CA	1DA	1DA	1DA	1FA	1FA	1FA	1GA	1GA	1GA
		Set value in A	1.2	1.4	1.4	1.4	1.5	1.6	1.8	1.8	1.8	1.9	2.2	2.2	2.2	3.5	3.5	3.7	4.5	4.5	4.5
4AM55 4	0.8	3RV20 11-□□□10	1CA	1CA	1CA	1DA	1DA	1DA	1DA	1DA	1DA	1EA	1EA	1EA	1EA	1GA	1GA	1HA	1HA	1HA	1HA
		Set value in A	1.8	1.8	1.8	2.2	2.2	2.2	2.2	2.2	2.2	2.8	2.8	2.8	2.8	4.5	4.5	5.5	5.5	5.5	5.5
4AM57 4	1	3RV20 11-□□□10	1DA	1DA	1DA	1DA	1DA	1EA	1EA	1EA	1EA	1EA	1FA	1FA	1FA	1HA	1HA	1JA	1JA	1JA	1JA
		Set value in A	2.2	2.2	2.2	2.3	2.4	2.8	2.8	2.8	2.8	3	3.5	3.5	3.5	5.5	5.7	7	7	7	7
4AM61 4	1.6	3RV20 11-□□□10	1FA	1FA	1FA	1FA	1FA	1GA	1GA	1GA	1GA	1HA	1HA	1HA	1HA	1KA	--	--	--	--	--
		3RV20 21-□□□10	--	--	--	--	--	--	--	--	--	--	--	--	--		4AA	4AA	4AA	4AA	4AA
		Set value in A	3.5	3.5	3.5	3.7	3.9	4.5	4.5	4.5	4.6	5.5	5.5	5.5	5.6	9	11	11	11	11	11
4AM64 4	2	3RV20 11-□□□10	1GA	1GA	1GA	1GA	1HA	1HA	1HA	1HA	1HA	1JA	1JA	1JA	1JA	--	--	--	--	--	--
		3RV20 21-□□□10	--	--	--	--	--	--	--	--	--	--	--	--	--	4AA	4AA	4BA	4BA	4BA	4BA
		Set value in A	4.5	4.5	4.5	4.5	5.5	5.5	5.5	5.5	5.7	7	7	7	7	11	11	14	14	14	14
4AM65 4	2.5	3RV20 11-□□□10	1GA	1GA	1HA	1HA	1HA	1JA	1JA	1JA	1JA	1KA	1KA	1KA	1KA	--	--	--	--	--	--
		3RV20 21-□□□10	--	--	--	--	--	--	--	--	--	--	--	--	--	4BA	4BA	4CA	4CA	4CA	4DA
		Set value in A	4.5	5.5	5.5	5.5	5.7	7	7	7	7	9	9	9	9	14	14	17	17	17	20
4AT transformers																					
4AT30 3	4	3RV20 11-□□□10	1JA	1JA	1KA	1KA	1KA	1KA	--	--	--	--	--	--	--	--	--	--	--	--	--
		3RV20 21-□□□10	--	--	--	--	--	--	4AA	4AA	4AA	4AA	4AA	4AA	4BA	--	--	--	--	--	--
		3RV10 31-□□□10	--	--	--	--	--	--	--	--	--	--	--	--	--	4EA	4EA	4EA	4EA	4FA	4FA
		Set value in A	8	8	9	9	9	10	11	11	11	12	12	13	14	22	22	23	24	28	28
4AT36 1	5	3RV20 11-□□□10	1KA	1KA	1KA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		3RV20 21-□□□10	--	--	--	4AA	4AA	4AA	4BA	4BA	4BA	4BA	4BA	4BA	4CA	--	--	--	--	--	--
		3RV10 31-□□□10	--	--	--	--	--	--	--	--	--	--	--	--	--	4FA	4FA	4FA	4FA	4FA	4GA
		Set value in A	10	10	11	11	12	12	14	14	14	15	16	16	17	28	28	29	31	32	36
4AT36 3	6.3	3RV20 21-□□□10	4AA	4AA	4BA	4BA	4BA	4BA	4CA	4CA	4CA	4CA	4DA	4DA	4DA	--	--	--	--	--	--
		3RV10 31-□□□10	--	--	--	--	--	--	--	--	--	--	--	--	--	4GA	4GA	4GA	4GA	4GA	4HA
		Set value in A	12	12	14	14	15	15	17	17	17	18	20	20	21	36	36	36	38	39	41
4AT39 1	8	3RV20 21-□□□10	4BA	4BA	4CA	4CA	4CA	4DA	4DA	4DA	4DA	--	--	--	--	--	--	--	--	--	--
		3RV10 31-□□□10	--	--	--	--	--	--	--	--	--	4EA	4EA	4EA	4FA	4HA	4HA	4HA	--	--	--
		3RV10 41-□□□10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4JA	4JA	4JA
		Set value in A	15	15	17	18	18	20	20	21	22	23	24	25	28	42	43	45	48	50	52
4AT39 3	10	3RV20 21-□□□10	4CA	4CA	4DA	4DA	4DA	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		3RV10 31-□□□10	--	--	--	--	--	4EA	4EA	4EA	4FA	4FA	4FA	4FA	4FA	--	--	--	--	--	--
		3RV10 41-□□□10	--	--	--	--	--	--	--	--	--	--	--	--	--	4JA	4KA	4KA	4KA	4KA	4KA
		Set value in A	18	19	21	22	23	24	25	26	28	28	30	31	32	51	57	57	59	69	64
4AT43 0	11.2	3RV10 31-□□□10	4EA	4EA	4EA	4EA	4EA	4FA	4FA	4FA	4FA	4GA	4GA	4GA	4HA	--	--	--	--	--	--
		3RV10 41-□□□10	--	--	--	--	--	--	--	--	--	--	--	--	--	4KA	4KA	4LA	4LA	4LA	4MA
		Set value in A	22	22	23	24	25	28	28	29	30	36	36	36	40	58	60	70	70	70	80
4AT43 1	12.5	3RV10 31-□□□10	4EA	4EA	4FA	4FA	4FA	4FA	4FA	4GA	4GA	4GA	4HA	4HA	--	--	--	--	--	--	--
		3RV10 41-□□□10	--	--	--	--	--	--	--	--	--	--	--	--	4JA	4LA	4LA	4LA	4LA	4MA	4MA
		Set value in A	22	23	28	28	28	29	31	36	36	36	40	40	45	70	70	70	73	80	80
4AT43 2	14	3RV10 31-□□□10	4EA	4FA	4FA	4FA	4FA	4GA	4GA	4HA	4HA	4HA	--	--	--	--	--	--	--	--	--
		3RV10 41-□□□10	--	--	--	--	--	--	--	--	--	--	4JA	4JA	4JA	4MA	4MA	4MA	4MA	4MA	4MA
		Set value in A	25	28	29	30	31	36	36	40	40	40	45	45	45	80	80	80	82	85	90
4AT45 0	16	3RV10 31-□□□10	4FA	4FA	4GA	4GA	4HA	4HA	--	--	--	--	--	--	--	--	--	--	--	--	--
		3RV10 41-□□□10	--	--	--	--	--	--	4JA	4JA	4JA	4JA	4JA	4KA	4KA	4MA	4MA	4MA	4MA	4MA	4MA
		Set value in A	29	30	33	36	40	40	45	45	45	45	47	57	57	81	85	89	94	97	100

[1] Two-pole or single-pole motor starter protectors can be connected (3 conducting paths in series), see circuit diagram on page 15/8.

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European voltage and multi-voltage version

Trans-former	Rated power P_n	Motor starter protector[1]	Rated input voltage U_{1N} in V																		
Type	kVA	Type	690	660	600	575	550	525	500	480	460	440	415	400	380	240	230	220	208	200	190
Motor starter protector version for 4AM transformers: Transformer protection																					
4AM23 4	0.025	3RV24 11-□□□10	0AA	0AA	0AA	0AA	0AA	0AA	0AA	0AA	0AA	0AA	0AA	0AA	0AA	0CA	0CA	0CA	0CA	0CA	0CA
		Set value in A	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.12	0.19	0.2	0.2	0.23	0.24	0.25
4AM26 4	0.04	3RV24 11-□□□10	0AA	0AA	0AA	0AA	0AA	0BA	0BA	0BA	0BA	0BA	0BA	0CA	0CA	0DA	0DA	0DA	0EA	0EA	0EA
		Set value in A	0.11	0.11	0.12	0.12	0.13	0.14	0.14	0.15	0.16	0.16	0.17	0.18	0.19	0.3	0.32	0.32	0.35	0.35	0.38
4AM32 4	0.063	3RV24 11-□□□10	0BA	0BA	0BA	0CA	0CA	0CA	0CA	0CA	0DA	0DA	0DA	0DA	0DA	0FA	0FA	0FA	0GA	0GA	0GA
		Set value in A	0.15	0.15	0.17	0.18	0.19	0.2	0.2	0.21	0.22	0.23	0.25	0.26	0.27	0.43	0.45	0.47	0.49	0.5	0.55
4AM34 4	0.1	3RV24 11-□□□10	0DA	0DA	0EA	0EA	0EA	0EA	0EA	0FA	0FA	0FA	0FA	0FA	0FA	0HA	0HA	0HA	0JA	0JA	0JA
		Set value in A	0.25	0.26	0.29	0.3	0.31	0.33	0.34	0.35	0.35	0.39	0.41	0.43	0.45	0.72	0.75	0.75	0.83	0.85	0.9
4AM38 4	0.16	3RV24 11-□□□10	0FA	0FA	0GA	0GA	0GA	0GA	0GA	0HA	0HA	0HA	0HA	0HA	0HA	0KA	0KA	0KA	1AA	1AA	1AA
		Set value in A	0.39	0.4	0.45	0.45	0.49	0.51	0.54	0.55	0.55	0.6	0.65	0.67	0.71	1.1	1.1	1.2	1.3	1.35	1.4
4AM40 4	0.25	3RV24 11-□□□10	0HA	0HA	0HA	0HA	0JA	0JA	0JA	0JA	0JA	0KA	0KA	0KA	0KA	1BA	1BA	1BA	1BA	1BA	1BA
		Set value in A	0.55	0.6	0.66	0.69	0.7	0.75	0.8	0.82	0.85	0.9	0.95	0.99	1	1.65	1.7	1.8	1.9	1.9	2
4AM43 4	0.315	3RV24 11-□□□10	0JA	0JA	0JA	0JA	0KA	0KA	0KA	0KA	0KA	0KA	0KA	1AA	1AA	1CA	1CA	1CA	1CA	1CA	1CA
		Set value in A	0.7	0.75	0.8	0.85	0.9	0.9	1	1	1	1.1	1.2	1.24	1.3	2	2.1	2.2	2.3	2.4	2.5
4AM46 4	0.4	3RV24 11-□□□10	0KA	0KA	0KA	0KA	1AA	1AA	1AA	1AA	1AA	1AA	1AA	1BA	1BA	1DA	1DA	1DA	1DA	1DA	1DA
		Set value in A	0.9	0.9	1	1	1.1	1.1	1.2	1.3	1.35	1.4	1.48	1.55	1.63	2.6	2.7	2.8	3	3.1	3.2
4AM48 4	0.5	3RV24 11-□□□10	1AA	1AA	1AA	1AA	1BA	1BA	1BA	1BA	1BA	1BA	1BA	1CA	1CA	1EA	1EA	1EA	1EA	1EA	1EA
		Set value in A	1.1	1.1	1.3	1.35	1.4	1.4	1.5	1.6	1.65	1.75	1.85	1.9	2	3.2	3.3	3.5	3.7	3.8	4
4AM52 4	0.63	3RV24 11-□□□10	1AA	1BA	1BA	1BA	1BA	1CA	1CA	1CA	1CA	1CA	1CA	1DA	1DA	1FA	1FA	1FA	1FA	1FA	1FA
		Set value in A	1.35	1.4	1.5	1.6	1.7	1.8	1.9	1.9	2	2.1	2.2	2.3	2.5	3.9	4	4	4.5	4.7	5
4AM55 4	0.8	3RV24 11-□□□10	1BA	1CA	1CA	1CA	1CA	1DA	1DA	1DA	1DA	1DA	1DA	1EA	1EA	1GA	1GA	1GA	1GA	1GA	1GA
		Set value in A	1.5	1.8	2	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.9	3	3.1	5	5	5.5	5.8	6	6.3
4AM57 4	1	3RV24 11-□□□10	1DA	1DA	1DA	1DA	1DA	1EA	1EA	1EA	1EA	1EA	1EA	1FA	1FA	1HA	1HA	1HA	1HA	1HA	1HA
		Set value in A	2.2	2.3	2.5	2.6	2.7	2.9	3	3.1	3.3	3.4	3.6	3.8	4	6.3	6.5	6.5	7	7.6	8
4AM61 4	1.6	3RV24 11-□□□10	1FA	1FA	1FA	1FA	1GA	1GA	1GA	1GA	1GA	1GA	1GA	1GA	1GA	1KA	1KA	1KA	1KA	1KA	1KA
		Set value in A	3.6	3.7	4.1	4.3	4.5	4.7	5	5	5.4	5.6	5.9	6.2	6.3	10	10.5	11	12	12.3	12.5
4AM64 4	2	3RV24 11-□□□10	1FA	1GA	1GA	1GA	1HA	1HA	1HA	1HA	1HA	1HA	1HA	1HA	1HA	4AA	4AA	4AA	4AA	4AA	4AA
		Set value in A	4.4	4.6	5	5.3	5.5	5.8	6.1	6.3	6.6	6.9	7.3	7.6	8	12.5	13	13.5	14.5	15	16
4AM65 4	2.5	3RV24 11-□□□10	1HA	1HA	1HA	1HA	1JA	1JA	1JA	1JA	1JA	1JA	1JA	1KA	1KA	4BA	4BA	4BA	4BA	4BA	--
		3RV24 21-□□□10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4DA
		Set value in A	5.5	5.8	6.4	6.6	7	7.3	7.5	8	8.3	8.7	9.2	9.5	10	16	16.5	17	18.5	19	20
Motor starter protector version for 4AT transformers: Motor protection																					
4AT30 3	4	3RV20 11-□□□10	1JA	1JA	1KA	1KA	1KA	1KA	--	--	--	--	--	--	--	--	--	--	--	--	--
		3RV20 21-□□□10	--	--	--	--	--	--	4AA	4AA	4AA	4AA	4AA	4AA	4BA	--	--	--	--	--	--
		3RV10 31-□□□10	--	--	--	--	--	--	--	--	--	--	--	--	--	4EA	4EA	4EA	4EA	4FA	4FA
		Set value in A	8	8	9	9	9	10	11	11	11	12	12	13	14	22	22	23	24	28	28
4AT36 1	5	3RV20 11-□□□10	1KA	1KA	1KA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		3RV20 21-□□□10	--	--	--	4AA	4AA	4AA	4BA	4BA	4BA	4BA	4BA	4BA	4CA	--	--	--	--	--	--
		3RV10 31-□□□10	--	--	--	--	--	--	--	--	--	--	--	--	--	4FA	4FA	4FA	4FA	4FA	4GA
		Set value in A	10	10	11	11	12	12	14	14	14	15	16	16	17	28	28	29	31	32	36
4AT36 3	6.3	3RV20 21-□□□10	4AA	4AA	4BA	4BA	4BA	4BA	4CA	4CA	4CA	4CA	4DA	4DA	4DA	--	--	--	--	--	--
		3RV10 31-□□□10	--	--	--	--	--	--	--	--	--	--	--	--	--	4GA	4GA	4GA	4GA	4GA	4HA
		Set value in A	12	12	14	14	15	15	17	17	17	18	20	20	21	36	36	36	8	39	41
4AT39 1	8	3RV20 21-□□□10	4BA	4BA	4CA	4CA	4CA	4DA	4DA	4DA	4DA	--	--	--	--	--	--	--	--	--	--
		3RV10 31-□□□10	--	--	--	--	--	--	--	--	--	4EA	4EA	4EA	4FA	4HA	4HA	4HA	--	--	--
		3RV10 41-□□□10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4JA	4JA	4JA
		Set value in A	15	15	17	18	18	20	20	21	22	23	24	25	28	42	43	45	48	50	52
4AT39 3	10	3RV20 21-□□□10	4CA	4CA	4DA	4DA	4DA	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		3RV10 31-□□□10	--	--	--	--	--	4EA	4EA	4EA	4FA	4FA	4FA	4FA	4FA	--	--	--	--	--	--
		3RV10 41-□□□10	--	--	--	--	--	--	--	--	--	--	--	--	--	4JA	4KA	4KA	4KA	4KA	4KA
		Set value in A	18	19	21	22	23	24	25	26	28	28	30	31	32	51	57	57	59	69	64
4AT43 0	11.2	3RV10 31-□□□10	4EA	4EA	4EA	4EA	4EA	4FA	4FA	4FA	4FA	4GA	4GA	4GA	4HA	--	--	--	--	--	--
		3RV10 41-□□□10	--	--	--	--	--	--	--	--	--	--	--	--	--	4KA	4KA	4LA	4LA	4LA	4MA
		Set value in A	22	22	23	24	25	28	28	29	30	36	36	36	40	58	60	70	70	70	80
4AT43 1	12.5	3RV10 31-□□□10	4EA	4EA	4FA	4FA	4FA	4FA	4FA	4GA	4GA	4GA	4HA	4HA	--	--	--	--	--	--	--
		3RV10 41-□□□10	--	--	--	--	--	--	--	--	--	--	--	--	4JA	4LA	4LA	4LA	4LA	4MA	4MA
		Set value in A	22	23	28	28	28	29	31	36	36	36	40	40	45	70	70	70	73	80	80
4AT43 2	14	3RV10 31-□□□10	4EA	4FA	4FA	4FA	4FA	4GA	4GA	4HA	4HA	4HA	--	--	--	--	--	--	--	--	--
		3RV10 41-□□□10	--	--	--	--	--	--	--	--	--	--	4JA	4JA	4JA	4MA	4MA	4MA	4MA	4MA	4MA
		Set value in A	25	28	29	30	31	36	36	40	40	40	45	45	45	80	80	80	82	85	90
4AT45 0	16	3RV10 31-□□□10	4FA	4FA	4GA	4GA	4HA	4HA	--	--	--	--	--	--	--	--	--	--	--	--	--
		3RV10 41-□□□10	--	--	--	--	--	--	4JA	4JA	4JA	4JA	4JA	4KA	4KA	4MA	4MA	4MA	4MA	4MA	4MA
		Set value in A	29	30	33	36	40	40	45	45	45	45	47	57	57	81	85	89	94	97	100

[1] Two-pole or single-pole motor starter protectors can be connected (3 conducting paths in series), see circuit diagram on page 15/8.

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General data

Secondary-side short-circuit and overload protection with motor starter protector

Transformer	Rated power P_n	Motor Starter Protectors					
		Version: Motor protection[1]	Rated output voltage U_{2N} in V				
Type	kVA	Type	230	115	110	42	24
4AM transformers							
4AM23 4	0.025	3RV20 11-□□□10	0AA	0DA	0DA	0HA	1AA
		Set value in A	0.14	0.26	0.29	0.75	1.3
4AM26 4	0.04	3RV20 11-□□□10	0CA	0FA	0FA	0KA	1CA
		Set value in A	0.21	0.41	0.45	1.2	2.1
4AM32 4	0.063	3RV20 11-□□□10	0EA	0HA	0HA	1BA	1EA
		Set value in A	0.34	0.68	0.72	1.9	3.3
4AM34 4	0.1	3RV20 11-□□□10	0GA	0KA	0KA	1DA	1GA
		Set value in A	0.55	1.1	1.14	3	5.2
4AM38 4	0.16	3RV20 11-□□□10	0JA	1BA	1BA	1FA	1JA
		Set value in A	0.86	1.72	1.82	4.8	8.4
4AM40 4	0.25	3RV20 11-□□□10	1AA	1DA	1DA	1HA	--
		3RV20 21-□□□10	--	--	--	--	4AA
		Set value in A	1.37	2.7	2.8	7.4	13
4AM43 4	0.315	3RV20 11-□□□10	1BA	1EA	1EA	1JA	--
		3RV20 21-□□□10	--	--	--	--	4BA
		Set value in A	1.72	3.4	3.6	9.4	16.5
4AM46 4	0.4	3RV20 11-□□□10	1CA	1FA	1FA	1KA	--
		3RV20 21-□□□10	--	--	--	--	4CA
		Set value in A	2.2	4.4	4.6	12	21
4AM48 4	0.5	3RV20 11-□□□10	1DA	1GA	1GA	--	--
		3RV20 21-□□□10	--	--	--	4AA	--
		3RV10 31-□□□10	--	--	--	--	4EA
		Set value in A	2.7	5.4	5.7	15	26
4AM52 4	0.63	3RV20 11-□□□10	1EA	1HA	1HA	--	--
		3RV20 21-□□□10	--	--	--	4BA	--
		3RV10 31-□□□10	--	--	--	--	4FA
		Set value in A	3.4	6.8	7.2	18.8	33
4AM55 4	0.8	3RV20 11-□□□10	1FA	1JA	1JA	--	--
		3RV20 21-□□□10	--	--	--	4DA	--
		3RV10 31-□□□10	--	--	--	--	4GA
		Set value in A	4.4	8.8	9.2	24	42
4AM57 4	1	3RV20 11-□□□10	1GA	1KA	1KA	--	--
		3RV10 31-□□□10	--	--	--	4EA	--
		3RV10 41-□□□10	--	--	--	--	4JA
		Set value in A	5.4	10.8	11.4	30	52
4AM61 4	1.6	3RV20 11-□□□10	1JA	--	--	--	--
		3RV10 31-□□□10	--	4BA	4BA	4HA	--
		3RV10 41-□□□10	--	--	--	--	4LA
		Set value in A	8.6	17	18.5	48	81
4AM64 4	2	3RV20 11-□□□10	1KA	--	--	--	--
		3RV10 31-□□□10	--	4DA	4DA	--	--
		3RV10 41-□□□10	--	--	--	4JA	4MA
		Set value in A	10.9	22	23	60	101
4AM65 4	2.5	3RV20 21-□□□10	4AA	--	--	--	--
		3RV10 31-□□□10	--	4EA	4EA	--	--
		3RV10 41-□□□10	--	--	--	4KA	--
		3VF32 11-□□□□□-0AA0	--	--	--	--	1BU41
		Set value in A	13.6	27	28	72	125
4AT transformers							
4AT30 3	4	3RV20 21-□□□10	4CA	--	--	--	--
		3RV10 31-□□□10	--	4GA	--	--	--
		Set value in A	21	41	--	--	--
4AT36 1	5	3RV10 31-□□□10	4EA	--	--	--	--
		3RV10 41-□□□10	--	4JA	--	--	--
		Set value in A	26	51	--	--	--
4AT36 3	6.3	3RV10 31-□□□10	4FA	--	--	--	--
		3RV10 41-□□□10	--	4KA	--	--	--
		Set value in A	32	64	--	--	--
4AT39 1	8	3RV10 31-□□□10	4GA	--	--	--	--
		3RV10 41-□□□10	--	4LA	--	--	--
		Set value in A	41	81	--	--	--
4AT39 3	10	3RV10 41-□□□10	4JA	4MA	--	--	--
		Set value in A	51	100	--	--	--

[1] Two-pole or single-pole motor starter protectors can be connected (3 conducting paths in series), see circuit diagram on page 15/8.

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Short-time rating of control transformers $P_{shortt.}$[1]) = f (p.f.) for $U_2 = 0.95 \times U_{2N}$

Trans-former	Rated power P_n	Short-time rating $P_{shortt.}$[1]) with p.f. of										Voltage rise in no-load operation (operating temperature)	Voltage drop on rated load (at 20 °C)	Short-circuit voltage (at 20 °C)
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1			
Type	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	u_A %	u_R %	u_Z %
4AM transformers														
4AM32 4	0.063	0.56	0.37	0.28	0.23	0.19	0.16	0.14	0.12	0.12	0.11	10	8.4	8.5
4AM34 4	0.1	0.96	0.62	0.46	0.37	0.31	0.26	0.23	0.21	0.19	0.17	10	7.7	7.7
4AM38 4	0.16	1.52	0.98	0.73	0.58	0.49	0.42	0.37	0.33	0.3	0.28	10.4	7.6	7.7
4AM40 4	0.25	2.5	1.62	1.24	1	0.85	0.74	0.66	0.59	0.54	0.51	7.2	5.4	5.4
4AM43 4	0.315	3.4	2.15	1.63	1.33	1.12	0.97	0.86	0.77	0.71	0.67	6.6	4.9	5
4AM46 4	0.4	3.51	2.53	2	1.67	1.44	1.26	1.13	1	0.95	0.92	5.7	4.3	4.4
4AM48 4	0.5	5.34	3.75	2.9	2.4	2	1.75	1.55	1.4	1.3	1.25	5	3.8	3.8
4AM52 4	0.63	5.05	3.85	3.15	2.7	2.35	2.1	1.9	1.75	1.65	1.6	4.7	3.6	3.7
4AM55 4	0.8	7.69	5.8	4.65	3.9	3.4	3	2.7	2.5	2.3	2.25	4	3	3.1
4AM57 4	1.0	12.1	8.85	7	5.85	5	4.4	3.95	3.6	3.3	3.2	3.2	2.5	2.5
4AM61 4	1.6	12.1	10.3	9	8.1	7.3	6.8	6.4	6.1	5.9	6.4	2.4	1.9	2.1
4AM64 4	2	15.8	13.5	11.9	10.7	9.7	9	8.5	8.1	7.9	8.6	2.1	1.7	1.9
4AM65 4	2.5	19.6	17.3	15.6	14.3	13.3	12.5	12	11.6	11.5	13.2	1.6	1.3	1.6
4AT transformers														
With one input voltage														
4AT30 3	4	31.2	25	20.9	18	16	14.4	13.2	12.2	11.6	11.7	3.8	2.7	2.9
4AT36 1	5	44.3	32.5	25.8	21.4	18.5	16.1	14.4	13.1	12.1	11.6	5.5	3.8	3.9
4AT36 3	6.3	40.7	33.4	28.4	24.9	22.5	20.3	18.7	17.5	16.7	16.9	4.3	3.1	3.3
4AT39 1	8	52.7	43.1	36.5	31.8	28.5	25.6	23.4	21.9	20.8	21.3	4.3	3.1	3.3
4AT39 3	10	42	37.7	34.4	31.9	30	28.4	27.3	26.7	26.8	29	3.5	2.5	3.3
In European voltage version or multi-voltage version														
4AT30 3	4	45.8	32.6	25.4	20.9	17.8	15.5	13.8	12.5	11.5	11	4.1	2.9	2.9
4AT36 1	5	48	36.7	27.9	22.6	19	16.5	14.6	13.1	12	11.2	5.9	4	4.1
4AT36 3	6.3	54.9	42.1	33.8	28.4	24.5	21.7	19.5	17.8	16.5	16.1	4.7	3.2	3.3
4AT39 1	8	70	53.6	43	36	31.1	27.5	24.8	22.6	21	20.4	4.6	3.2	3.3
4AT39 3	10	64.1	53.3	45.8	40.5	36.4	33.3	30.9	29.1	27.9	29.4	3.7	2.6	2.9
With selectable voltages														
4AT30 3	4	45.8	32.6	25.4	20.9	17.8	15.5	13.8	12.5	11.5	11	4.1	2.9	2.9
4AT36 1	5	48	36.7	27.9	22.6	19	16.5	14.6	13.1	12	11.2	5.9	4	4.1
4AT36 3	6.3	54.9	42.1	33.8	28.4	24.5	21.7	19.5	17.8	16.5	16.1	4.7	3.2	3.3
4AT39 1	8	70	53.6	43	36	31.1	27.5	24.8	22.6	21	20.4	4.6	3.2	3.3
4AT39 3	10	64.1	53.3	45.8	40.5	36.4	33.3	30.9	29.1	27.9	29.4	3.7	2.6	2.9
4AT43 0	11.2	117	85.8	67.8	56.3	48.3	42.4	37.9	34.5	31.9	30.7	4.1	2.9	2.9
4AT43 1	12.5	117	89.5	72.9	61.8	53.8	47.9	43.3	39.8	37.2	36.7	3.7	2.6	2.7
4AT43 2	14	111	90	75.9	66	58.7	53.1	48.8	45.5	43.2	44.2	3.3	2.3	2.5
4AT45 0	16	187	140	112	94	81.2	71.7	64.5	59	54.7	53.4	3.1	2.1	2.2

[1]) $P_{shortt.}$ applies to up to 300 contactor operations per hour. The specified rating is the typical maximum short-time rating.

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Single-Phase Transformers

Safety, Isolating, Control and Mains Transformers

SIRIUS 4AM
safety, mains and control transformers

Overview

- According to EN 61558-2-6, -2-1, -2-2
- cULus
- t_a = 40 °C/B
- 50/60 Hz AC
- Degree of protection IP00, IP23 and IP54
- For more products see Industry Mall and Interactive Catalog CA 01 or www.mdexx.com.



SIRIUS 4AM single-phase transformer with screw terminals/ flat connectors

Selection and ordering data

With one input voltage

Rated input voltage U_{1N} 230 V ± 5 %, rated output voltages U_{2N} 24 V or 42 V

cULus,

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 4M1

Rated power P_n	Short-time rating $P_{shortt.}$ [1]	DT [2]	U_{2N} 24 V Screw terminals/ flat connectors Configurator Order No.	Price per PU	Cu weight per PU approx. kg	DT [2]	U_{2N} 42 V Screw terminals/ flat connectors Configurator Order No.	Price per PU	Cu weight per PU approx. kg
kVA	kVA								
Degree of protection IP00, standard version [3]									
0.063	0.19	A	**4AM32 42-4TN00-0EA0**		1.400	A	**4AM32 42-4TV00-0EA0**		1.400
0.1	0.31	A	**4AM34 42-4TN00-0EA0**		2.000	A	**4AM34 42-4TV00-0EA0**		2.000
0.16	0.49	A	**4AM38 42-4TN00-0EA0**		2.700	A	**4AM38 42-4TV00-0EA0**		2.700
0.25	0.85	A	**4AM40 42-4TN00-0EA0**		3.700	A	**4AM40 42-4TV00-0EA0**		3.700
0.315	1.12	A	**4AM43 42-4TN00-0EA0**		4.500	X	**4AM43 42-4TV00-0EA0**		4.500
0.4	1.44	A	**4AM46 42-4TN00-0EA0**		5.400	X	**4AM46 42-4TV00-0EA0**		5.400
0.5	2	A	**4AM48 42-4TN00-0EA0**		7.000	X	**4AM48 42-4TV00-0EA0**		7.000
0.63	2.35	A	**4AM52 42-4TN00-0EA0**		7.900	X	**4AM52 42-4TV00-0EA0**		7.900
0.8	3.4	A	**4AM55 42-4TN00-0EA0**		11.000	X	**4AM55 42-4TV00-0EA0**		11.000
1	5	A	**4AM57 42-4TN00-0EA0**		14.000	X	**4AM57 42-4TV00-0EA0**		14.000
Degree of protection IP00, standard rail mounting [3]									
0.063	0.19	A	**4AM32 42-4TN00-0EA0**		1.400	A	**4AM32 42-4TV00-0EA0**		1.400
0.1	0.31	A	**4AM34 42-4TN00-0EA0**		2.000	A	**4AM34 42-4TV00-0EA0**		2.000
0.16	0.49	A	**4AM38 42-4TN00-0EA0**		2.700	A	**4AM38 42-4TV00-0EA0**		2.700
0.25	0.85	A	**4AM40 42-4TN00-0EA0**		3.700	A	**4AM40 42-4TV00-0EA0**		3.700
0.315	1.12	X	**4AM43 42-4TN00-0EB0**		4.500	X	**4AM43 42-4TV00-0EB0**		4.500
0.4	1.44	X	**4AM46 42-4TN00-0EB0**		5.400	X	**4AM46 42-4TV00-0EB0**		5.400
0.5	2	X	**4AM48 42-4TN00-0EB0**		7.000	X	**4AM48 42-4TV00-0EB0**		7.000
Degree of protection IP23									
0.057	0.19	X	**4AM32 42-4TN00-0EC0**		2.700	X	**4AM32 42-4TV00-0EC0**		2.700
0.09	0.31	X	**4AM34 42-4TN00-0EC0**		3.300	X	**4AM34 42-4TV00-0EC0**		3.300
0.145	0.49	X	**4AM38 42-4TN00-0EC0**		5.600	X	**4AM38 42-4TV00-0EC0**		5.600
0.225	0.85	X	**4AM40 42-4TN00-0EC0**		6.600	X	**4AM40 42-4TV00-0EC0**		6.600
0.268	1.12	X	**4AM43 42-4TN00-0EC0**		7.400	X	**4AM43 42-4TV00-0EC0**		7.400
0.34	1.44	X	**4AM46 42-4TN00-0EC0**		8.300	X	**4AM46 42-4TV00-0EC0**		8.300
0.425	2	X	**4AM48 42-4TN00-0EC0**		9.900	X	**4AM48 42-4TV00-0EC0**		9.900
0.535	2.35	X	**4AM52 42-4TN00-0EC0**		10.800	X	**4AM52 42-4TV00-0EC0**		10.800
0.68	3.4	X	**4AM55 42-4TN00-0EC0**		13.900	X	**4AM55 42-4TV00-0EC0**		13.900
0.85	5	X	**4AM57 42-4TN00-0EC0**		16.900	X	**4AM57 42-4TV00-0EC0**		16.900
Degree of protection IP54									
0.05	0.19	X	**4AM32 42-4TN00-0ED0**		2.700	X	**4AM32 42-4TV00-0ED0**		2.700
0.08	0.31	X	**4AM34 42-4TN00-0ED0**		3.300	X	**4AM34 42-4TV00-0ED0**		3.300
0.128	0.49	X	**4AM38 42-4TN00-0ED0**		5.600	X	**4AM38 42-4TV00-0ED0**		5.600
0.2	0.85	X	**4AM40 42-4TN00-0ED0**		6.600	X	**4AM40 42-4TV00-0ED0**		6.600
0.236	1.12	X	**4AM43 42-4TN00-0ED0**		7.400	X	**4AM43 42-4TV00-0ED0**		7.400
0.3	1.44	X	**4AM46 42-4TN00-0ED0**		8.300	X	**4AM46 42-4TV00-0ED0**		8.300
0.375	2	X	**4AM48 42-4TN00-0ED0**		9.900	X	**4AM48 42-4TV00-0ED0**		9.900
0.475	2.35	X	**4AM52 42-4TN00-0ED0**		10.800	X	**4AM52 42-4TV00-0ED0**		10.800
0.6	3.4	X	**4AM55 42-4TN00-0ED0**		13.900	X	**4AM55 42-4TV00-0ED0**		13.900
0.75	5	X	**4AM57 42-4TN00-0ED0**		16.900	X	**4AM57 42-4TV00-0ED0**		16.900

For online configurator see www.siemens.com/sirius/configurators.

[1] For p.f. = 0.5 and U_2 = 0.95 × U_{2N}.

[2] The delivery time class depends on the quantity, see page 15/6 "Options".

[3] For types 4AM32 to 4AM40, standard rail mounting is integrated in the standard version.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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With one input voltage

Rated input voltage U_{1N} 400 V ± 5 %, rated output voltages U_{2N} 24 V or 42 V

cULus, ⓑ, ⓒ, ⚠

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 4M1

Rated power P_n	Short-time rating $P_{shortt.}$ [1]	DT [2]	U_{2N} 24 V Screw terminals/ flat connectors Configurator	Cu weight per PU approx.	DT [2]	U_{2N} 42 V Screw terminals/ flat connectors Configurator	Cu weight per PU approx.
kVA	kVA		Order No. Price per PU	kg		Order No. Price per PU	kg
Degree of protection IP00, standard version [3]							
0.063	0.19	A	**4AM32 42-5AN00-0EA0**	1.400	A	**4AM32 42-5AV00-0EA0**	1.400
0.1	0.31	A	**4AM34 42-5AN00-0EA0**	2.000	A	**4AM34 42-5AV00-0EA0**	2.000
0.16	0.49	A	**4AM38 42-5AN00-0EA0**	2.700	A	**4AM38 42-5AV00-0EA0**	2.700
0.25	0.85	A	**4AM40 42-5AN00-0EA0**	3.700	A	**4AM40 42-5AV00-0EA0**	3.700
0.315	1.12	A	**4AM43 42-5AN00-0EA0**	4.500	X	**4AM43 42-5AV00-0EA0**	4.500
0.4	1.44	A	**4AM46 42-5AN00-0EA0**	5.400	X	**4AM46 42-5AV00-0EA0**	5.400
0.5	2	A	**4AM48 42-5AN00-0EA0**	7.000	X	**4AM48 42-5AV00-0EA0**	7.000
0.63	2.35	A	**4AM52 42-5AN00-0EA0**	7.900	X	**4AM52 42-5AV00-0EA0**	7.900
0.8	3.4	A	**4AM55 42-5AN00-0EA0**	11.000	X	**4AM55 42-5AV00-0EA0**	11.000
1	5	A	**4AM57 42-5AN00-0EA0**	14.000	X	**4AM57 42-5AV00-0EA0**	14.000
Degree of protection IP00, standard rail mounting [3]							
0.063	0.19	A	**4AM32 42-5AN00-0EA0**	1.400	A	**4AM32 42-5AV00-0EA0**	1.400
0.1	0.31	A	**4AM34 42-5AN00-0EA0**	2.000	A	**4AM34 42-5AV00-0EA0**	2.000
0.16	0.49	A	**4AM38 42-5AN00-0EA0**	2.700	A	**4AM38 42-5AV00-0EA0**	2.700
0.25	0.85	A	**4AM40 42-5AN00-0EA0**	3.700	A	**4AM40 42-5AV00-0EA0**	3.700
0.315	1.12	X	**4AM43 42-5AN00-0EB0**	4.500	X	**4AM43 42-5AV00-0EB0**	4.500
0.4	1.44	X	**4AM46 42-5AN00-0EB0**	5.400	X	**4AM46 42-5AV00-0EB0**	5.400
0.5	2	X	**4AM48 42-5AN00-0EB0**	7.000	X	**4AM48 42-5AV00-0EB0**	7.000
Degree of protection IP23							
0.057	0.19	X	**4AM32 42-5AN00-0EC0**	2.700	X	**4AM32 42-5AV00-0EC0**	2.700
0.09	0.31	X	**4AM34 42-5AN00-0EC0**	3.300	X	**4AM34 42-5AV00-0EC0**	3.300
0.145	0.49	X	**4AM38 42-5AN00-0EC0**	5.600	X	**4AM38 42-5AV00-0EC0**	5.600
0.225	0.85	X	**4AM40 42-5AN00-0EC0**	6.600	X	**4AM40 42-5AV00-0EC0**	6.600
0.268	1.12	X	**4AM43 42-5AN00-0EC0**	7.400	X	**4AM43 42-5AV00-0EC0**	7.400
0.34	1.44	X	**4AM46 42-5AN00-0EC0**	8.300	X	**4AM46 42-5AV00-0EC0**	8.300
0.425	2	X	**4AM48 42-5AN00-0EC0**	9.900	X	**4AM48 42-5AV00-0EC0**	9.900
0.535	2.35	X	**4AM52 42-5AN00-0EC0**	10.800	X	**4AM52 42-5AV00-0EC0**	10.800
0.68	3.4	X	**4AM55 42-5AN00-0EC0**	13.900	X	**4AM55 42-5AV00-0EC0**	13.900
0.85	5	X	**4AM57 42-5AN00-0EC0**	16.900	X	**4AM57 42-5AV00-0EC0**	16.900
Degree of protection IP54							
0.05	0.19	X	**4AM32 42-5AN00-0ED0**	2.700	X	**4AM32 42-5AV00-0ED0**	2.700
0.08	0.31	X	**4AM34 42-5AN00-0ED0**	3.300	X	**4AM34 42-5AV00-0ED0**	3.300
0.128	0.49	X	**4AM38 42-5AN00-0ED0**	5.600	X	**4AM38 42-5AV00-0ED0**	5.600
0.2	0.85	X	**4AM40 42-5AN00-0ED0**	6.600	X	**4AM40 42-5AV00-0ED0**	6.600
0.236	1.12	X	**4AM43 42-5AN00-0ED0**	7.400	X	**4AM43 42-5AV00-0ED0**	7.400
0.3	1.44	X	**4AM46 42-5AN00-0ED0**	8.300	X	**4AM46 42-5AV00-0ED0**	8.300
0.375	2	X	**4AM48 42-5AN00-0ED0**	9.900	X	**4AM48 42-5AV00-0ED0**	9.900
0.475	2.35	X	**4AM52 42-5AN00-0ED0**	10.800	X	**4AM52 42-5AV00-0ED0**	10.800
0.6	3.4	X	**4AM55 42-5AN00-0ED0**	13.900	X	**4AM55 42-5AV00-0ED0**	13.900
0.75	5	X	**4AM57 42-5AN00-0ED0**	16.900	X	**4AM57 42-5AV00-0ED0**	16.900

⚙ For online configurator see www.siemens.com/sirius/configurators.

1) For p.f. = 0.5 and $U_2 = 0.95 \times U_{2N}$.

2) The delivery time class depends on the quantity, see page 15/6 "Options".

3) For types 4AM32 to 4AM40, standard rail mounting is integrated in the standard version.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 4AM
safety, mains and control transformers

For European voltages

Rated input voltage U_{1N} 400/230 V ± 15 V, rated output voltages U_{2N} 24 V or 42 V

cULus, ⊕, ⊕, ⊕

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 4M1

Rated power P_n	Short-time rating $P_{shortt.}$ [1]	DT [2]	U_{2N} 24 V Screw terminals/ flat connectors Configurator		Cu weight per PU approx.	DT [2]	U_{2N} 42 V Screw terminals/ flat connectors Configurator		Cu weight per PU approx.
kVA	kVA		Order No.	Price per PU	kg		Order No.	Price per PU	kg
Degree of protection IP00, standard version [3]									
0.063	0.19	A	**4AM32 42-8JN00-0EA0**		1.500	X	**4AM32 42-8JV00-0EA0**		1.500
0.1	0.31	A	**4AM34 42-8JN00-0EA0**		2.100	X	**4AM34 42-8JV00-0EA0**		2.100
0.16	0.49	A	**4AM38 42-8JN00-0EA0**		2.800	X	**4AM38 42-8JV00-0EA0**		2.800
0.25	0.85	A	**4AM40 42-8JN00-0EA0**		3.900	X	**4AM40 42-8JV00-0EA0**		3.900
0.315	1.12	X	**4AM43 42-8JN00-0EA0**		4.800	X	**4AM43 42-8JV00-0EA0**		4.800
0.4	1.44	X	**4AM46 42-8JN00-0EA0**		5.800	X	**4AM46 42-8JV00-0EA0**		5.800
0.5	2	X	**4AM48 42-8JN00-0EA0**		7.400	X	**4AM48 42-8JV00-0EA0**		7.400
0.63	2.35	X	**4AM52 42-8JN00-0EA0**		8.600	X	**4AM52 42-8JV00-0EA0**		8.600
0.8	3.4	X	**4AM55 42-8JN00-0EA0**		12.000	X	**4AM55 42-8JV00-0EA0**		12.000
1	5	X	**4AM57 42-8JN00-0EA0**		15.000	X	**4AM57 42-8JV00-0EA0**		15.000
Degree of protection IP00, standard rail mounting [3]									
0.063	0.19	A	**4AM32 42-8JN00-0EA0**		1.500	X	**4AM32 42-8JV00-0EA0**		1.500
0.1	0.31	A	**4AM34 42-8JN00-0EA0**		2.100	X	**4AM34 42-8JV00-0EA0**		2.100
0.16	0.49	A	**4AM38 42-8JN00-0EA0**		2.800	X	**4AM38 42-8JV00-0EA0**		2.800
0.25	0.85	A	**4AM40 42-8JN00-0EA0**		3.900	X	**4AM40 42-8JV00-0EA0**		3.900
0.315	1.12	X	**4AM43 42-8JN00-0EB0**		4.800	X	**4AM43 42-8JV00-0EB0**		4.800
0.4	1.44	X	**4AM46 42-8JN00-0EB0**		5.800	X	**4AM46 42-8JV00-0EB0**		5.800
0.5	2	X	**4AM48 42-8JN00-0EB0**		7.400	X	**4AM48 42-8JV00-0EB0**		7.400
Degree of protection IP23									
0.057	0.19	X	**4AM32 42-8JN00-0EC0**		2.800	X	**4AM32 42-8JV00-0EC0**		2.800
0.09	0.31	X	**4AM34 42-8JN00-0EC0**		3.400	X	**4AM34 42-8JV00-0EC0**		3.400
0.145	0.49	X	**4AM38 42-8JN00-0EC0**		5.700	X	**4AM38 42-8JV00-0EC0**		5.700
0.225	0.85	X	**4AM40 42-8JN00-0EC0**		6.800	X	**4AM40 42-8JV00-0EC0**		6.800
0.268	1.12	X	**4AM43 42-8JN00-0EC0**		7.700	X	**4AM43 42-8JV00-0EC0**		7.700
0.34	1.44	X	**4AM46 42-8JN00-0EC0**		8.700	X	**4AM46 42-8JV00-0EC0**		8.700
0.425	2	X	**4AM48 42-8JN00-0EC0**		10.300	X	**4AM48 42-8JV00-0EC0**		10.300
0.535	2.35	X	**4AM52 42-8JN00-0EC0**		11.500	X	**4AM52 42-8JV00-0EC0**		11.500
0.68	3.4	X	**4AM55 42-8JN00-0EC0**		14.900	X	**4AM55 42-8JV00-0EC0**		14.900
0.85	5	X	**4AM57 42-8JN00-0EC0**		17.900	X	**4AM57 42-8JV00-0EC0**		17.900
Degree of protection IP54									
0.05	0.19	X	**4AM32 42-8JN00-0ED0**		2.800	X	**4AM32 42-8JV00-0ED0**		2.800
0.08	0.31	X	**4AM34 42-8JN00-0ED0**		3.400	X	**4AM34 42-8JV00-0ED0**		3.400
0.128	0.49	X	**4AM38 42-8JN00-0ED0**		5.700	X	**4AM38 42-8JV00-0ED0**		5.700
0.2	0.85	X	**4AM40 42-8JN00-0ED0**		6.800	X	**4AM40 42-8JV00-0ED0**		6.800
0.236	1.12	X	**4AM43 42-8JN00-0ED0**		7.700	X	**4AM43 42-8JV00-0ED0**		7.700
0.3	1.44	X	**4AM46 42-8JN00-0ED0**		8.700	X	**4AM46 42-8JV00-0ED0**		8.700
0.375	2	X	**4AM48 42-8JN00-0ED0**		10.300	X	**4AM48 42-8JV00-0ED0**		10.300
0.475	2.35	X	**4AM52 42-8JN00-0ED0**		11.500	X	**4AM52 42-8JV00-0ED0**		11.500
0.6	3.4	X	**4AM55 42-8JN00-0ED0**		14.900	X	**4AM55 42-8JV00-0ED0**		14.900
0.75	5	X	**4AM57 42-8JN00-0ED0**		17.900	X	**4AM57 42-8JV00-0ED0**		17.900

⚙ For online configurator see www.siemens.com/sirius/configurators.

[1] For p.f. = 0.5 and $U_2 = 0.95 \times U_{2N}$.

[2] The delivery time class depends on the quantity, see page 15/6 "Options".

[3] For types 4AM32 to 4AM40, standard rail mounting is integrated in the standard version.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 4AM
safety, mains and control transformers

In multi-voltage version

Rated input voltage U_{1N}
550-525-500-480-460-440-415-400-380-230-208 V,
rated output voltages U_{2N} 24 V or 42 V

cULus, ⊕, ⊕, ⚠

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 4M1

Rated power P_n	Short-time rating $P_{shortt.}$ [1]	DT [2]	U_{2N} 24 V Screw terminals/ flat connectors Configurator		Cu weight per PU approx.	DT [2]	U_{2N} 42 V Screw terminals/ flat connectors Configurator		Cu weight per PU approx.
kVA	kVA		Order No.	Price per PU	kg		Order No.	Price per PU	kg
Degree of protection IP00, standard version [3]									
0.063	0.19	A	**4AM32 42-8DN00-0EA0**		1.500	X	**4AM32 42-8DV00-0EA0**		1.500
0.1	0.31	A	**4AM34 42-8DN00-0EA0**		2.100	X	**4AM34 42-8DV00-0EA0**		2.100
0.16	0.49	A	**4AM38 42-8DN00-0EA0**		2.800	X	**4AM38 42-8DV00-0EA0**		2.800
0.25	0.85	A	**4AM40 42-8DN00-0EA0**		3.900	X	**4AM40 42-8DV00-0EA0**		3.900
0.315	1.12	A	**4AM43 42-8DN00-0EA0**		4.800	X	**4AM43 42-8DV00-0EA0**		4.800
0.4	1.44	A	**4AM46 42-8DN00-0EA0**		5.800	X	**4AM46 42-8DV00-0EA0**		5.800
0.5	2	A	**4AM48 42-8DN00-0EA0**		7.400	X	**4AM48 42-8DV00-0EA0**		7.400
0.63	2.35	A	**4AM52 42-8DN00-0EA0**		8.600	X	**4AM52 42-8DV00-0EA0**		8.600
0.8	3.4	X	**4AM55 42-8DN00-0EA0**		12.000	X	**4AM55 42-8DV00-0EA0**		12.000
1	5	X	**4AM57 42-8DN00-0EA0**		15.000	X	**4AM57 42-8DV00-0EA0**		15.000
Degree of protection IP00, standard rail mounting [3]									
0.063	0.19	A	**4AM32 42-8DN00-0EA0**		1.500	X	**4AM32 42-8DV00-0EA0**		1.500
0.1	0.31	A	**4AM34 42-8DN00-0EA0**		2.100	X	**4AM34 42-8DV00-0EA0**		2.100
0.16	0.49	A	**4AM38 42-8DN00-0EA0**		2.800	X	**4AM38 42-8DV00-0EA0**		2.800
0.25	0.85	A	**4AM40 42-8DN00-0EA0**		3.900	X	**4AM40 42-8DV00-0EA0**		3.900
0.315	1.12	X	**4AM43 42-8DN00-0EB0**		4.800	X	**4AM43 42-8DV00-0EB0**		4.800
0.4	1.44	X	**4AM46 42-8DN00-0EB0**		5.800	X	**4AM46 42-8DV00-0EB0**		5.800
0.5	2	X	**4AM48 42-8DN00-0EB0**		7.400	X	**4AM48 42-8DV00-0EB0**		7.400
Degree of protection IP23									
0.057	0.19	X	**4AM32 42-8DN00-0EC0**		2.800	X	**4AM32 42-8DV00-0EC0**		2.800
0.09	0.31	X	**4AM34 42-8DN00-0EC0**		3.400	X	**4AM34 42-8DV00-0EC0**		3.400
0.145	0.49	X	**4AM38 42-8DN00-0EC0**		5.700	X	**4AM38 42-8DV00-0EC0**		5.700
0.225	0.85	X	**4AM40 42-8DN00-0EC0**		6.800	X	**4AM40 42-8DV00-0EC0**		6.800
0.268	1.12	X	**4AM43 42-8DN00-0EC0**		7.700	X	**4AM43 42-8DV00-0EC0**		7.700
0.34	1.44	X	**4AM46 42-8DN00-0EC0**		8.700	X	**4AM46 42-8DV00-0EC0**		8.700
0.425	2	X	**4AM48 42-8DN00-0EC0**		10.300	X	**4AM48 42-8DV00-0EC0**		10.300
0.535	2.35	X	**4AM52 42-8DN00-0EC0**		11.500	X	**4AM52 42-8DV00-0EC0**		11.500
0.68	3.4	X	**4AM55 42-8DN00-0EC0**		14.900	X	**4AM55 42-8DV00-0EC0**		14.900
0.85	5	X	**4AM57 42-8DN00-0EC0**		17.900	X	**4AM57 42-8DV00-0EC0**		17.900
Degree of protection IP54									
0.05	0.19	X	**4AM32 42-8DN00-0ED0**		2.800	X	**4AM32 42-8DV00-0ED0**		2.800
0.08	0.31	X	**4AM34 42-8DN00-0ED0**		3.400	X	**4AM34 42-8DV00-0ED0**		3.400
0.128	0.49	X	**4AM38 42-8DN00-0ED0**		5.700	X	**4AM38 42-8DV00-0ED0**		5.700
0.2	0.85	X	**4AM40 42-8DN00-0ED0**		6.800	X	**4AM40 42-8DV00-0ED0**		6.800
0.236	1.12	X	**4AM43 42-8DN00-0ED0**		7.700	X	**4AM43 42-8DV00-0ED0**		7.700
0.3	1.44	X	**4AM46 42-8DN00-0ED0**		8.700	X	**4AM46 42-8DV00-0ED0**		8.700
0.375	2	X	**4AM48 42-8DN00-0ED0**		10.300	X	**4AM48 42-8DV00-0ED0**		10.300
0.475	2.35	X	**4AM52 42-8DN00-0ED0**		11.500	X	**4AM52 42-8DV00-0ED0**		11.500
0.6	3.4	X	**4AM55 42-8DN00-0ED0**		14.900	X	**4AM55 42-8DV00-0ED0**		14.900
0.75	5	X	**4AM57 42-8DN00-0ED0**		17.900	X	**4AM57 42-8DV00-0ED0**		17.900

⚙ For online configurator see www.siemens.com/sirius/configurators.

1) For p.f. = 0.5 and $U_2 = 0.95 \times U_{2N}$.

2) The delivery time class depends on the quantity, see page 15/6 "Options".

3) For types 4AM32 to 4AM40, standard rail mounting is integrated in the standard version.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 4AM
safety, mains and control transformers

In multi-voltage version

Rated input voltage U_{1N}
600-575-550-525-500-480-460-440-415-400-240-230 V,
rated output voltages U_{2N} 24 V or 42 V

cULus, ⓑ, ⓑ, ⓑ

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 4M1

Rated power P_n	Short-time rating $P_{shortt.}$ [1]	DT [2]	U_{2N} 24 V Screw terminals/ flat connectors Configurator	Cu weight per PU approx.	DT [2]	U_{2N} 42 V Screw terminals/ flat connectors Configurator	Cu weight per PU approx.
kVA	kVA		Order No. Price per PU	kg		Order No. Price per PU	kg
Degree of protection IP00, standard version [3]							
0.063	0.19	A	**4AM32 42-8EN00-0EA0**	1.500	X	**4AM32 42-8EV00-0EA0**	1.500
0.1	0.31	A	**4AM34 42-8EN00-0EA0**	2.100	X	**4AM34 42-8EV00-0EA0**	2.100
0.16	0.49	A	**4AM38 42-8EN00-0EA0**	2.800	X	**4AM38 42-8EV00-0EA0**	2.800
0.25	0.85	A	**4AM40 42-8EN00-0EA0**	3.900	X	**4AM40 42-8EV00-0EA0**	3.900
0.315	1.12	A	**4AM43 42-8EN00-0EA0**	4.800	X	**4AM43 42-8EV00-0EA0**	4.800
0.4	1.44	A	**4AM46 42-8EN00-0EA0**	5.800	X	**4AM46 42-8EV00-0EA0**	5.800
0.5	2	A	**4AM48 42-8EN00-0EA0**	7.400	X	**4AM48 42-8EV00-0EA0**	7.400
0.63	2.35	A	**4AM52 42-8EN00-0EA0**	8.600	X	**4AM52 42-8EV00-0EA0**	8.600
0.8	3.4	X	**4AM55 42-8EN00-0EA0**	12.000	X	**4AM55 42-8EV00-0EA0**	12.000
1	5	X	**4AM57 42-8EN00-0EA0**	15.000	X	**4AM57 42-8EV00-0EA0**	15.000
Degree of protection IP00, standard rail mounting [3]							
0.063	0.19	A	**4AM32 42-8EN00-0EA0**	1.500	X	**4AM32 42-8EV00-0EA0**	1.500
0.1	0.31	A	**4AM34 42-8EN00-0EA0**	2.100	X	**4AM34 42-8EV00-0EA0**	2.100
0.16	0.49	A	**4AM38 42-8EN00-0EA0**	2.800	X	**4AM38 42-8EV00-0EA0**	2.800
0.25	0.85	A	**4AM40 42-8EN00-0EA0**	3.900	X	**4AM40 42-8EV00-0EA0**	3.900
0.315	1.12	X	**4AM43 42-8EN00-0EB0**	4.800	X	**4AM43 42-8EV00-0EB0**	4.800
0.4	1.44	X	**4AM46 42-8EN00-0EB0**	5.800	X	**4AM46 42-8EV00-0EB0**	5.800
0.5	2	X	**4AM48 42-8EN00-0EB0**	7.400	X	**4AM48 42-8EV00-0EB0**	7.400
Degree of protection IP23							
0.057	0.19	X	**4AM32 42-8EN00-0EC0**	2.800	X	**4AM32 42-8EV00-0EC0**	2.800
0.09	0.31	X	**4AM34 42-8EN00-0EC0**	3.400	X	**4AM34 42-8EV00-0EC0**	3.400
0.145	0.49	X	**4AM38 42-8EN00-0EC0**	5.700	X	**4AM38 42-8EV00-0EC0**	5.700
0.225	0.85	X	**4AM40 42-8EN00-0EC0**	6.800	X	**4AM40 42-8EV00-0EC0**	6.800
0.268	1.12	X	**4AM43 42-8EN00-0EC0**	7.700	X	**4AM43 42-8EV00-0EC0**	7.700
0.34	1.44	X	**4AM46 42-8EN00-0EC0**	8.700	X	**4AM46 42-8EV00-0EC0**	8.700
0.425	2	X	**4AM48 42-8EN00-0EC0**	10.300	X	**4AM48 42-8EV00-0EC0**	10.300
0.535	2.35	X	**4AM52 42-8EN00-0EC0**	11.500	X	**4AM52 42-8EV00-0EC0**	11.500
0.68	3.4	X	**4AM55 42-8EN00-0EC0**	14.900	X	**4AM55 42-8EV00-0EC0**	14.900
0.85	5	X	**4AM57 42-8EN00-0EC0**	17.900	X	**4AM57 42-8EV00-0EC0**	17.900
Degree of protection IP54							
0.05	0.19	X	**4AM32 42-8EN00-0ED0**	2.800	X	**4AM32 42-8EV00-0ED0**	2.800
0.08	0.31	X	**4AM34 42-8EN00-0ED0**	3.400	X	**4AM34 42-8EV00-0ED0**	3.400
0.128	0.49	X	**4AM38 42-8EN00-0ED0**	5.700	X	**4AM38 42-8EV00-0ED0**	5.700
0.2	0.85	X	**4AM40 42-8EN00-0ED0**	6.800	X	**4AM40 42-8EV00-0ED0**	6.800
0.236	1.12	X	**4AM43 42-8EN00-0ED0**	7.700	X	**4AM43 42-8EV00-0ED0**	7.700
0.3	1.44	X	**4AM46 42-8EN00-0ED0**	8.700	X	**4AM46 42-8EV00-0ED0**	8.700
0.375	2	X	**4AM48 42-8EN00-0ED0**	10.300	X	**4AM48 42-8EV00-0ED0**	10.300
0.475	2.35	X	**4AM52 42-8EN00-0ED0**	11.500	X	**4AM52 42-8EV00-0ED0**	11.500
0.6	3.4	X	**4AM55 42-8EN00-0ED0**	14.900	X	**4AM55 42-8EV00-0ED0**	14.900
0.75	5	X	**4AM57 42-8EN00-0ED0**	17.900	X	**4AM57 42-8EV00-0ED0**	17.900

ⓑ For online configurator see www.siemens.com/sirius/configurators.

1) For p.f. = 0.5 and $U_2 = 0.95 \times U_{2N}$.

2) The delivery time class depends on the quantity, see page 15/6 "Options".

3) For types 4AM32 to 4AM40, standard rail mounting is integrated in the standard version.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

- According to EN 61558-2-6, -2-1
- cULus
- t_a = 40 °C/B
- 50/60 Hz AC
- Degree of protection IP00, IP23 and IP54
- For more products see Industry Mall and Interactive Catalog CA 01 or www.mdexx.com.



SIRIUS 4AM single-phase transformer with screw terminals/ flat connectors

Selection and ordering data

With one input voltage

Rated input voltage U_{1N} 230 V ± 5 %, rated output voltages U_{2N} 24 V or 42 V

cULus,

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 4M1

Rated power P_n	Short-time rating $P_{shortt.}$	DT[1]	U_{2N} 24 V Screw terminals/ flat connectors Configurator Order No.	Price per PU	Cu weight per PU approx.	DT[2]	U_{2N} 42 V Screw terminals/ flat connectors Configurator Order No.	Price per PU	Cu weight per PU approx.
kVA	kVA				kg				kg
Degree of protection IP00, standard version									
0.025	--	A	**4AM23 42-4TN00-0EA0**		0.600	X	**4AM23 42-4TV00-0EA0**		0.600
0.04	--	A	**4AM26 42-4TN00-0EA0**		0.800	X	**4AM26 42-4TV00-0EA0**		0.800
Degree of protection IP00, standard rail mounting									
0.025	--	X	**4AM23 42-4TN00-0EB0**		0.600	X	**4AM23 42-4TV00-0EB0**		0.600
0.04	--	X	**4AM26 42-4TN00-0EB0**		0.800	X	**4AM26 42-4TV00-0EB0**		0.800
Degree of protection IP23									
0.023	--	X	**4AM23 42-4TN00-0EC0**		1.900	X	**4AM23 42-4TV00-0EC0**		1.900
0.036	--	X	**4AM26 42-4TN00-0EC0**		2.100	X	**4AM26 42-4TV00-0EC0**		2.100
Degree of protection IP54									
0.02	--	X	**4AM23 42-4TN00-0ED0**		1.900	X	**4AM23 42-4TV00-0ED0**		1.900
0.03	--	X	**4AM26 42-4TN00-0ED0**		2.100	X	**4AM26 42-4TV00-0ED0**		2.100

For online configurator see www.siemens.com/sirius/configurators.

[1] The delivery time class depends on the quantity, see page 15/6 "Options".

With one input voltage

Rated input voltage U_{1N} 400 V ± 5 %, rated output voltages U_{2N} 24 V or 42 V

cULus,

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 4M1

Rated power P_n	Short-time rating $P_{shortt.}$	DT[1]	U_{2N} 24 V Screw terminals/ flat connectors Configurator Order No.	Price per PU	Cu weight per PU approx.	DT[2]	U_{2N} 42 V Screw terminals/ flat connectors Configurator Order No.	Price per PU	Cu weight per PU approx.
kVA	kVA				kg				kg
Degree of protection IP00, standard version									
0.025	--	A	**4AM23 42-5AN00-0EA0**		0.600	X	**4AM23 42-5AV00-0EA0**		0.600
0.04	--	X	**4AM26 42-5AN00-0EA0**		0.800	X	**4AM26 42-5AV00-0EA0**		0.800
Degree of protection IP00, standard rail mounting									
0.025	--	X	**4AM23 42-5AN00-0EB0**		0.600	X	**4AM23 42-5AV00-0EB0**		0.600
0.04	--	X	**4AM26 42-5AN00-0EB0**		0.800	X	**4AM26 42-5AV00-0EB0**		0.800
Degree of protection IP23									
0.023	--	X	**4AM23 42-5AN00-0EC0**		1.900	X	**4AM23 42-5AV00-0EC0**		1.900
0.036	--	X	**4AM26 42-5AN00-0EC0**		2.100	X	**4AM26 42-5AV00-0EC0**		2.100
Degree of protection IP54									
0.02	--	X	**4AM23 42-5AN00-0ED0**		1.900	X	**4AM23 42-5AV00-0ED0**		1.900
0.03	--	X	**4AM26 42-5AN00-0ED0**		2.100	X	**4AM26 42-5AV00-0ED0**		2.100

For online configurator see www.siemens.com/sirius/configurators.

[1] The delivery time class depends on the quantity, see page 15/6 "Options".

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 4AM, 4AT
isolating, control and mains transformers

Overview

- According to EN 61558-2-4, -2-2, -2-1
- cULus[1)]
- 4AM: t_a = 40 °C/B, 4AT: t_a = 55 °C/H
- 50/60 Hz AC
- Degree of protection IP00, IP23 and IP54
- For more products see Industry Mall and Interactive Catalog CA 01 or www.mdexx.com.



SIRIUS 4AM single-phase transformer with screw terminals/flat connectors (left) and SIRIUS 4AT single-phase transformer with screw terminals (right)

1) cULus approvals for voltages ≤ 600 V (excluding tappings).

Selection and ordering data

With one input voltage

Rated input voltage U_{1N} 230 V ± 5 %, rated output voltages U_{2N} 110 V or 230 V, degree of protection IP00

cULus,

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 4M1

Rated power P_n	Short-time rating $P_{shortt.}$[1)]	DT[2)]	U_{2N} 110 V		Cu weight per PU approx.	DT[2)]	U_{2N} 230 V		Cu weight per PU approx.
			Screw terminals[3)]/ flat connectors[3)]				Screw terminals[3)]/ flat connectors[3)]		
			Configurator				Configurator		
kVA	kVA		Order No.	Price per PU	kg		Order No.	Price per PU	kg
Degree of protection IP00, standard version[4)]									
0.063	0.19	A	**4AM32 42-4TJ10-0FA0**		1.400	A	**4AM32 42-4TT10-0FA0**		1.400
0.1	0.31	A	**4AM34 42-4TJ10-0FA0**		2.000	A	**4AM34 42-4TT10-0FA0**		2.000
0.16	0.49	A	**4AM38 42-4TJ10-0FA0**		2.700	A	**4AM38 42-4TT10-0FA0**		2.700
0.25	0.85	A	**4AM40 42-4TJ10-0FA0**		3.700	A	**4AM40 42-4TT10-0FA0**		3.700
0.315	1.12	A	**4AM43 42-4TJ10-0FA0**		4.500	A	**4AM43 42-4TT10-0FA0**		4.500
0.4	1.44	A	**4AM46 42-4TJ10-0FA0**		5.400	A	**4AM46 42-4TT10-0FA0**		5.400
0.5	2	A	**4AM48 42-4TJ10-0FA0**		7.000	A	**4AM48 42-4TT10-0FA0**		7.000
0.63	2.35	A	**4AM52 42-4TJ10-0FA0**		7.900	A	**4AM52 42-4TT10-0FA0**		7.900
0.8	3.4	A	**4AM55 42-4TJ10-0FA0**		11.000	A	**4AM55 42-4TT10-0FA0**		11.000
1	5	A	**4AM57 42-4TJ10-0FA0**		14.000	A	**4AM57 42-4TT10-0FA0**		14.000
1.6	7.3	X	**4AM61 42-4TJ10-0FA0**		19.000	A	**4AM61 42-4TT10-0FA0**		19.000
2	9.7	X	**4AM64 42-4TJ10-0FA0**		23.000	A	**4AM64 42-4TT10-0FA0**		23.000
2.5	13.3	X	**4AM65 42-4TJ10-0FA0**		29.000	A	**4AM65 42-4TT10-0FA0**		29.000
4	16	X	**4AT30 32-4TJ10-0FA0**		30.300	X	**4AT30 32-4TT10-0FA0**		30.300
5	18.5	X	**4AT36 12-4TJ10-0FA0**		33.700	X	**4AT36 12-4TT10-0FA0**		33.700
6.3	22.5	X	**4AT36 32-4TJ10-0FA0**		39.600	X	**4AT36 32-4TT10-0FA0**		39.600
8	28.5	X	**4AT39 12-4TJ10-0FA0**		47.900	X	**4AT39 12-4TT10-0FA0**		47.900
10	30	X	**4AT39 32-4TJ10-0FA0**		57.100	X	**4AT39 32-4TT10-0FA0**		57.100
Degree of protection IP00, standard rail mounting[4)]									
0.063	0.19	A	**4AM32 42-4TJ10-0FA0**		1.400	A	**4AM32 42-4TT10-0FA0**		1.400
0.1	0.31	A	**4AM34 42-4TJ10-0FA0**		2.000	A	**4AM34 42-4TT10-0FA0**		2.000
0.16	0.49	A	**4AM38 42-4TJ10-0FA0**		2.700	A	**4AM38 42-4TT10-0FA0**		2.700
0.25	0.85	A	**4AM40 42-4TJ10-0FA0**		3.700	A	**4AM40 42-4TT10-0FA0**		3.700
0.315	1.12	X	**4AM43 42-4TJ10-0FB0**		4.500	X	**4AM43 42-4TT10-0FB0**		4.500
0.4	1.44	X	**4AM46 42-4TJ10-0FB0**		5.400	X	**4AM46 42-4TT10-0FB0**		5.400
0.5	2	X	**4AM48 42-4TJ10-0FB0**		7.000	X	**4AM48 42-4TT10-0FB0**		7.000

For degrees of protection IP23 and IP54 see page 15/21.

For online configurator see www.siemens.com/sirius/configurators.

1) For p.f. = 0.5 and U_2 = 0.95 × U_{2N}.

2) The delivery time class depends on the quantity, see page 15/6 "Options".

3) The 4AT types are only supplied with screw terminals.

4) For types 4AM32 to 4AM40, standard rail mounting is integrated in the standard version.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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With one input voltage

Rated input voltage U_{1N} 230 V ± 5 %, rated output voltages U_{2N} 110 V or 230 V, degrees of protection IP23 and IP54

cULus, , ,

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 4M1

Rated power P_n	Short-time rating $P_{shortt.}$ [1]	DT [2]	U_{2N} 110 V		Cu weight per PU approx.	DT [2]	U_{2N} 230 V		Cu weight per PU approx.
			Screw terminals [3]/ flat connectors [3]				Screw terminals [3]/ flat connectors [3]		
			Configurator				Configurator		
kVA	kVA		Order No.	Price per PU	kg		Order No.	Price per PU	kg
Degree of protection IP23									
0.057	0.19	X	**4AM32 42-4TJ10-0FC0**		2.700	X	**4AM32 42-4TT10-0FC0**		2.700
0.09	0.31	X	**4AM34 42-4TJ10-0FC0**		3.300	X	**4AM34 42-4TT10-0FC0**		3.300
0.145	0.49	X	**4AM38 42-4TJ10-0FC0**		5.600	X	**4AM38 42-4TT10-0FC0**		5.600
0.225	0.85	X	**4AM40 42-4TJ10-0FC0**		6.600	X	**4AM40 42-4TT10-0FC0**		6.600
0.268	1.12	X	**4AM43 42-4TJ10-0FC0**		7.400	X	**4AM43 42-4TT10-0FC0**		7.400
0.34	1.44	X	**4AM46 42-4TJ10-0FC0**		8.300	X	**4AM46 42-4TT10-0FC0**		8.300
0.425	2	X	**4AM48 42-4TJ10-0FC0**		9.900	X	**4AM48 42-4TT10-0FC0**		9.900
0.535	2.35	X	**4AM52 42-4TJ10-0FC0**		10.800	X	**4AM52 42-4TT10-0FC0**		10.800
0.68	3.4	X	**4AM55 42-4TJ10-0FC0**		13.900	X	**4AM55 42-4TT10-0FC0**		13.900
0.85	5	X	**4AM57 42-4TJ10-0FC0**		16.900	X	**4AM57 42-4TT10-0FC0**		16.900
1.36	7.3	X	**4AM61 42-4TJ10-0FC0**		26.700	X	**4AM61 42-4TT10-0FC0**		26.700
1.7	9.7	X	**4AM64 42-4TJ10-0FC0**		30.700	X	**4AM64 42-4TT10-0FC0**		30.700
2.13	13.3	X	**4AM65 42-4TJ10-0FC0**		36.700	X	**4AM65 42-4TT10-0FC0**		36.700
3.6	16	X	**4AT30 32-4TJ10-0FC0**		38.000	X	**4AT30 32-4TT10-0FC0**		38.000
4.5	18.5	X	**4AT36 12-4TJ10-0FC0**		41.400	X	**4AT36 12-4TT10-0FC0**		41.400
5.6	22.5	X	**4AT36 32-4TJ10-0FC0**		47.300	X	**4AT36 32-4TT10-0FC0**		47.300
7.1	28.5	X	**4AT39 12-4TJ10-0FC0**		61.800	X	**4AT39 12-4TT10-0FC0**		61.800
9	30	X	**4AT39 32-4TJ10-0FC0**		71.000	X	**4AT39 32-4TT10-0FC0**		71.000
Degree of protection IP54									
0.05	0.19	X	**4AM32 42-4TJ10-0FD0**		2.700	X	**4AM32 42-4TT10-0FD0**		2.700
0.08	0.31	X	**4AM34 42-4TJ10-0FD0**		3.300	X	**4AM34 42-4TT10-0FD0**		3.300
0.128	0.49	X	**4AM38 42-4TJ10-0FD0**		5.600	X	**4AM38 42-4TT10-0FD0**		5.600
0.2	0.85	X	**4AM40 42-4TJ10-0FD0**		6.600	X	**4AM40 42-4TT10-0FD0**		6.600
0.236	1.12	X	**4AM43 42-4TJ10-0FD0**		7.400	X	**4AM43 42-4TT10-0FD0**		7.400
0.3	1.44	X	**4AM46 42-4TJ10-0FD0**		8.300	X	**4AM46 42-4TT10-0FD0**		8.300
0.375	2	X	**4AM48 42-4TJ10-0FD0**		9.900	X	**4AM48 42-4TT10-0FD0**		9.900
0.475	2.35	X	**4AM52 42-4TJ10-0FD0**		10.800	X	**4AM52 42-4TT10-0FD0**		10.800
0.6	3.4	X	**4AM55 42-4TJ10-0FD0**		13.900	X	**4AM55 42-4TT10-0FD0**		13.900
0.75	5	X	**4AM57 42-4TJ10-0FD0**		16.900	X	**4AM57 42-4TT10-0FD0**		16.900
1.2	7.3	X	**4AM61 42-4TJ10-0FD0**		26.700	X	**4AM61 42-4TT10-0FD0**		26.700
1.5	9.7	X	**4AM64 42-4TJ10-0FD0**		30.700	X	**4AM64 42-4TT10-0FD0**		30.700
1.875	13.3	X	**4AM65 42-4TJ10-0FD0**		36.700	X	**4AM65 42-4TT10-0FD0**		36.700
3.15	16	X	**4AT30 32-4TJ10-0FD0**		38.000	X	**4AT30 32-4TT10-0FD0**		38.000
4	18.5	X	**4AT36 12-4TJ10-0FD0**		41.400	X	**4AT36 12-4TT10-0FD0**		41.400
5	22.5	X	**4AT36 32-4TJ10-0FD0**		47.300	X	**4AT36 32-4TT10-0FD0**		47.300
6.3	28.5	X	**4AT39 12-4TJ10-0FD0**		61.800	X	**4AT39 12-4TT10-0FD0**		61.800
8	30	X	**4AT39 32-4TJ10-0FD0**		71.000	X	**4AT39 32-4TT10-0FD0**		71.000

For online configurator see www.siemens.com/sirius/configurators.

[1] For p.f. = 0.5 and $U_2 = 0.95 \times U_{2N}$.

[2] The delivery time class depends on the quantity, see page 15/6 "Options".

[3] The 4AT types are only supplied with screw terminals.

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SIRIUS 4AM, 4AT
isolating, control and mains transformers

With one input voltage

Rated input voltage U_{1N} 400 V ± 5 %, rated output voltages U_{2N} 110 V or 230 V, degrees of protection IP00 and IP23

cULus, , ,

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 4M1

Rated power P_n	Short-time rating $P_{shortt.}$ [1]	DT [2]	U_{2N} 110 V		Cu weight per PU approx.	DT [2]	U_{2N} 230 V		Cu weight per PU approx.
			Screw terminals [3]/ flat connectors [3]				Screw terminals [3]/ flat connectors [3]		
			Configurator				Configurator		
kVA	kVA		Order No.	Price per PU	kg		Order No.	Price per PU	kg
Degree of protection IP00, standard version [4]									
0.063	0.19	A	**4AM32 42-5AJ10-0FA0**		1.400	A	**4AM32 42-5AT10-0FA0**		1.400
0.1	0.31	A	**4AM34 42-5AJ10-0FA0**		2.000	A	**4AM34 42-5AT10-0FA0**		2.000
0.16	0.49	A	**4AM38 42-5AJ10-0FA0**		2.700	A	**4AM38 42-5AT10-0FA0**		2.700
0.25	0.85	A	**4AM40 42-5AJ10-0FA0**		3.700	A	**4AM40 42-5AT10-0FA0**		3.700
0.315	1.12	A	**4AM43 42-5AJ10-0FA0**		4.500	A	**4AM43 42-5AT10-0FA0**		4.500
0.4	1.44	A	**4AM46 42-5AJ10-0FA0**		5.400	A	**4AM46 42-5AT10-0FA0**		5.400
0.5	2	A	**4AM48 42-5AJ10-0FA0**		7.000	A	**4AM48 42-5AT10-0FA0**		7.000
0.63	2.35	A	**4AM52 42-5AJ10-0FA0**		7.900	A	**4AM52 42-5AT10-0FA0**		7.900
0.8	3.4	A	**4AM55 42-5AJ10-0FA0**		11.000	A	**4AM55 42-5AT10-0FA0**		11.000
1	5	A	**4AM57 42-5AJ10-0FA0**		14.000	A	**4AM57 42-5AT10-0FA0**		14.000
1.6	7.3	A	**4AM61 42-5AJ10-0FA0**		19.000	A	**4AM61 42-5AT10-0FA0**		19.000
2	9.7	X	**4AM64 42-5AJ10-0FA0**		21.000	A	**4AM64 42-5AT10-0FA0**		23.000
2.5	13.3	A	**4AM65 42-5AJ10-0FA0**		29.000	A	**4AM65 42-5AT10-0FA0**		29.000
4	16	X	**4AT30 32-5AJ10-0FA0**		30.300	X	**4AT30 32-5AT10-0FA0**		30.300
5	18.5	X	**4AT36 12-5AJ10-0FA0**		33.700	X	**4AT36 12-5AT10-0FA0**		32.000
6.3	22.5	X	**4AT36 32-5AJ10-0FA0**		39.600	X	**4AT36 32-5AT10-0FA0**		37.000
8	28.5	X	**4AT39 12-5AJ10-0FA0**		47.900	X	**4AT39 12-5AT10-0FA0**		47.900
10	30	X	**4AT39 32-5AJ10-0FA0**		57.100	X	**4AT39 32-5AT10-0FA0**		57.100
Degree of protection IP00, standard rail mounting [4]									
0.063	0.19	A	**4AM32 42-5AJ10-0FA0**		1.400	A	**4AM32 42-5AT10-0FA0**		1.400
0.1	0.31	A	**4AM34 42-5AJ10-0FA0**		2.000	A	**4AM34 42-5AT10-0FA0**		2.000
0.16	0.49	A	**4AM38 42-5AJ10-0FA0**		2.700	A	**4AM38 42-5AT10-0FA0**		2.700
0.25	0.85	A	**4AM40 42-5AJ10-0FA0**		3.700	A	**4AM40 42-5AT10-0FA0**		3.700
0.315	1.12	X	**4AM43 42-5AJ10-0FB0**		4.500	X	**4AM43 42-5AT10-0FB0**		4.500
0.4	1.44	X	**4AM46 42-5AJ10-0FB0**		5.400	X	**4AM46 42-5AT10-0FB0**		5.400
0.5	2	X	**4AM48 42-5AJ10-0FB0**		7.000	X	**4AM48 42-5AT10-0FB0**		7.000
Degree of protection IP23									
0.057	0.19	X	**4AM32 42-5AJ10-0FC0**		2.700	X	**4AM32 42-5AT10-0FC0**		2.700
0.09	0.31	X	**4AM34 42-5AJ10-0FC0**		3.300	X	**4AM34 42-5AT10-0FC0**		3.300
0.145	0.49	X	**4AM38 42-5AJ10-0FC0**		5.600	X	**4AM38 42-5AT10-0FC0**		5.600
0.225	0.85	X	**4AM40 42-5AJ10-0FC0**		6.600	X	**4AM40 42-5AT10-0FC0**		6.600
0.268	1.12	X	**4AM43 42-5AJ10-0FC0**		7.400	X	**4AM43 42-5AT10-0FC0**		7.400
0.34	1.44	X	**4AM46 42-5AJ10-0FC0**		8.300	X	**4AM46 42-5AT10-0FC0**		8.300
0.425	2	X	**4AM48 42-5AJ10-0FC0**		9.900	X	**4AM48 42-5AT10-0FC0**		9.900
0.535	2.35	X	**4AM52 42-5AJ10-0FC0**		10.800	X	**4AM52 42-5AT10-0FC0**		10.800
0.68	3.4	X	**4AM55 42-5AJ10-0FC0**		13.900	X	**4AM55 42-5AT10-0FC0**		13.900
0.85	5	X	**4AM57 42-5AJ10-0FC0**		16.900	X	**4AM57 42-5AT10-0FC0**		16.900
1.36	7.3	X	**4AM61 42-5AJ10-0FC0**		26.700	X	**4AM61 42-5AT10-0FC0**		26.700
1.7	9.7	X	**4AM64 42-5AJ10-0FC0**		30.700	X	**4AM64 42-5AT10-0FC0**		30.700
2.13	13.3	X	**4AM65 42-5AJ10-0FC0**		36.700	X	**4AM65 42-5AT10-0FC0**		36.700
3.6	16	X	**4AT30 32-5AJ10-0FC0**		38.000	X	**4AT30 32-5AT10-0FC0**		38.000
4.5	18.5	X	**4AT36 12-5AJ10-0FC0**		41.400	X	**4AT36 12-5AT10-0FC0**		41.400
5.6	22.5	X	**4AT36 32-5AJ10-0FC0**		47.300	X	**4AT36 32-5AT10-0FC0**		47.300
7.1	28.5	X	**4AT39 12-5AJ10-0FC0**		61.800	X	**4AT39 12-5AT10-0FC0**		61.800
9	30	X	**4AT39 32-5AJ10-0FC0**		71.000	X	**4AT39 32-5AT10-0FC0**		71.000

Degree of protection IP54 see page 15/23.

For online configurator see www.siemens.com/sirius/configurators.

[1] For p.f. = 0.5 and $U_2 = 0.95 \times U_{2N}$.

[2] The delivery time class depends on the quantity, see page 15/6 "Options".

[3] The 4AT types are only supplied with screw terminals.

[4] For types 4AM32 to 4AM40, standard rail mounting is integrated in the standard version.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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With one input voltage

Rated input voltage U_{1N} 400 V ± 5 %, rated output voltages U_{2N} 110 V or 230 V, degree of protection IP54

cULus, ⊖, ⚠, ⊖

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 4M1

Rated power P_n	Short-time rating $P_{shortt.}$ [1]	DT [2]	U_{2N} 110 V Screw terminals [3]/ flat connectors [3] Configurator	Cu weight per PU approx.	DT [2]	U_{2N} 230 V Screw terminals [3]/ flat connectors [3] Configurator	Cu weight per PU approx.
kVA	kVA		Order No. Price per PU	kg		Order No. Price per PU	kg
Degree of protection IP54							
0.05	0.19	X	**4AM32 42-5AJ10-0FD0**	2.700	X	**4AM32 42-5AT10-0FD0**	2.700
0.08	0.31	X	**4AM34 42-5AJ10-0FD0**	3.300	X	**4AM34 42-5AT10-0FD0**	3.300
0.128	0.49	X	**4AM38 42-5AJ10-0FD0**	5.600	X	**4AM38 42-5AT10-0FD0**	5.600
0.2	0.85	X	**4AM40 42-5AJ10-0FD0**	6.600	X	**4AM40 42-5AT10-0FD0**	6.600
0.236	1.12	X	**4AM43 42-5AJ10-0FD0**	7.400	X	**4AM43 42-5AT10-0FD0**	7.400
0.3	1.44	X	**4AM46 42-5AJ10-0FD0**	8.300	X	**4AM46 42-5AT10-0FD0**	8.300
0.375	2	X	**4AM48 42-5AJ10-0FD0**	9.900	X	**4AM48 42-5AT10-0FD0**	9.900
0.475	2.35	X	**4AM52 42-5AJ10-0FD0**	10.800	X	**4AM52 42-5AT10-0FD0**	10.800
0.6	3.4	X	**4AM55 42-5AJ10-0FD0**	13.900	X	**4AM55 42-5AT10-0FD0**	13.900
0.75	5	X	**4AM57 42-5AJ10-0FD0**	16.900	X	**4AM57 42-5AT10-0FD0**	16.900
1.2	7.3	X	**4AM61 42-5AJ10-0FD0**	26.700	X	**4AM61 42-5AT10-0FD0**	26.700
1.5	9.7	X	**4AM64 42-5AJ10-0FD0**	30.700	X	**4AM64 42-5AT10-0FD0**	30.700
1.875	13.3	X	**4AM65 42-5AJ10-0FD0**	36.700	X	**4AM65 42-5AT10-0FD0**	36.700
3.15	16	X	**4AT30 32-5AJ10-0FD0**	38.000	X	**4AT30 32-5AT10-0FD0**	38.000
4	18.5	X	**4AT36 12-5AJ10-0FD0**	41.400	X	**4AT36 12-5AT10-0FD0**	41.400
5	22.5	X	**4AT36 32-5AJ10-0FD0**	47.300	X	**4AT36 32-5AT10-0FD0**	47.300
6.3	28.5	X	**4AT39 12-5AJ10-0FD0**	61.800	X	**4AT39 12-5AT10-0FD0**	61.800
8	30	X	**4AT39 32-5AJ10-0FD0**	71.000	X	**4AT39 32-5AT10-0FD0**	71.000

For online configurator see www.siemens.com/sirius/configurators.

[1] For p.f. = 0.5 and $U_2 = 0.95 \times U_{2N}$.

[2] The delivery time class depends on the quantity, see page 15/6 "Options".

[3] The 4AT types are only supplied with screw terminals.

With one input voltage

Rated input voltage U_{1N} 440 V ± 5 %, rated output voltages U_{2N} 110 V or 230 V, degree of protection IP00 (standard version)

cULus, ⊖, ⚠, ⊖

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 4M1

Rated power P_n	Short-time rating $P_{shortt.}$ [1]	DT [2]	U_{2N} 110 V Screw terminals [3]/ flat connectors [3] Configurator	Cu weight per PU approx.	DT [2]	U_{2N} 230 V Screw terminals [3]/ flat connectors [3] Configurator	Cu weight per PU approx.
kVA	kVA		Order No. Price per PU	kg		Order No. Price per PU	kg
Degree of protection IP00, standard version [4]							
0.063	0.19	X	**4AM32 42-5CJ10-0FA0**	1.400	A	**4AM32 42-5CT10-0FA0**	1.400
0.1	0.31	X	**4AM34 42-5CJ10-0FA0**	2.000	A	**4AM34 42-5CT10-0FA0**	2.000
0.16	0.49	X	**4AM38 42-5CJ10-0FA0**	2.700	A	**4AM38 42-5CT10-0FA0**	2.700
0.25	0.85	X	**4AM40 42-5CJ10-0FA0**	3.700	A	**4AM40 42-5CT10-0FA0**	3.700
0.315	1.12	X	**4AM43 42-5CJ10-0FA0**	4.500	A	**4AM43 42-5CT10-0FA0**	4.500
0.4	1.44	X	**4AM46 42-5CJ10-0FA0**	5.400	A	**4AM46 42-5CT10-0FA0**	5.400
0.5	2	X	**4AM48 42-5CJ10-0FA0**	7.000	A	**4AM48 42-5CT10-0FA0**	7.000
0.63	2.35	X	**4AM52 42-5CJ10-0FA0**	7.900	A	**4AM52 42-5CT10-0FA0**	7.900
0.8	3.4	X	**4AM55 42-5CJ10-0FA0**	11.000	A	**4AM55 42-5CT10-0FA0**	11.000
1	5	X	**4AM57 42-5CJ10-0FA0**	14.000	A	**4AM57 42-5CT10-0FA0**	14.000
1.6	7.3	X	**4AM61 42-5CJ10-0FA0**	19.000	A	**4AM61 42-5CT10-0FA0**	19.000
2	9.7	X	**4AM64 42-5CJ10-0FA0**	23.000	A	**4AM64 42-5CT10-0FA0**	23.000
2.5	13.3	X	**4AM65 42-5CJ10-0FA0**	29.000	X	**4AM65 42-5CT10-0FA0**	29.000
4	16	X	**4AT30 32-5CJ10-0FA0**	30.300	X	**4AT30 32-5CT10-0FA0**	30.300
5	18.5	X	**4AT36 12-5CJ10-0FA0**	33.700	X	**4AT36 12-5CT10-0FA0**	33.700
6.3	22.5	X	**4AT36 32-5CJ10-0FA0**	39.600	X	**4AT36 32-5CT10-0FA0**	39.600
8	28.5	X	**4AT39 12-5CJ10-0FA0**	47.600	X	**4AT39 12-5CT10-0FA0**	47.900
10	30	X	**4AT39 32-5CJ10-0FA0**	57.100	X	**4AT39 32-5CT10-0FA0**	57.100

Degrees of protection IP00 (standard rail mounting), IP23 and IP54 see page 15/24.

For online configurator see www.siemens.com/sirius/configurators.

[1] For p.f. = 0.5 and $U_2 = 0.95 \times U_{2N}$.

[2] The delivery time class depends on the quantity, see page 15/6 "Options".

[3] The 4AT types are only supplied with screw terminals.

[4] For types 4AM32 to 4AM40, standard rail mounting is integrated in the standard version.

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SIRIUS 4AM, 4AT
isolating, control and mains transformers

With one input voltage

Rated input voltage U_{1N} 440 V ± 5 %,
rated output voltages U_{2N} 110 V or 230 V,
degrees of protection IP00 (standard rail mounting), IP23, IP54

cULus, ⊖, ⚠, ⊖

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 4M1

Rated power P_n	Short-time rating $P_{shortt.}$ [1]	DT [2]	U_{2N} 110 V Screw terminals [3]/ flat connectors [3] Configurator		Cu weight per PU approx.	DT [2]	U_{2N} 230 V Screw terminals [3]/ flat connectors [3] Configurator		Cu weight per PU approx.
kVA	kVA		Order No.	Price per PU	kg		Order No.	Price per PU	kg
Degree of protection IP00, standard rail mounting [4]									
0.063	0.19	X	**4AM32 42-5CJ10-0FA0**	1.400	A		**4AM32 42-5CT10-0FA0**		1.400
0.1	0.31	X	**4AM34 42-5CJ10-0FA0**	2.000	A		**4AM34 42-5CT10-0FA0**		2.000
0.16	0.49	X	**4AM38 42-5CJ10-0FA0**	2.700	A		**4AM38 42-5CT10-0FA0**		2.700
0.25	0.85	X	**4AM40 42-5CJ10-0FA0**	3.700	A		**4AM40 42-5CT10-0FA0**		3.700
0.315	1.12	X	**4AM43 42-5CJ10-0FB0**	4.500	X		**4AM43 42-5CT10-0FB0**		4.500
0.4	1.44	X	**4AM46 42-5CJ10-0FB0**	5.400	X		**4AM46 42-5CT10-0FB0**		5.400
0.5	2	X	**4AM48 42-5CJ10-0FB0**	7.000	X		**4AM48 42-5CT10-0FB0**		7.000
Degree of protection IP23									
0.057	0.19	X	**4AM32 42-5CJ10-0FC0**	2.700	X		**4AM32 42-5CT10-0FC0**		2.700
0.09	0.31	X	**4AM34 42-5CJ10-0FC0**	3.300	X		**4AM34 42-5CT10-0FC0**		3.300
0.145	0.49	X	**4AM38 42-5CJ10-0FC0**	5.600	X		**4AM38 42-5CT10-0FC0**		5.600
0.225	0.85	X	**4AM40 42-5CJ10-0FC0**	6.600	X		**4AM40 42-5CT10-0FC0**		6.600
0.268	1.12	X	**4AM43 42-5CJ10-0FC0**	7.400	X		**4AM43 42-5CT10-0FC0**		7.400
0.34	1.44	X	**4AM46 42-5CJ10-0FC0**	8.300	X		**4AM46 42-5CT10-0FC0**		8.300
0.425	2	X	**4AM48 42-5CJ10-0FC0**	9.900	X		**4AM48 42-5CT10-0FC0**		9.900
0.535	2.35	X	**4AM52 42-5CJ10-0FC0**	10.800	X		**4AM52 42-5CT10-0FC0**		10.800
0.68	3.4	X	**4AM55 42-5CJ10-0FC0**	13.900	X		**4AM55 42-5CT10-0FC0**		13.900
0.85	5	X	**4AM57 42-5CJ10-0FC0**	16.900	X		**4AM57 42-5CT10-0FC0**		16.900
1.36	7.3	X	**4AM61 42-5CJ10-0FC0**	26.700	X		**4AM61 42-5CT10-0FC0**		26.700
1.7	9.7	X	**4AM64 42-5CJ10-0FC0**	30.700	X		**4AM64 42-5CT10-0FC0**		30.700
2.13	13.3	X	**4AM65 42-5CJ10-0FC0**	36.700	X		**4AM65 42-5CT10-0FC0**		36.700
3.6	16	X	**4AT30 32-5CJ10-0FC0**	38.000	X		**4AT30 32-5CT10-0FC0**		38.000
4.5	18.5	X	**4AT36 12-5CJ10-0FC0**	41.400	X		**4AT36 12-5CT10-0FC0**		41.400
5.6	22.5	X	**4AT36 32-5CJ10-0FC0**	47.300	X		**4AT36 32-5CT10-0FC0**		47.300
7.1	28.5	X	**4AT39 12-5CJ10-0FC0**	61.800	X		**4AT39 12-5CT10-0FC0**		61.800
9	30	X	**4AT39 32-5CJ10-0FC0**	71.000	X		**4AT39 32-5CT10-0FC0**		71.000
Degree of protection IP54									
0.05	0.19	X	**4AM32 42-5CJ10-0FD0**	2.700	X		**4AM32 42-5CT10-0FD0**		2.700
0.08	0.31	X	**4AM34 42-5CJ10-0FD0**	3.300	X		**4AM34 42-5CT10-0FD0**		3.300
0.128	0.49	X	**4AM38 42-5CJ10-0FD0**	5.600	X		**4AM38 42-5CT10-0FD0**		5.600
0.2	0.85	X	**4AM40 42-5CJ10-0FD0**	6.600	X		**4AM40 42-5CT10-0FD0**		6.600
0.236	1.12	X	**4AM43 42-5CJ10-0FD0**	7.400	X		**4AM43 42-5CT10-0FD0**		7.400
0.3	1.44	X	**4AM46 42-5CJ10-0FD0**	8.300	X		**4AM46 42-5CT10-0FD0**		8.300
0.375	2	X	**4AM48 42-5CJ10-0FD0**	9.900	X		**4AM48 42-5CT10-0FD0**		9.900
0.475	2.35	X	**4AM52 42-5CJ10-0FD0**	10.800	X		**4AM52 42-5CT10-0FD0**		10.800
0.6	3.4	X	**4AM55 42-5CJ10-0FD0**	13.900	X		**4AM55 42-5CT10-0FD0**		13.900
0.75	5	X	**4AM57 42-5CJ10-0FD0**	16.900	X		**4AM57 42-5CT10-0FD0**		16.900
1.2	7.3	X	**4AM61 42-5CJ10-0FD0**	26.700	X		**4AM61 42-5CT10-0FD0**		26.700
1.5	9.7	X	**4AM64 42-5CJ10-0FD0**	30.700	X		**4AM64 42-5CT10-0FD0**		30.700
1.875	13.3	X	**4AM65 42-5CJ10-0FD0**	36.700	X		**4AM65 42-5CT10-0FD0**		36.700
3.15	16	X	**4AT30 32-5CJ10-0FD0**	38.000	X		**4AT30 32-5CT10-0FD0**		38.000
4	18.5	X	**4AT36 12-5CJ10-0FD0**	41.400	X		**4AT36 12-5CT10-0FD0**		41.400
5	22.5	X	**4AT36 32-5CJ10-0FD0**	47.300	X		**4AT36 32-5CT10-0FD0**		47.300
6.3	28.5	X	**4AT39 12-5CJ10-0FD0**	61.800	X		**4AT39 12-5CT10-0FD0**		61.800
8	30	X	**4AT39 32-5CJ10-0FD0**	71.000	X		**4AT39 32-5CT10-0FD0**		71.000

⚙ For online configurator see www.siemens.com/sirius/configurators.

[1] For p.f. = 0.5 and $U_2 = 0.95 \times U_{2N}$.

[2] The delivery time class depends on the quantity, see page 15/6 "Options".

[3] The 4AT types are only supplied with screw terminals.

[4] For types 4AM32 to 4AM40, standard rail mounting is integrated in the standard version.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 4AM, 4AT
isolating, control and mains transformers

With one input voltage

Rated input voltage U_{1N} 500 V ± 5 %, rated output voltages U_{2N} 110 V or 230 V, degrees of protection IP00 and IP23

cULus, , ,

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 4M1

Rated power P_n	Short-time rating $P_{shortt.}$ [1]	DT [2]	U_{2N} 110 V		Cu weight per PU approx.	DT [2]	U_{2N} 230 V		Cu weight per PU approx.
			Screw terminals [3]/ flat connectors [3]				Screw terminals [3]/ flat connectors [3]		
			Configurator				Configurator		
kVA	kVA		Order No.	Price per PU	kg		Order No.	Price per PU	kg
Degree of protection IP00, standard version [4]									
0.063	0.19	X	**4AM32 42-5FJ10-0FA0**		1.400	A	**4AM32 42-5FT10-0FA0**		1.400
0.1	0.31	X	**4AM34 42-5FJ10-0FA0**		2.000	A	**4AM34 42-5FT10-0FA0**		2.000
0.16	0.49	X	**4AM38 42-5FJ10-0FA0**		2.700	A	**4AM38 42-5FT10-0FA0**		2.700
0.25	0.85	X	**4AM40 42-5FJ10-0FA0**		3.700	A	**4AM40 42-5FT10-0FA0**		3.700
0.315	1.12	X	**4AM43 42-5FJ10-0FA0**		4.500	A	**4AM43 42-5FT10-0FA0**		4.500
0.4	1.44	X	**4AM46 42-5FJ10-0FA0**		5.400	A	**4AM46 42-5FT10-0FA0**		5.400
0.5	2	X	**4AM48 42-5FJ10-0FA0**		7.000	A	**4AM48 42-5FT10-0FA0**		7.000
0.63	2.35	X	**4AM52 42-5FJ10-0FA0**		7.900	A	**4AM52 42-5FT10-0FA0**		7.900
0.8	3.4	A	**4AM55 42-5FJ10-0FA0**		11.000	A	**4AM55 42-5FT10-0FA0**		11.000
1	5	X	**4AM57 42-5FJ10-0FA0**		14.000	A	**4AM57 42-5FT10-0FA0**		14.000
1.6	7.3	X	**4AM61 42-5FJ10-0FA0**		19.000	A	**4AM61 42-5FT10-0FA0**		19.000
2	9.7	X	**4AM64 42-5FJ10-0FA0**		23.000	A	**4AM64 42-5FT10-0FA0**		23.000
2.5	13.3	X	**4AM65 42-5FJ10-0FA0**		29.000	A	**4AM65 42-5FT10-0FA0**		29.000
4	16	X	**4AT30 32-5FJ10-0FA0**		30.300	X	**4AT30 32-5FT10-0FA0**		30.300
5	18.5	X	**4AT36 12-5FJ10-0FA0**		33.700	X	**4AT36 12-5FT10-0FA0**		33.700
6.3	22.5	X	**4AT36 32-5FJ10-0FA0**		39.600	X	**4AT36 32-5FT10-0FA0**		39.600
8	28.5	X	**4AT39 12-5FJ10-0FA0**		47.900	X	**4AT39 12-5FT10-0FA0**		47.900
10	30	X	**4AT39 32-5FJ10-0FA0**		57.100	X	**4AT39 32-5FT10-0FA0**		57.100
Degree of protection IP00, standard rail mounting [4]									
0.063	0.19	X	**4AM32 42-5FJ10-0FA0**		1.400	A	**4AM32 42-5FT10-0FA0**		1.400
0.1	0.31	X	**4AM34 42-5FJ10-0FA0**		2.000	A	**4AM34 42-5FT10-0FA0**		2.000
0.16	0.49	X	**4AM38 42-5FJ10-0FA0**		2.700	A	**4AM38 42-5FT10-0FA0**		2.700
0.25	0.85	X	**4AM40 42-5FJ10-0FA0**		3.700	A	**4AM40 42-5FT10-0FA0**		3.700
0.315	1.12	X	**4AM43 42-5FJ10-0FB0**		4.500	X	**4AM43 42-5FT10-0FB0**		4.500
0.4	1.44	X	**4AM46 42-5FJ10-0FB0**		5.400	X	**4AM46 42-5FT10-0FB0**		5.400
0.5	2	X	**4AM48 42-5FJ10-0FB0**		7.000	X	**4AM48 42-5FT10-0FB0**		7.000
Degree of protection IP23									
0.057	0.19	X	**4AM32 42-5FJ10-0FC0**		2.700	X	**4AM32 42-5FT10-0FC0**		2.700
0.09	0.31	X	**4AM34 42-5FJ10-0FC0**		3.300	X	**4AM34 42-5FT10-0FC0**		3.300
0.145	0.49	X	**4AM38 42-5FJ10-0FC0**		5.600	X	**4AM38 42-5FT10-0FC0**		5.600
0.225	0.85	X	**4AM40 42-5FJ10-0FC0**		6.600	X	**4AM40 42-5FT10-0FC0**		6.600
0.268	1.12	X	**4AM43 42-5FJ10-0FC0**		7.400	X	**4AM43 42-5FT10-0FC0**		7.400
0.34	1.44	X	**4AM46 42-5FJ10-0FC0**		8.300	X	**4AM46 42-5FT10-0FC0**		8.300
0.425	2	X	**4AM48 42-5FJ10-0FC0**		9.900	X	**4AM48 42-5FT10-0FC0**		9.900
0.535	2.35	X	**4AM52 42-5FJ10-0FC0**		10.800	X	**4AM52 42-5FT10-0FC0**		10.800
0.68	3.4	X	**4AM55 42-5FJ10-0FC0**		13.900	X	**4AM55 42-5FT10-0FC0**		13.900
0.85	5	X	**4AM57 42-5FJ10-0FC0**		16.900	X	**4AM57 42-5FT10-0FC0**		16.900
1.36	7.3	X	**4AM61 42-5FJ10-0FC0**		26.700	X	**4AM61 42-5FT10-0FC0**		26.700
1.7	9.7	X	**4AM64 42-5FJ10-0FC0**		30.700	X	**4AM64 42-5FT10-0FC0**		30.700
2.13	13.3	X	**4AM65 42-5FJ10-0FC0**		36.700	X	**4AM65 42-5FT10-0FC0**		36.700
3.6	16	X	**4AT30 32-5FJ10-0FC0**		38.000	X	**4AT30 32-5FT10-0FC0**		38.000
4.5	18.5	X	**4AT36 12-5FJ10-0FC0**		41.400	X	**4AT36 12-5FT10-0FC0**		41.400
5.6	22.5	X	**4AT36 32-5FJ10-0FC0**		47.300	X	**4AT36 32-5FT10-0FC0**		47.300
7.1	28.5	X	**4AT39 12-5FJ10-0FC0**		61.800	X	**4AT39 12-5FT10-0FC0**		61.800
9	30	X	**4AT39 32-5FJ10-0FC0**		71.000	X	**4AT39 32-5FT10-0FC0**		71.000

Degree of protection IP54 see page 15/26.

For online configurator see www.siemens.com/sirius/configurators.

[1] For p.f. = 0.5 and $U_2 = 0.95 \times U_{2N}$.

[2] The delivery time class depends on the quantity, see page 15/6 "Options".

[3] The 4AT types are only supplied with screw terminals.

[4] For types 4AM32 to 4AM40, standard rail mounting is integrated in the standard version.

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SIRIUS 4AM, 4AT
isolating, control and mains transformers

With one input voltage

Rated input voltage U_{1N} 500 V ± 5 %, rated output voltages U_{2N} 110 V or 230 V, degree of protection IP54

cULus, ⚙, ⚙, ⚙

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 4M1

Rated power P_n	Short-time rating $P_{shortt.}$ [1]	DT [2]	U_{2N} 110 V		Cu weight per PU approx.	DT [2]	U_{2N} 230 V		Cu weight per PU approx.
			Screw terminals [3]/ flat connectors [3]				Screw terminals [3]/ flat connectors [3]		
			Configurator				Configurator		
kVA	kVA		Order No.	Price per PU	kg		Order No.	Price per PU	kg
Degree of protection IP54									
0.05	0.19	X	**4AM32 42-5FJ10-0FD0**		2.700	X	**4AM32 42-5FT10-0FD0**		2.700
0.08	0.31	X	**4AM34 42-5FJ10-0FD0**		3.300	X	**4AM34 42-5FT10-0FD0**		3.300
0.128	0.49	X	**4AM38 42-5FJ10-0FD0**		5.600	X	**4AM38 42-5FT10-0FD0**		5.600
0.2	0.85	X	**4AM40 42-5FJ10-0FD0**		6.600	X	**4AM40 42-5FT10-0FD0**		6.600
0.236	1.12	X	**4AM43 42-5FJ10-0FD0**		7.400	X	**4AM43 42-5FT10-0FD0**		7.400
0.3	1.44	X	**4AM46 42-5FJ10-0FD0**		8.300	X	**4AM46 42-5FT10-0FD0**		8.300
0.375	2	X	**4AM48 42-5FJ10-0FD0**		9.900	X	**4AM48 42-5FT10-0FD0**		9.900
0.475	2.35	X	**4AM52 42-5FJ10-0FD0**		10.800	X	**4AM52 42-5FT10-0FD0**		10.800
0.6	3.4	X	**4AM55 42-5FJ10-0FD0**		13.900	X	**4AM55 42-5FT10-0FD0**		13.900
0.75	5	X	**4AM57 42-5FJ10-0FD0**		16.900	X	**4AM57 42-5FT10-0FD0**		16.900
1.2	7.3	X	**4AM61 42-5FJ10-0FD0**		26.700	X	**4AM61 42-5FT10-0FD0**		26.700
1.5	9.7	X	**4AM64 42-5FJ10-0FD0**		30.700	X	**4AM64 42-5FT10-0FD0**		30.700
1.875	13.3	X	**4AM65 42-5FJ10-0FD0**		36.700	X	**4AM65 42-5FT10-0FD0**		36.700
3.15	16	X	**4AT30 32-5FJ10-0FD0**		38.000	X	**4AT30 32-5FT10-0FD0**		38.000
4	18.5	X	**4AT36 12-5FJ10-0FD0**		41.400	X	**4AT36 12-5FT10-0FD0**		41.400
5	22.5	X	**4AT36 32-5FJ10-0FD0**		47.300	X	**4AT36 32-5FT10-0FD0**		47.300
6.3	28.5	X	**4AT39 12-5FJ10-0FD0**		61.800	X	**4AT39 12-5FT10-0FD0**		61.800
8	30	X	**4AT39 32-5FJ10-0FD0**		71.000	X	**4AT39 32-5FT10-0FD0**		71.000

⚙ For online configurator see www.siemens.com/sirius/configurators.

[1] For p.f. = 0.5 and $U_2 = 0.95 \times U_{2N}$.

[2] The delivery time class depends on the quantity, see page 15/6 "Options".

[3] The 4AT types are only supplied with screw terminals.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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With one input voltage

Rated input voltages U_{1N} 660 V ± 5 %[1] or 690 V ± 5 %[1], rated output voltage U_{2N} 230 V

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 4M1

Rated power P_n	Short-time rating $P_{shortt.}$[2]	DT[3]	U_{1N} 660 V ± 5 %[1] Screw terminals/ flat connectors		Cu weight per PU approx.	DT[3]	U_{1N} 690 V ± 5 %[1] Screw terminals/ flat connectors		Cu weight per PU approx.
			Configurator				Configurator		
kVA	kVA		Order No.	Price per PU	kg		Order No.	Price per PU	kg
Degree of protection IP00, standard version[4]									
0.063	0.19	X	**4AM32 42-5LT10-0FA0**		1.400	X	**4AM32 42-5MT10-0FA0**		1.400
0.1	0.31	X	**4AM34 42-5LT10-0FA0**		2.000	X	**4AM34 42-5MT10-0FA0**		2.000
0.16	0.49	X	**4AM38 42-5LT10-0FA0**		2.700	X	**4AM38 42-5MT10-0FA0**		2.700
0.25	0.85	X	**4AM40 42-5LT10-0FA0**		3.700	X	**4AM40 42-5MT10-0FA0**		3.700
0.315	1.12	X	**4AM43 42-5LT10-0FA0**		4.500	X	**4AM43 42-5MT10-0FA0**		4.500
0.4	1.44	X	**4AM46 42-5LT10-0FA0**		5.400	X	**4AM46 42-5MT10-0FA0**		5.400
0.5	2	X	**4AM48 42-5LT10-0FA0**		7.000	X	**4AM48 42-5MT10-0FA0**		7.000
0.63	2.35	X	**4AM52 42-5LT10-0FA0**		7.900	X	**4AM52 42-5MT10-0FA0**		7.900
0.8	3.4	X	**4AM55 42-5LT10-0FA0**		11.000	X	**4AM55 42-5MT10-0FA0**		11.000
1	5	X	**4AM57 42-5LT10-0FA0**		14.000	X	**4AM57 42-5MT10-0FA0**		14.000
1.6	7.3	X	**4AM61 42-5LT10-0FA0**		19.000	X	**4AM61 42-5MT10-0FA0**		19.000
2	9.7	X	**4AM64 42-5LT10-0FA0**		23.000	X	**4AM64 42-5MT10-0FA0**		23.000
2.5	13.3	X	**4AM65 42-5LT10-0FA0**		29.000	X	**4AM65 42-5MT10-0FA0**		29.000
Degree of protection IP00, standard rail mounting[4]									
0.063	0.19	X	**4AM32 42-5LT10-0FA0**		1.400	X	**4AM32 42-5MT10-0FA0**		1.400
0.1	0.31	X	**4AM34 42-5LT10-0FA0**		2.000	X	**4AM34 42-5MT10-0FA0**		2.000
0.16	0.49	X	**4AM38 42-5LT10-0FA0**		2.700	X	**4AM38 42-5MT10-0FA0**		2.700
0.25	0.85	X	**4AM40 42-5LT10-0FA0**		3.700	X	**4AM40 42-5MT10-0FA0**		3.700
0.315	1.12	X	**4AM43 42-5LT10-0FB0**		4.500	X	**4AM43 42-5MT10-0FB0**		4.500
0.4	1.44	X	**4AM46 42-5LT10-0FB0**		5.400	X	**4AM46 42-5MT10-0FB0**		5.400
0.5	2	X	**4AM48 42-5LT10-0FB0**		7.000	X	**4AM48 42-5MT10-0FB0**		7.000
Degree of protection IP23									
0.057	0.19	X	**4AM32 42-5LT10-0FC0**		2.700	X	**4AM32 42-5MT10-0FC0**		2.700
0.09	0.31	X	**4AM34 42-5LT10-0FC0**		3.300	X	**4AM34 42-5MT10-0FC0**		3.300
0.145	0.49	X	**4AM38 42-5LT10-0FC0**		5.600	X	**4AM38 42-5MT10-0FC0**		5.600
0.225	0.85	X	**4AM40 42-5LT10-0FC0**		6.600	X	**4AM40 42-5MT10-0FC0**		6.600
0.268	1.12	X	**4AM43 42-5LT10-0FC0**		7.400	X	**4AM43 42-5MT10-0FC0**		7.400
0.34	1.44	X	**4AM46 42-5LT10-0FC0**		8.300	X	**4AM46 42-5MT10-0FC0**		8.300
0.425	2	X	**4AM48 42-5LT10-0FC0**		9.900	X	**4AM48 42-5MT10-0FC0**		9.900
0.535	2.35	X	**4AM52 42-5LT10-0FC0**		10.800	X	**4AM52 42-5MT10-0FC0**		10.800
0.68	3.4	X	**4AM55 42-5LT10-0FC0**		13.900	X	**4AM55 42-5MT10-0FC0**		13.900
0.85	5	X	**4AM57 42-5LT10-0FC0**		16.900	X	**4AM57 42-5MT10-0FC0**		16.900
1.36	7.3	X	**4AM61 42-5LT10-0FC0**		26.700	X	**4AM61 42-5MT10-0FC0**		26.700
1.7	9.7	X	**4AM64 42-5LT10-0FC0**		30.700	X	**4AM64 42-5MT10-0FC0**		30.700
2.13	13.3	X	**4AM65 42-5LT10-0FC0**		36.700	X	**4AM65 42-5MT10-0FC0**		36.700
Degree of protection IP54									
0.05	0.19	X	**4AM32 42-5LT10-0FD0**		2.700	X	**4AM32 42-5MT10-0FD0**		2.700
0.08	0.31	X	**4AM34 42-5LT10-0FD0**		3.300	X	**4AM34 42-5MT10-0FD0**		3.300
0.128	0.49	X	**4AM38 42-5LT10-0FD0**		5.600	X	**4AM38 42-5MT10-0FD0**		5.600
0.2	0.85	X	**4AM40 42-5LT10-0FD0**		6.600	X	**4AM40 42-5MT10-0FD0**		6.600
0.236	1.12	X	**4AM43 42-5LT10-0FD0**		7.400	X	**4AM43 42-5MT10-0FD0**		7.400
0.3	1.44	X	**4AM46 42-5LT10-0FD0**		8.300	X	**4AM46 42-5MT10-0FD0**		8.300
0.375	2	X	**4AM48 42-5LT10-0FD0**		9.900	X	**4AM48 42-5MT10-0FD0**		9.900
0.475	2.35	X	**4AM52 42-5LT10-0FD0**		10.800	X	**4AM52 42-5MT10-0FD0**		10.800
0.6	3.4	X	**4AM55 42-5LT10-0FD0**		13.900	X	**4AM55 42-5MT10-0FD0**		13.900
0.75	5	X	**4AM57 42-5LT10-0FD0**		16.900	X	**4AM57 42-5MT10-0FD0**		16.900
1.2	7.3	X	**4AM61 42-5LT10-0FD0**		26.700	X	**4AM61 42-5MT10-0FD0**		26.700
1.5	9.7	X	**4AM64 42-5LT10-0FD0**		30.700	X	**4AM64 42-5MT10-0FD0**		30.700
1.875	13.3	X	**4AM65 42-5LT10-0FD0**		36.700	X	**4AM65 42-5MT10-0FD0**		36.700

For online configurator see www.siemens.com/sirius/configurators.

1) Without cULus approval.
2) For p.f. = 0.5 and $U_2 = 0.95 \times U_{2N}$.
3) The delivery time class depends on the quantity, see page 15/6 "Options".
4) For types 4AM32 to 4AM40, standard rail mounting is integrated in the standard version.

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SIRIUS 4AM, 4AT
isolating, control and mains transformers

For European voltages

Rated input voltage U_{1N} 400/230 V ±15 V,
rated output voltage U_{2N} 2 × 115 V

cULus, ⊖, ⚠, ⊖

Rated power P_n	Short-time rating $P_{shortt.}$ [1]	DT [2]	Screw terminals [3]/ flat connectors [3] Configurator — Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.
kVA	kVA							kg
Degree of protection IP00, standard version [4]								
0.063	0.19	A	**4AM32 42-8JD40-0FA0**		1	1 unit	4M1	1.500
0.1	0.31	A	**4AM34 42-8JD40-0FA0**		1	1 unit	4M1	2.100
0.16	0.49	A	**4AM38 42-8JD40-0FA0**		1	1 unit	4M1	2.800
0.25	0.85	A	**4AM40 42-8JD40-0FA0**		1	1 unit	4M1	3.900
0.315	1.12	A	**4AM43 42-8JD40-0FA0**		1	1 unit	4M1	4.800
0.4	1.44	A	**4AM46 42-8JD40-0FA0**		1	1 unit	4M1	5.800
0.5	2	A	**4AM48 42-8JD40-0FA0**		1	1 unit	4M1	7.400
0.63	2.35	A	**4AM52 42-8JD40-0FA0**		1	1 unit	4M1	8.600
0.8	3.4	A	**4AM55 42-8JD40-0FA0**		1	1 unit	4M1	12.000
1	5	A	**4AM57 42-8JD40-0FA0**		1	1 unit	4M1	15.000
1.6	7.3	A	**4AM61 42-8JD40-0FA0**		1	1 unit	4M1	20.000
2	9.7	A	**4AM64 42-8JD40-0FA0**		1	1 unit	4M1	24.000
2.5	13.3	A	**4AM65 42-8JD40-0FA0**		1	1 unit	4M1	32.000
4	16	X	**4AT30 32-8JD40-0FA0**		1	1 unit	4M1	29.000
5	18.5	X	**4AT36 12-8JD40-0FA0**		1	1 unit	4M1	35.000
6.3	22.5	X	**4AT36 32-8JD40-0FA0**		1	1 unit	4M1	46.000
8	28.5	X	**4AT39 12-8JD40-0FA0**		1	1 unit	4M1	49.000
10	30	X	**4AT39 32-8JD40-0FA0**		1	1 unit	4M1	67.000
Degree of protection IP00, standard rail mounting [4]								
0.063	0.19	A	**4AM32 42-8JD40-0FA0**		1	1 unit	4M1	1.500
0.1	0.31	A	**4AM34 42-8JD40-0FA0**		1	1 unit	4M1	2.100
0.16	0.49	A	**4AM38 42-8JD40-0FA0**		1	1 unit	4M1	2.800
0.25	0.85	A	**4AM40 42-8JD40-0FA0**		1	1 unit	4M1	3.900
0.315	1.12	X	**4AM43 42-8JD40-0FB0**		1	1 unit	4M1	4.800
0.4	1.44	X	**4AM46 42-8JD40-0FB0**		1	1 unit	4M1	5.800
0.5	2	X	**4AM48 42-8JD40-0FB0**		1	1 unit	4M1	7.400
Degree of protection IP23								
0.057	0.19	X	**4AM32 42-8JD40-0FC0**		1	1 unit	4M1	2.800
0.09	0.31	X	**4AM34 42-8JD40-0FC0**		1	1 unit	4M1	3.400
0.145	0.49	X	**4AM38 42-8JD40-0FC0**		1	1 unit	4M1	5.700
0.225	0.85	X	**4AM40 42-8JD40-0FC0**		1	1 unit	4M1	6.800
0.268	1.12	X	**4AM43 42-8JD40-0FC0**		1	1 unit	4M1	7.700
0.34	1.44	X	**4AM46 42-8JD40-0FC0**		1	1 unit	4M1	8.700
0.425	2	X	**4AM48 42-8JD40-0FC0**		1	1 unit	4M1	10.300
0.535	2.35	X	**4AM52 42-8JD40-0FC0**		1	1 unit	4M1	11.500
0.68	3.4	X	**4AM55 42-8JD40-0FC0**		1	1 unit	4M1	14.900
0.85	5	X	**4AM57 42-8JD40-0FC0**		1	1 unit	4M1	17.900
1.36	7.3	X	**4AM61 42-8JD40-0FC0**		1	1 unit	4M1	27.700
1.7	9.7	X	**4AM64 42-8JD40-0FC0**		1	1 unit	4M1	31.700
2.13	13.3	X	**4AM65 42-8JD40-0FC0**		1	1 unit	4M1	39.700
3.6	16	X	**4AT30 32-8JD40-0FC0**		1	1 unit	4M1	36.700
4.5	18.5	X	**4AT36 12-8JD40-0FC0**		1	1 unit	4M1	42.700
5.6	22.5	X	**4AT36 32-8JD40-0FC0**		1	1 unit	4M1	48.700
7.1	28.5	X	**4AT39 12-8JD40-0FC0**		1	1 unit	4M1	62.900
9	30	X	**4AT39 32-8JD40-0FC0**		1	1 unit	4M1	72.900
Degree of protection IP54								
0.05	0.19	X	**4AM32 42-8JD40-0FD0**		1	1 unit	4M1	2.800
0.08	0.31	X	**4AM34 42-8JD40-0FD0**		1	1 unit	4M1	3.400
0.128	0.49	X	**4AM38 42-8JD40-0FD0**		1	1 unit	4M1	5.700
0.2	0.85	X	**4AM40 42-8JD40-0FD0**		1	1 unit	4M1	6.800
0.236	1.12	X	**4AM43 42-8JD40-0FD0**		1	1 unit	4M1	7.700
0.3	1.44	X	**4AM46 42-8JD40-0FD0**		1	1 unit	4M1	8.700
0.375	2	X	**4AM48 42-8JD40-0FD0**		1	1 unit	4M1	10.300
0.475	2.35	X	**4AM52 42-8JD40-0FD0**		1	1 unit	4M1	11.500
0.6	3.4	X	**4AM55 42-8JD40-0FD0**		1	1 unit	4M1	14.900
0.75	5	X	**4AM57 42-8JD40-0FD0**		1	1 unit	4M1	17.900
1.2	7.3	X	**4AM61 42-8JD40-0FD0**		1	1 unit	4M1	27.700
1.5	9.7	X	**4AM64 42-8JD40-0FD0**		1	1 unit	4M1	31.700
1.875	13.3	X	**4AM65 42-8JD40-0FD0**		1	1 unit	4M1	39.700
3.15	16	X	**4AT30 32-8JD40-0FD0**		1	1 unit	4M1	36.700
4	18.5	X	**4AT36 12-8JD40-0FD0**		1	1 unit	4M1	42.700
5	22.5	X	**4AT36 32-8JD40-0FD0**		1	1 unit	4M1	48.700
6.3	28.5	X	**4AT39 12-8JD40-0FD0**		1	1 unit	4M1	62.900
8	30	X	**4AT39 32-8JD40-0FD0**		1	1 unit	4M1	72.900

⚙ For online configurator see www.siemens.com/sirius/configurators.

[1] For p.f. = 0.5 and $U_2 = 0.95 \times U_{2N}$.

[2] The delivery time class depends on the quantity, see page 15/6 "Options".

[3] The 4AT types are only supplied with screw terminals.

[4] For types 4AM32 to 4AM40, standard rail mounting is integrated in the standard version.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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In multi-voltage version

Rated input voltage U_{1N} 550-525-500-480-460-440-415-400-380-230-208 V, rated output voltage U_{2N} 2 × 115 V

cULus, ⚙, ⚠, ⚙

Rated power P_n	Short-time rating $P_{shortt.}$ [1]	DT [2]	Screw terminals [3] / flat connectors [3] — Configurator — Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.
kVA	kVA							kg
Degree of protection IP00, standard version [4]								
0.063	0.19	A	**4AM32 42-8DD40-0FA0**		1	1 unit	4M1	1.500
0.1	0.31	A	**4AM34 42-8DD40-0FA0**		1	1 unit	4M1	2.100
0.16	0.49	A	**4AM38 42-8DD40-0FA0**		1	1 unit	4M1	2.800
0.25	0.85	A	**4AM40 42-8DD40-0FA0**		1	1 unit	4M1	3.900
0.315	1.12	A	**4AM43 42-8DD40-0FA0**		1	1 unit	4M1	4.800
0.4	1.44	A	**4AM46 42-8DD40-0FA0**		1	1 unit	4M1	5.800
0.5	2	A	**4AM48 42-8DD40-0FA0**		1	1 unit	4M1	7.400
0.63	2.35	A	**4AM52 42-8DD40-0FA0**		1	1 unit	4M1	8.600
0.8	3.4	A	**4AM55 42-8DD40-0FA0**		1	1 unit	4M1	12.000
1	5	A	**4AM57 42-8DD40-0FA0**		1	1 unit	4M1	15.000
1.6	7.3	A	**4AM61 42-8DD40-0FA0**		1	1 unit	4M1	20.000
2	9.7	A	**4AM64 42-8DD40-0FA0**		1	1 unit	4M1	24.000
2.5	13.3	A	**4AM65 42-8DD40-0FA0**		1	1 unit	4M1	32.000
4	16	X	**4AT30 32-8DD40-0FA0**		1	1 unit	4M1	29.000
5	18.5	X	**4AT36 12-8DD40-0FA0**		1	1 unit	4M1	35.000
6.3	22.5	X	**4AT36 32-8DD40-0FA0**		1	1 unit	4M1	41.000
8	28.5	X	**4AT39 12-8DD40-0FA0**		1	1 unit	4M1	49.000
10	30	X	**4AT39 32-8DD40-0FA0**		1	1 unit	4M1	59.000
Degree of protection IP00, standard rail mounting [4]								
0.063	0.19	A	**4AM32 42-8DD40-0FA0**		1	1 unit	4M1	1.500
0.1	0.31	A	**4AM34 42-8DD40-0FA0**		1	1 unit	4M1	2.100
0.16	0.49	A	**4AM38 42-8DD40-0FA0**		1	1 unit	4M1	2.800
0.25	0.85	A	**4AM40 42-8DD40-0FA0**		1	1 unit	4M1	3.900
0.315	1.12	X	**4AM43 42-8DD40-0FB0**		1	1 unit	4M1	4.800
0.4	1.44	X	**4AM46 42-8DD40-0FB0**		1	1 unit	4M1	5.800
0.5	2	X	**4AM48 42-8DD40-0FB0**		1	1 unit	4M1	7.400
Degree of protection IP23								
0.057	0.19	X	**4AM32 42-8DD40-0FC0**		1	1 unit	4M1	2.800
0.09	0.31	X	**4AM34 42-8DD40-0FC0**		1	1 unit	4M1	3.400
0.145	0.49	X	**4AM38 42-8DD40-0FC0**		1	1 unit	4M1	5.700
0.225	0.85	X	**4AM40 42-8DD40-0FC0**		1	1 unit	4M1	6.800
0.268	1.12	X	**4AM43 42-8DD40-0FC0**		1	1 unit	4M1	7.700
0.34	1.44	X	**4AM46 42-8DD40-0FC0**		1	1 unit	4M1	8.700
0.425	2	X	**4AM48 42-8DD40-0FC0**		1	1 unit	4M1	10.300
0.535	2.35	X	**4AM52 42-8DD40-0FC0**		1	1 unit	4M1	11.500
0.68	3.4	X	**4AM55 42-8DD40-0FC0**		1	1 unit	4M1	14.900
0.85	5	X	**4AM57 42-8DD40-0FC0**		1	1 unit	4M1	17.900
1.36	7.3	X	**4AM61 42-8DD40-0FC0**		1	1 unit	4M1	27.700
1.7	9.7	X	**4AM64 42-8DD40-0FC0**		1	1 unit	4M1	31.700
2.13	13.3	X	**4AM65 42-8DD40-0FC0**		1	1 unit	4M1	39.700
3.6	16	X	**4AT30 32-8DD40-0FC0**		1	1 unit	4M1	36.700
4.5	18.5	X	**4AT36 12-8DD40-0FC0**		1	1 unit	4M1	42.700
5.6	22.5	X	**4AT36 32-8DD40-0FC0**		1	1 unit	4M1	48.700
7.1	28.5	X	**4AT39 12-8DD40-0FC0**		1	1 unit	4M1	62.900
9	30	X	**4AT39 32-8DD40-0FC0**		1	1 unit	4M1	72.900
Degree of protection IP54								
0.05	0.19	X	**4AM32 42-8DD40-0FD0**		1	1 unit	4M1	2.800
0.08	0.31	X	**4AM34 42-8DD40-0FD0**		1	1 unit	4M1	3.400
0.128	0.49	X	**4AM38 42-8DD40-0FD0**		1	1 unit	4M1	5.700
0.2	0.85	X	**4AM40 42-8DD40-0FD0**		1	1 unit	4M1	6.800
0.236	1.12	X	**4AM43 42-8DD40-0FD0**		1	1 unit	4M1	7.700
0.3	1.44	X	**4AM46 42-8DD40-0FD0**		1	1 unit	4M1	8.700
0.375	2	X	**4AM48 42-8DD40-0FD0**		1	1 unit	4M1	10.300
0.475	2.35	X	**4AM52 42-8DD40-0FD0**		1	1 unit	4M1	11.500
0.6	3.4	X	**4AM55 42-8DD40-0FD0**		1	1 unit	4M1	14.900
0.75	5	X	**4AM57 42-8DD40-0FD0**		1	1 unit	4M1	17.900
1.2	7.3	X	**4AM61 42-8DD40-0FD0**		1	1 unit	4M1	27.700
1.5	9.7	X	**4AM64 42-8DD40-0FD0**		1	1 unit	4M1	31.700
1.875	13.3	X	**4AM65 42-8DD40-0FD0**		1	1 unit	4M1	39.700
3.15	16	X	**4AT30 32-8DD40-0FD0**		1	1 unit	4M1	36.700
4	18.5	X	**4AT36 12-8DD40-0FD0**		1	1 unit	4M1	42.700
5	22.5	X	**4AT36 32-8DD40-0FD0**		1	1 unit	4M1	48.700
6.3	28.5	X	**4AT39 12-8DD40-0FD0**		1	1 unit	4M1	62.900
8	30	X	**4AT39 32-8DD40-0FD0**		1	1 unit	4M1	72.900

⚙ For online configurator see www.siemens.com/sirius/configurators.

1) For p.f. = 0.5 and $U_2 = 0.95 \times U_{2N}$.

2) The delivery time class depends on the quantity, see page 15/6 "Options".

3) The 4AT types are only supplied with screw terminals.

4) For types 4AM32 to 4AM40, standard rail mounting is integrated in the standard version.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 4AM, 4AT
isolating, control and mains transformers

In multi-voltage version

Rated input voltage U_{1N} 600-575-550-525-500-480-460-440-415-400-240-230 V, rated output voltage U_{2N} 2 × 115 V

cULus, ⊖, ⚠, ⊖

Rated power P_n	Short-time rating $P_{shortt.}$ [1]	DT [2]	Screw terminals [3] / flat connectors [3] — Configurator — Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.
kVA	kVA							kg
Degree of protection IP00, standard version [4]								
0.063	0.19	A	**4AM32 42-8ED40-0FA0**		1	1 unit	4M1	1.500
0.1	0.31	A	**4AM34 42-8ED40-0FA0**		1	1 unit	4M1	2.100
0.16	0.49	A	**4AM38 42-8ED40-0FA0**		1	1 unit	4M1	2.800
0.25	0.85	A	**4AM40 42-8ED40-0FA0**		1	1 unit	4M1	3.900
0.315	1.12	A	**4AM43 42-8ED40-0FA0**		1	1 unit	4M1	4.800
0.4	1.44	A	**4AM46 42-8ED40-0FA0**		1	1 unit	4M1	5.800
0.5	2	A	**4AM48 42-8ED40-0FA0**		1	1 unit	4M1	7.400
0.63	2.35	A	**4AM52 42-8ED40-0FA0**		1	1 unit	4M1	8.600
0.8	3.4	A	**4AM55 42-8ED40-0FA0**		1	1 unit	4M1	12.000
1	5	A	**4AM57 42-8ED40-0FA0**		1	1 unit	4M1	15.000
1.6	7.3	A	**4AM61 42-8ED40-0FA0**		1	1 unit	4M1	20.000
2	9.7	A	**4AM64 42-8ED40-0FA0**		1	1 unit	4M1	24.000
2.5	13.3	A	**4AM65 42-8ED40-0FA0**		1	1 unit	4M1	32.000
4	16	X	**4AT30 32-8ED40-0FA0**		1	1 unit	4M1	29.000
5	18.5	X	**4AT36 12-8ED40-0FA0**		1	1 unit	4M1	35.000
6.3	22.5	X	**4AT36 32-8ED40-0FA0**		1	1 unit	4M1	41.000
8	28.5	X	**4AT39 12-8ED40-0FA0**		1	1 unit	4M1	49.000
10	30	X	**4AT39 32-8ED40-0FA0**		1	1 unit	4M1	59.000
Degree of protection IP00, standard rail mounting [4]								
0.063	0.19	A	**4AM32 42-8ED40-0FA0**		1	1 unit	4M1	1.500
0.1	0.31	A	**4AM34 42-8ED40-0FA0**		1	1 unit	4M1	2.100
0.16	0.49	A	**4AM38 42-8ED40-0FA0**		1	1 unit	4M1	2.800
0.25	0.85	A	**4AM40 42-8ED40-0FA0**		1	1 unit	4M1	3.900
0.315	1.12	X	**4AM43 42-8ED40-0FB0**		1	1 unit	4M1	4.800
0.4	1.44	X	**4AM46 42-8ED40-0FB0**		1	1 unit	4M1	5.800
0.5	2	X	**4AM48 42-8ED40-0FB0**		1	1 unit	4M1	7.400
Degree of protection IP23								
0.057	0.19	X	**4AM32 42-8ED40-0FC0**		1	1 unit	4M1	2.800
0.09	0.31	X	**4AM34 42-8ED40-0FC0**		1	1 unit	4M1	3.400
0.145	0.49	X	**4AM38 42-8ED40-0FC0**		1	1 unit	4M1	5.700
0.225	0.85	X	**4AM40 42-8ED40-0FC0**		1	1 unit	4M1	6.800
0.268	1.12	X	**4AM43 42-8ED40-0FC0**		1	1 unit	4M1	7.700
0.34	1.44	X	**4AM46 42-8ED40-0FC0**		1	1 unit	4M1	8.700
0.425	2	X	**4AM48 42-8ED40-0FC0**		1	1 unit	4M1	10.300
0.535	2.35	X	**4AM52 42-8ED40-0FC0**		1	1 unit	4M1	11.500
0.68	3.4	X	**4AM55 42-8ED40-0FC0**		1	1 unit	4M1	14.900
0.85	5	X	**4AM57 42-8ED40-0FC0**		1	1 unit	4M1	17.900
1.36	7.3	X	**4AM61 42-8ED40-0FC0**		1	1 unit	4M1	27.700
1.7	9.7	X	**4AM64 42-8ED40-0FC0**		1	1 unit	4M1	31.700
2.13	13.3	X	**4AM65 42-8ED40-0FC0**		1	1 unit	4M1	39.700
3.6	16	X	**4AT30 32-8ED40-0FC0**		1	1 unit	4M1	36.700
4.5	18.5	X	**4AT36 12-8ED40-0FC0**		1	1 unit	4M1	42.700
5.6	22.5	X	**4AT36 32-8ED40-0FC0**		1	1 unit	4M1	48.700
7.1	28.5	X	**4AT39 12-8ED40-0FC0**		1	1 unit	4M1	62.900
9	30	X	**4AT39 32-8ED40-0FC0**		1	1 unit	4M1	72.900
Degree of protection IP54								
0.05	0.19	X	**4AM32 42-8ED40-0FD0**		1	1 unit	4M1	2.800
0.08	0.31	X	**4AM34 42-8ED40-0FD0**		1	1 unit	4M1	3.400
0.128	0.49	X	**4AM38 42-8ED40-0FD0**		1	1 unit	4M1	5.700
0.2	0.85	X	**4AM40 42-8ED40-0FD0**		1	1 unit	4M1	6.800
0.236	1.12	X	**4AM43 42-8ED40-0FD0**		1	1 unit	4M1	7.700
0.3	1.44	X	**4AM46 42-8ED40-0FD0**		1	1 unit	4M1	8.700
0.375	2	X	**4AM48 42-8ED40-0FD0**		1	1 unit	4M1	10.300
0.475	2.35	X	**4AM52 42-8ED40-0FD0**		1	1 unit	4M1	11.500
0.6	3.4	X	**4AM55 42-8ED40-0FD0**		1	1 unit	4M1	14.900
0.75	5	X	**4AM57 42-8ED40-0FD0**		1	1 unit	4M1	17.900
1.2	7.3	X	**4AM61 42-8ED40-0FD0**		1	1 unit	4M1	27.700
1.5	9.7	X	**4AM64 42-8ED40-0FD0**		1	1 unit	4M1	31.700
1.875	13.3	X	**4AM65 42-8ED40-0FD0**		1	1 unit	4M1	39.700
3.15	16	X	**4AT30 32-8ED40-0FD0**		1	1 unit	4M1	36.700
4	18.5	X	**4AT36 12-8ED40-0FD0**		1	1 unit	4M1	42.700
5	22.5	X	**4AT36 32-8ED40-0FD0**		1	1 unit	4M1	48.700
6.3	28.5	X	**4AT39 12-8ED40-0FD0**		1	1 unit	4M1	62.900
8	30	X	**4AT39 32-8ED40-0FD0**		1	1 unit	4M1	72.900

⚙ For online configurator see www.siemens.com/sirius/configurators.

[1] For p.f. = 0.5 and $U_2 = 0.95 \times U_{2N}$.

[2] The delivery time class depends on the quantity, see page 15/6 "Options".

[3] The 4AT types are only supplied with screw terminals.

[4] For types 4AM32 to 4AM40, standard rail mounting is integrated in the standard version.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 4AT isolating transformers for the supply of medical premises

Overview

- According to EN 61558-2-15
- Protection class I
- With static shield between the primary and secondary winding with insulated connection
- With thermistor transformer protection for warning of thermal overload[1)]
- With central tap for insulation monitoring
- Short-circuit voltage $u_z \leq 3$ %
- No-load supply current $i_0 \leq 3$ %
- Inrush current max. $8 \times I_{1N}$
- t_a = 55 °C/H
- For more products see Industry Mall and Interactive Catalog CA 01 or www.mdexx.com.



SIRIUS 4AT single-phase transformer, special version for medical premises

1) 3RN releases for PTC sensors must be ordered separately, see Chapter 10, "Monitoring and Control Devices".

Technical specifications

General data		
Transformers	Type	**4AT**
• Version		UI core
Rated frequency	Hz	50 ... 60
Protection class		I
Degree of protection • Without enclosure • With protective enclosure (see "Selection and Ordering Data")		 IP00 IP23 Version: sheet-steel enclosure coated with epoxy resin, color gray RAL 7032
Installation altitude		Up to 1 000m above sea level (above this, power reduction is necessary)
Protective devices • Internal • External		 With thermistor transformer protection for warning The transformers have to be protected against short circuits on the primary or secondary side with a gG operational class fuse or circuit breakers (see "Selection and Ordering Data"), see circuit diagram on page 15/8. For reliable protection against short circuits and touch, the cables between the output terminals of the transformer and the load must have a negligible line impedance. For more details see DIN VDE 0100 (Erection of low-voltage systems) Part 410, Part 520 particularly section 525 and Part 610. Assigned protective devices (see "Selection and Ordering Data")
Mounting position		For any position

For more technical specifications see www.siemens.com/sirius-supplying → "Technical Information" or www.siemens.com/sirius/support → "Transformers and Power Supplies" → "Manuals/Operating Instructions".

Selection and ordering data

Rated power P_n	Voltage rise during no-load operation u_A	Rated voltages		Short-circuit protection for the transformer			DT[1)]	Configurator		PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.
		Input U_{1N}	Output U_{2N}	With fuse, gG operational class	With motor starter protector Type	Set value		Order No.	Price per PU				
kVA	%	V	V	A		A							kg
Degree of protection IP00													
2.5	3.6	230	230-115	35	3RV20 21-4CA10	21	X	**4AT30 12-1TA71-3MA0**		1	1 unit	4M1	25.500
3.15	3.6	230	230-115	35	3RV10 31-4EA10	26	X	**4AT36 02-1TA71-3MA0**		1	1 unit	4M1	33.000
4	3.6	230	230-115	50	3RV10 31-4EA10	29	X	**4AT36 12-1TA71-3MA0**		1	1 unit	4M1	36.000
5	3.6	230	230-115	50	3RV10 31-4FA10	36	X	**4AT39 02-1TA71-3MA0**		1	1 unit	4M1	45.000
6.3	3.6	230	230-115	63	3RV10 31-4GA10	40	X	**4AT39 12-1TA71-3MA0**		1	1 unit	4M1	49.000
8	3.7	230	230-115	63	3RV10 41-4JA10	49	X	**4AT43 02-1TA71-3MA0**		1	1 unit	4M1	63.000
10	2.5	230	230-115	80	3RV10 41-4KA10	61	X	**4AT43 12-1TA71-3MA0**		1	1 unit	4M1	70.000
Degree of protection IP23													
2.5	3.6	230	230-115	35	3RV20 21-4CA10	21	X	**4AT30 12-1TA71-3MC0**		1	1 unit	4M1	33.200
3.15	3.6	230	230-115	35	3RV10 31-4EA10	26	X	**4AT36 02-1TA71-3MC0**		1	1 unit	4M1	50.000
4	3.7	230	230-115	50	3RV10 31-4EA10	29	X	**4AT36 12-1TA71-3MC0**		1	1 unit	4M1	44.000
5	3.6	230	230-115	50	3RV10 31-4FA10	36	X	**4AT39 02-1TA71-3MC0**		1	1 unit	4M1	59.000
6.3	3.9	230	230-115	63	3RV10 31-4GA10	40	X	**4AT39 12-1TA71-3MC0**		1	1 unit	4M1	63.000
8	3.7	230	230-115	63	3RV10 41-4JA10	49	X	**4AT43 02-1TA71-3MC0**		1	1 unit	4M1	77.000
10	2.5	230	230-115	80	3RV10 41-4KA10	61	X	**4AT43 12-1TA71-3MC0**		1	1 unit	4M1	84.000

For online configurator see www.siemens.com/sirius/configurators.

1) The delivery time class depends on the quantity, see page 15/6 "Options".

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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General data

Overview

4AP../4AU.. transformers

With the right transformer, the right voltage will be available at any conditions.

Our transformers are the right choice for each application: They work reliably, safely and worldwide under a wide range of different conditions.

Transformers are summarized in a user-friendly manner as:

- Isolating, control and mains transformers according to EN 61558-2-4, -2-2, -2-1 or
- Safety, control and mains transformers according to EN 61558-2-6, -2-2, -2-1 (see Industry Mall and Interactive Catalog CA 01 or www.mdexx.com)

Note:

Mains transformers with ≤ 50 V on the output side are, in the case of SIRIUS transformers, always designed as safety transformers.

Our transformers provide optimal protection through high permissible ambient temperatures up to 40 °C or 55 °C, a high short-time rating in the case of control transformers, fuseless construction and due to their safety standard "Safety inside" EN 61558.

Connection methods

4AP../4AU.. transformers are available with screw terminals/flat connectors.

	Screw terminals
	Flat connectors
	The terminals are indicated in the corresponding tables by the symbols shown on orange backgrounds.

Order No. scheme

Digit of the Order No.	1st	2nd	3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th		13th	14th	15th	16th
	□	□	□	□	□	□	□	–	□	□	□	□	□	–	□	□	□	□
Transformer product type	**4**	**A**																
Product group			□															
Rated power				□	□													
Power level						□												
Development status							□											
Rated input voltage									□	□								
Rated output voltage											□	□						
Protective device													□					
Application															□	□		
Degree of protection																	□	
Connection type																		□
Example	**4**	**A**	**P**	**3**	**0**	**4**	**2**	**–**	**8**	**B**	**C**	**4**	**0**	**–**	**0**	**H**	**A**	**0**

Note:

The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quoted in the catalog in the Selection and ordering data.

Benefits

- High short-time rating of the SIRIUS transformers: lower transformer rated power for a large number of contactors
- Suitable for "fuseless construction": The small inrush current means that "circuit breakers for motor protection" can also be used on the primary side
- cULus approvals for the USA and Canada: can be used worldwide without any problems
- Comprehensive type spectrum supplied from stock: rapid availability

Application

Transformers are used in industrial machines, process engineering, heating and air-conditioning equipment, etc., for supplying control and signaling circuits, when:

- Several electromagnetic loads (e.g. contactors) have to be controlled
- Control and signaling devices are used outside the control cabinet
- The operational voltage for the loads differs from the available voltage level
- Voltage matching for machines and installations with electrical isolation or as an autotransformer

Generally, our transformers are used for voltage matching of electrical devices, e.g. in communications, medical engineering and domestic appliances.

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Technical specifications

General data			
Transformers	Type	**4AP**	**4AU**
• Version		3UI core	3UI core
• Performance range (with IP00)	kVA	0.16 ... 5	> 5 ... 16
• Approvals		cULus	
Voltage range	V	≤ 690	
• Approvals for USA, Canada	V	≤ 600	
Rated frequency	Hz	50 ... 60	
Thermal class		B	H
• Acc. to UL/CSA		CLASS 130	CLASS 180
Ambient conditions		Protection against harmful ambient conditions: Complete impregnation in polyester resin. Climate-proof for installation in rooms with an external climate to DIN 50010	
Rated ambient temperature			
• At rated power	°C	40	55
• Maximum value (after power reduction in accordance with load characteristic[1])	°C	80	
• Minimum value	°C	– 25	
Relative air humidity			
• Mean value up to	%	80	
• Maximum value for 30 days/year	%	95	
• At 40 °C occasionally	%	100	
Protection class		I	
Degree of protection			
• Without enclosure		IP00	
• With protective enclosure (see "Selection and Ordering Data")		IP23 or IP54 Version: sheet-steel enclosure coated with epoxy resin, color gray RAL 7032	
Installation altitude		Up to 1 000 m above sea level (above this, power reduction is necessary)	
Protective devices			
• External		The transformers are protected from short circuits and overload on the primary and secondary side with motor starter protectors. For reliable protection against short circuits, overload and touch, the cables between the output terminals of the transformer and the load must have a negligible line impedance. For more details see DIN VDE 0100 (Erection of low-voltage systems) Part 410, Part 520 particularly section 525 and Part 610. Assigned protective devices (see "Primary-side short-circuit and overload protection with motor starter protectors")	
Connection methods		The permissible conductor cross-sections are assigned to the specified terminal types.	
• Terminal arrangement[1]		Refer to DIN VDE 0298-4 and EN 60204 for the permissible conductor cross-sections for the specified current according to the installation type. The terminals used are finger-safe according to EN 50274.	
• Terminal versions and connectable cross-sections[1]		Other terminal sizes than standard versions on request.	
Mounting position		The permissible mounting position for each version is shown in the "Project Planning Aids"[1].	

[1] See "Reference Manual for Single-Phase Transformers · Three-Phase Transformers".

For more technical specifications see www.siemens.com/sirius-supplying → ""Technical Information"

or

www.siemens.com/sirius/support
→ "Transformers and Power Supplies"
→ "Manuals/Operating Instructions".

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General data

Rated outputs at different ambient temperatures

- With electrically separated windings
- Degree of protection IP00
- According to EN 61558, cULus

Transformer	Rated power P_n	Permissible transformer load depending on the ambient temperature t_a of							
		60 °C	55 °C	50 °C	45 °C	40 °C	35 °C	30 °C	25 °C
Type	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA
4AP transformers									
4AP17 4	0.16	0.134	0.141	0.147	0.154	0.160	0.166	0.173	0.178
4AP18 4	0.25	0.210	0.220	0.230	0.240	0.250	0.260	0.270	0.278
4AP19 4	0.4	0.336	0.352	0.368	0.384	0.400	0.416	0.432	0.444
4AP20 4	0.63	0.529	0.554	0.580	0.605	0.630	0.655	0.680	0.699
4AP21 4	1	0.840	0.880	0.920	0.960	1	1.04	1.08	1.11
4AP25 4	1.6	1.34	1.41	1.47	1.54	1.60	1.66	1.73	1.78
4AP27 4	2.5	2.10	2.20	2.30	2.40	2.50	2.60	2.70	2.78
4AP30 4	4	3.36	3.52	3.68	3.84	4	4.16	4.32	4.44
4AP30 5	5	4.20	4.40	4.60	4.80	5.50	5.20	5.40	5.55
4AU transformers									
4AU30 3	6.3	6.11	6.30	6.49	6.68	6.93	7.12	7.31	7.50
4AU36 1	8	7.76	8	8.24	8.48	8.80	9.04	9.28	9.52
4AU36 3	10	9.70	10	10.3	10.6	11	11.3	11.6	11.9
4AU39 1	12.5	12.1	12.5	12.9	13.3	13.8	14.1	14.5	14.9
4AU39 3	16	15.5	16	16.5	17	17.6	18.1	18.6	19

Operation characteristics

- According to EN 61558-2-6, EN 61558-2-4, EN 61558-2-1

Transformer	Rated power P_n 50 Hz ... 60 Hz 1 000 m above sea level degree of protection IP00	Core size	Voltage rise in no-load operation (operating temperature) u_A approx.	Voltage drop on rated load[1] u_R approx.	Short-circuit voltage[1] u_Z approx.	Degree of efficiency η approx.
Type	kVA		%	%	%	%
4AP transformers: t_a = 40 °C/B						
4AP17 4	0.16	3UI 60/30	13.3	10.1	10.1	85
4AP18 4	0.25	3UI 75/25	11.7	8.9	9	87
4AP19 4	0.4	3UI 75/40	11.8	8.5	8.5	87
4AP20 4	0.63	3UI 90/30	9.3	6.8	6.8	89
4AP21 4	1	3UI 90/50	6.4	4.8	4.8	92
4AP25 4	1.6	3UI 114/62	4.9	3.6	3.6	93
4AP27 4	2.5	3UI 132/70	4.5	3.4	3.4	94
4AP30 4	4	3UI 150/75	3.5	2.6	2.7	95
4AP30 5	5	3UI 150/75	2.8	2.1	2.2	96
4AU transformers: t_a = 55 °C/H						
4AU30 3	6.3	3UI 150/75	3.8	2.6	2.6	96
4AU36 1	8	3UI 180/75	5.1	3.6	3.6	94
4AU36 3	10	3UI 180/75	4.1	2.9	3	95
4AU39 1	12.5	3UI 210/70	4.1	2.9	3.1	95
4AU39 3	16	3UI 210/70	3.2	2.3	2.8	96

Higher ratings and other conditions on request.

[1] Winding reference temperature: 20 °C.

Calculation of power loss P_V

$$P_V = \frac{P_n\,(100 - \eta)}{\eta}\ [\text{kW}]$$

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Primary-side short-circuit and overload protection with motor starter protectors

Trans-former	Rated power P_n	Motor starter protector version: Motor protection	Rated input voltage U_{1N} in V																
Type	kVA	Type	520	500	480	460	440	420	400	380	360	300	288	277	265	254	242	230	220	208
4AP transformers																				
4AP17 4	0.16	3RV20 11-□□□10	0DA	0DA	0EA	0EA	0EA	0EA	0EA	0EA	0FA	0GA	0GA	0GA	0HA	0HA	0HA	0HA	0HA	0HA
		Set value in A	0.26	0.26	0.29	0.29	0.29	0.31	0.32	0.34	0.4	0.48	0.52	0.54	0.55	0.55	0.56	0.56	0.58	0.62
4AP18 4	0.25	3RV20 11-□□□10	0FA	0FA	0FA	0FA	0FA	0GA	0GA	0GA	0HA	0JA	0JA	0JA	0JA	0KA	0KA	0KA	0KA	0KA
		Set value in A	0.4	0.4	0.44	0.44	0.44	0.47	0.49	0.51	0.6	0.75	0.75	0.8	0.85	0.9	0.9	0.9	0.9	0.94
4AP19 4	0.4	3RV20 11-□□□10	0HA	0HA	0JA	0JA	0JA	0JA	0JA	0JA	0KA	1AA	1AA	1AA	1AA	1BA	1BA	1BA	1BA	1BA
		Set value in A	0.62	0.62	0.7	0.7	0.71	0.75	0.78	0.82	1	1.2	1.2	1.3	1.3	1.4	1.4	1.4	1.4	1.5
4AP20 4	0.63	3RV20 11-□□□10	0KA	0KA	1AA	1AA	1AA	1AA	1AA	1AA	1BA	1CA	1CA	1CA	1CA	1CA	1CA	1DA	1DA	1DA
		Set value in A	0.95	0.95	1.1	1.1	1.1	1.2	1.2	1.3	1.5	1.8	1.9	2	2	2	2.2	2.2	2.2	2.3
4AP21 4	1	3RV20 11-□□□10	1BA	1BA	1CA	1CA	1CA	1CA	1CA	1CA	1DA	1EA	1EA	1EA	1EA	1EA	1EA	1EA	1FA	1FA
		Set value in A	1.5	1.5	1.7	1.8	1.8	1.8	2	2	2.3	2.8	2.9	3.1	3.2	3.2	3.2	3.2	3.5	3.5
4AP25 4	1.6	3RV20 11-□□□10	1DA	1DA	1EA	1EA	1EA	1EA	1EA	1FA	1FA	1GA	1GA	1GA	1GA	1GA	1HA	1HA	1HA	1HA
		Set value in A	2.3	2.3	2.8	2.8	2.8	2.8	3	3.5	3.5	4.5	4.5	4.9	5	5	5.5	5.5	5.5	5.6
4AP27 4	2.5	3RV20 11-□□□10	1FA	1FA	1FA	1GA	1GA	1GA	1GA	1HA	1HA	1JA	1JA	1JA	1JA	1JA	1JA	1JA	1KA	1KA
		Set value in A	3.6	3.6	4	4.5	4.5	4.5	4.5	5.8	5.8	7	7	7.5	7.5	8	8	8	9	9
4AP30 4	4	3RV20 11-□□□10	1HA	1HA	1HA	1JA	1JA	1JA	1JA	1JA	1KA	--	--	--	--	--	--	--	--	--
		3RV20 21-□□□10	--	--	--	--	--	--	--	--	--	4AA	4AA	4AA	4AA	4AA	4AA	4BA	4BA	4BA
		Set value in A	5.7	5.7	6	7	7	7	7.2	8	9	11	11	12	12	13	13	14	14	14
4AP30 5	5	3RV20 11-□□□10	1JA	1JA	1JA	1KA	1KA	1KA	1KA	--	--	--	--	--	--	--	--	--	--	--
		3RV20 21-□□□10	--	--	--	--	--	--	--	4AA	4AA	4AA	4BA	4BA	4BA	4BA	4CA	4CA	4CA	4CA
		Set value in A	7.2	7.2	8	9	9	9	9	11	11	13	14	15	15	16	17	17	17	17
4AU transformers																				
4AU30 3	6.3	3RV20 11-□□□10	1KA	1KA	1KA	1KA	1KA	--	--	--	--	--	--	--	--	--	--	--	--	--
		3RV20 21-□□□10	--	--	--	--	--	4AA	4AA	4AA	4AA	4BA	4BA	4BA	4CA	4CA	4CA	4DA	4DA	4DA
		Set value in A	9	9	10	10	10	11	11	12	13	15	16	16	17	18	19	20	20	22
4AU36 1	8	3RV20 21-□□□10	4AA	4AA	4AA	4AA	4AA	4BA	4BA	4BA	4BA	4CA	4CA	4CA	4DA	4DA	4DA	--	--	--
		3RV10 31-□□□10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4EA	4EA	4EA
		Set value in A	12	12	13	13	13	14	15	15	16	20	20	21	22	23	24	25	26	28
4AU36 3	10	3RV20 21-□□□10	4BA	4BA	4BA	4BA	4CA	4CA	4CA	4CA	4CA	4DA	4DA	--	--	--	--	--	--	--
		3RV10 31-□□□10	--	--	--	--	--	--	--	--	--	--	--	4EA	4EA	4FA	4FA	4FA	4FA	4FA
		Set value in A	15	15	16	16	17	17	18	19	20	25	25	26	27	28	30	31	32	34
4AU39 1	12.5	3RV20 21-□□□10	4CA	4CA	4CA	4CA	4DA	4DA	4DA	4DA	4DA	--	--	--	--	--	--	--	--	--
		3RV10 31-□□□10	--	--	--	--	--	--	--	--	--	4FA	4FA	4FA	4FA	4FA	4FA	4FA	4FA	4GA
		Set value in A	9	19	20	20	20	22	22	23	25	30	31	32	34	35	37	39	40	43
4AU39 3	16	3RV20 21-□□□10	4DA	4DA	4DA	4DA	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		3RV10 31-□□□10	--	--	--	--	4EA	4FA	4FA	4FA	4FA	4FA	4FA	4FA	4HA	4HA	4HA	4HA	4HA	4HA
		Set value in A	24	24	25	25	26	28	28	30	31	38	39	40	43	44	47	49	50	50

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General data

Secondary-side short-circuit and overload protection with motor starter protectors

Transformer	Rated power P_n	Motor starter protectors		
		Version: Motor protection	Rated output voltage U_{2N} in V	
Type	kVA	Type	400	230
4AP transformers				
4AP17 4	0.16	3RV20 11-□□□10 Set value in A	0DA 0.27	0FA 0.5
4AP18 4	0.25	3RV20 11-□□□10 Set value in A	0FA 0.42	0HA 0.75
4AP19 4	0.4	3RV20 11-□□□10 Set value in A	0HA 0.7	0KA 1.2
4AP20 4	0.63	3RV20 11-□□□10 Set value in A	0KA 1.1	1BA 1.9
4AP21 4	1	3RV20 11-□□□10 Set value in A	1BA 1.7	1DA 3
4AP25 4	1.6	3RV20 11-□□□10 Set value in A	1DA 2.7	1FA 5
4AP27 4	2.5	3RV20 11-□□□10 Set value in A	1FA 4.2	1HA 7.5
4AP30 4	4	3RV20 11-□□□10 Set value in A	1HA 6.7	1KA 12
4AP30 5	5	3RV20 11-□□□10 3RV20 21-□□□10 Set value in A	1JA -- 8.5	-- 4AA 15
4AU transformers				
4AU30 3	6.3	3RV20 11-□□□10 3RV20 21-□□□10 Set value in A	1KA -- 11	-- 4BA 19
4AU36 1	8	3RV20 21-□□□10 Set value in A	4AA 14	4DA 24
4AU36 3	10	3RV20 21-□□□10 3RV10 31-□□□10 Set value in A	4BA -- 17	-- 4EA 29
4AU39 1	12.5	3RV20 21-□□□10 3RV10 31-□□□10 Set value in A	4CA -- 21	-- 4FA 37
4AU39 3	16	3RV10 31-□□□10 Set value in A	4EA 27	4HA 47

Short-time rating of control transformers $P_{shortt.}$ [1] = f (p.f.) for $U_2 = 0.95 \times U_{2N}$

Trans-former	Rated power P_n	Short-time rating $P_{shortt.}$ [1] with p.f. of										Voltage rise in no-load operation (operating temperature)	Voltage drop on rated load (at 20 °C)	Short-circuit voltage (at 20 °C)
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1			
Type	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	kVA	u_A %	u_R %	u_Z %
4AP transformers														
4AP20 4	0.63	4.5	3.3	2.6	2.1	1.8	1.6	1.4	1.3	1.2	1.1	9.3	6.8	6.8
4AP21 4	1	9.3	6.5	5	4.1	3.5	3	2.7	2.4	2.2	2.1	6.4	4.8	4.8
4AP25 4	1.6	21	14	10	8.3	6.9	5.9	5.2	4.7	4.2	3.9	4.9	3.6	3.6
4AP27 4	2.5	37	24	17	14	11	9.9	8.7	7.8	7	6.5	4.5	3.4	3.4
4AP30 4	4	60	40	30	24	20	18	16	14	13	12	3.5	2.6	2.7
4AP30 5	5	53	41	34	29	25	22	20	19	18	17	2.8	2.1	2.2
4AU transformers														
4AU30 3	6.3	64.5	48.5	39	32.5	28	25	22.5	20.5	19	18.5	3.5	2.6	2.6
4AU36 1	8	83	58.5	45	37	31.5	27.5	24	22	20	19	5.1	3.6	3.6
4AU36 3	10	80.5	63	52	44	39	35	31.5	29	27.5	27	4.1	2.9	3
4AU39 1	12.5	104	80.5	66	56	49	44	39.5	36	34.5	34	4.1	2.9	3.1
4AU39 3	16	85	74	66	60	55	51.5	48.5	46.5	46	51	3.2	2.3	2.8

[1] $P_{shortt.}$ applies to up to 300 contactor operations per hour.

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Overview

- According to EN 61558-2-4, -2-2, -2-1
- cULus
- 4AP: t_a = 40 °C/B, 4AU: t_a = 55 °C/H
- 50/60 Hz AC
- Degree of protection IP00, IP23 and IP54
- For more products see Industry Mall and Interactive Catalog CA 01 or www.mdexx.com.



SIRIUS 4AP20 three-phase transformer (left) and SIRIUS 4AU three-phase transformer (right)

Selection and ordering data

In two-voltage version

Rated input voltage U_{1N} 3 AC Y 500-400 V/Δ 289-230 V, rated output voltage U_{2N} 3 AC Y 400 V/Δ 230 V

cULus,

Rated power P_n	Short-time rating $P_{shortt.}$ [1]	DT [2]	Screw terminals [3]/ flat connectors [3] Configurator Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.
kVA	kVA							kg
Degree of protection IP00								
0.63	1.8	A	**4AP20 42-8BC40-0HA0**		1	1 unit	4M1	6.900
1	3.5	A	**4AP21 42-8BC40-0HA0**		1	1 unit	4M1	10.800
1.6	6.9	X	**4AP25 42-8BC40-0HA0**		1	1 unit	4M1	18.100
2.5	11	A	**4AP27 42-8BC40-0HA0**		1	1 unit	4M1	25.800
4	20	X	**4AP30 42-8BC40-0HA0**		1	1 unit	4M1	38.500
6.3	28	X	**4AU30 32-8BC40-0HA0**		1	1 unit	4M1	43.000
8	32	X	**4AU36 12-8BC40-0HA0**		1	1 unit	4M1	53.000
10	39	X	**4AU36 32-8BC40-0HA0**		1	1 unit	4M1	60.000
12.5	49	X	**4AU39 12-8BC40-0HA0**		1	1 unit	4M1	73.000
16	55	X	**4AU39 32-8BC40-0HA0**		1	1 unit	4M1	89.000
Degree of protection IP23								
0.57	1.8	X	**4AP20 42-8BC40-0HC0**		1	1 unit	4M1	14.600
0.9	3.5	X	**4AP21 42-8BC40-0HC0**		1	1 unit	4M1	18.500
1.44	6.9	X	**4AP25 42-8BC40-0HC0**		1	1 unit	4M1	25.800
2.25	11	X	**4AP27 42-8BC40-0HC0**		1	1 unit	4M1	33.500
3.2	20	X	**4AP30 42-8BC40-0HC0**		1	1 unit	4M1	46.200
5	28	X	**4AU30 32-8BC40-0HC0**		1	1 unit	4M1	50.700
6.3	32	X	**4AU36 12-8BC40-0HC0**		1	1 unit	4M1	66.900
8	39	X	**4AU36 32-8BC40-0HC0**		1	1 unit	4M1	73.900
10	49	X	**4AU39 12-8BC40-0HC0**		1	1 unit	4M1	86.900
12.5	55	X	**4AU39 32-8BC40-0HC0**		1	1 unit	4M1	102.000
Degree of protection IP54								
0.44	1.8	X	**4AP20 42-8BC40-0HD0**		1	1 unit	4M1	14.600
0.8	3.5	X	**4AP21 42-8BC40-0HD0**		1	1 unit	4M1	18.500
1.12	6.9	X	**4AP25 42-8BC40-0HD0**		1	1 unit	4M1	25.800
2	11	X	**4AP27 42-8BC40-0HD0**		1	1 unit	4M1	33.500
2.8	20	X	**4AP30 42-8BC40-0HD0**		1	1 unit	4M1	46.200
4.4	28	X	**4AU30 32-8BC40-0HD0**		1	1 unit	4M1	50.700
5.6	32	X	**4AU36 12-8BC40-0HD0**		1	1 unit	4M1	66.900
7.1	39	X	**4AU36 32-8BC40-0HD0**		1	1 unit	4M1	73.900
8.8	49	X	**4AU39 12-8BC40-0HD0**		1	1 unit	4M1	86.900
11.2	55	X	**4AU39 32-8BC40-0HD0**		1	1 unit	4M1	102.000

For online configurator see www.siemens.com/sirius/configurators.

1) For p.f. = 0.5 and U_2 = 0.95 × U_{2N}.

2) The delivery time class depends on the quantity, see page 15/6 "Options".

3) The 4AU transformers are only supplied with screw terminals.

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SIRIUS 4AP, 4AU
isolating, control and mains transformers

In multi-voltage version

Rated input voltage U_{1N}
3 AC Y 520-500-480-460-440-420-400-380-360 V/Δ 300-289-277-266-254-240-230-220-208 V,
rated output voltage U_{2N}
3 AC Y 400 V/Δ 230 V

cULus, , ,

Rated power P_n	Short-time rating $P_{shortt.}$ [1]	DT [2]	Screw terminals [3]/ flat connectors [3] Configurator — Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.
kVA	kVA							kg
Degree of protection IP00								
0.63	1.8	X	**4AP20 42-8CC40-0HA0**		1	1 unit	4M1	7.100
1	3.5	X	**4AP21 42-8CC40-0HA0**		1	1 unit	4M1	10.400
1.6	6.9	X	**4AP25 42-8CC40-0HA0**		1	1 unit	4M1	19.700
2.5	11	X	**4AP27 42-8CC40-0HA0**		1	1 unit	4M1	27.000
4	20	X	**4AP30 42-8CC40-0HA0**		1	1 unit	4M1	39.400
6.3	28	X	**4AU30 32-8CC40-0HA0**		1	1 unit	4M1	47.000
8	32	X	**4AU36 12-8CC40-0HA0**		1	1 unit	4M1	56.000
10	39	X	**4AU36 32-8CC40-0HA0**		1	1 unit	4M1	65.000
12.5	49	X	**4AU39 12-8CC40-0HA0**		1	1 unit	4M1	78.000
16	55	X	**4AU39 32-8CC40-0HA0**		1	1 unit	4M1	99.000
Degree of protection IP23								
0.57	1.8	X	**4AP20 42-8CC40-0HC0**		1	1 unit	4M1	14.800
0.9	3.5	X	**4AP21 42-8CC40-0HC0**		1	1 unit	4M1	18.100
1.44	6.9	X	**4AP25 42-8CC40-0HC0**		1	1 unit	4M1	27.400
2.25	11	X	**4AP27 42-8CC40-0HC0**		1	1 unit	4M1	34.700
3.2	20	X	**4AP30 42-8CC40-0HC0**		1	1 unit	4M1	47.100
5	28	X	**4AU30 32-8CC40-0HC0**		1	1 unit	4M1	54.700
6.3	32	X	**4AU36 12-8CC40-0HC0**		1	1 unit	4M1	69.900
8	39	X	**4AU36 32-8CC40-0HC0**		1	1 unit	4M1	78.900
10	49	X	**4AU39 12-8CC40-0HC0**		1	1 unit	4M1	91.900
12.5	55	X	**4AU39 32-8CC40-0HC0**		1	1 unit	4M1	112.900
Degree of protection IP54								
0.44	1.8	X	**4AP20 42-8CC40-0HD0**		1	1 unit	4M1	14.800
0.8	3.5	X	**4AP21 42-8CC40-0HD0**		1	1 unit	4M1	18.100
1.12	6.9	X	**4AP25 42-8CC40-0HD0**		1	1 unit	4M1	27.000
2	11	X	**4AP27 42-8CC40-0HD0**		1	1 unit	4M1	34.700
2.8	20	X	**4AP30 42-8CC40-0HD0**		1	1 unit	4M1	47.100
4.4	28	X	**4AU30 32-8CC40-0HD0**		1	1 unit	4M1	54.700
5.6	32	X	**4AU36 12-8CC40-0HD0**		1	1 unit	4M1	69.900
7.1	39	X	**4AU36 32-8CC40-0HD0**		1	1 unit	4M1	78.900
8.8	49	X	**4AU39 12-8CC40-0HD0**		1	1 unit	4M1	91.900
11.2	55	X	**4AU39 32-8CC40-0HD0**		1	1 unit	4M1	112.900

For online configurator see www.siemens.com/sirius/configurators.

[1] For p.f. = 0.5 and $U_2 = 0.95 \times U_{2N}$.

[2] The delivery time class depends on the quantity, see page 15/6 "Options".

[3] The 4AU transformers are only supplied with screw terminals.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Overview

4BU.. transformers

With the right transformer, the right voltage will be available at any conditions.

Our transformers are the right choice for each application: They work reliably, safely and worldwide under a wide range of different conditions.

The 4BU three-phase power transformers are available as matching transformers with one input/output voltage according to DIN VDE 0532-6.

Our transformers provide optimal protection through high permissible ambient temperatures of up to 40 °C.

Connection methods

4BU.. transformers are available with screw terminals/flat connectors.

Order No. scheme

Digit of the Order No.	1st	2nd	3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th		13th	14th	15th	16th
	□	□	□	□	□	□	□	–	□	□	□	□	□	–	□	□	□	□
Transformer product type	**4**	**B**																
Product group			□															
Rated power				□	□													
Power level						□												
Development status							□											
Rated input voltage									□	□								
Rated output voltage											□	□						
Maximum permissible ambient temperature													□					
Application															□	□		
Degree of protection																	□	
Protective device																		□
Example	**4**	**B**	**U**	**5**	**2**	**3**	**3**	**–**	**5**	**E**	**A**	**2**	**0**	**–**	**2**	**D**	**A**	**0**

Note:

The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quoted in the catalog in the Selection and ordering data.

Benefits

- **cULus** approvals for the USA and Canada: can be used worldwide without any problems
- Comprehensive type spectrum: Rapid availability, see Industry Mall and Interactive Catalog CA 01 or www.mdexx.com

Application

4BU three-phase power transformers are implemented in industrial and building systems and control and distribution and are used to adapt the locally available mains voltage to the operational voltage of the system or its components. They also limit the possible short-circuit currents.

Power transformers with electrical isolation or designed as *autotransformers* are used for adapting machines and systems to the local voltages that are available at the installation site.

Furthermore *power transformers* can be used with electrical devices, for example in communications, medical engineering and domestic appliances. In drive systems, special *converter transformers* are used for voltage matching and *autotransformers* are used with infeed/regenerative feedback modules.

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General data

Technical specifications

General data		
Transformers	Type	**4BU**
• Version		3UI core
• Performance range (with IP00)	kVA	> 16 ... 160 (up to 2 000 kVA on request)
• Approvals		c UL us optional
Voltage range	V	≤ 1 000
• Approvals for USA, Canada	V	≤ 600
Rated frequency	Hz	50 ... 60
Thermal class		H
• Acc. to UL/CSA		CLASS 180
Ambient conditions		Protection against harmful ambient conditions: Complete impregnation in polyester resin Climate-proof for installation in rooms with an external climate to DIN 50010
Rated ambient temperature		
• At rated power	°C	40 and optionally 55
• Maximum value (after power reduction in accordance with load characteristic[1])	°C	80
• Minimum value	°C	–25
Relative air humidity		
• Mean value up to	%	80
• Maximum value for 30 days/year	%	95
• At 40 °C occasionally	%	100
Protection class		I
Degree of protection		
• Without protective enclosure		IP00
• With protective enclosure (see "Selection and Ordering Data")		IP20 or IP23 Version: sheet-steel enclosure coated with epoxy resin, color gray RAL 7032
Installation altitude		Up to 1 000 m above sea level (above this, power reduction is necessary)
Protective devices		
• Internal		Can be designed with thermistor transformer protection for warning or disconnection or warning and disconnection[1].
• External		The transformers can be protected from short circuits on the primary or secondary side with motor protective devices. For reliable protection against short-circuiting and touch, the cables between the output terminals of the transformer and the load must have a negligible line impedance. For more details see DIN VDE 0100 (Erection of low-voltage systems) Part 410, Part 520 particularly section 525 and Part 610.
		On request
Connection methods		The permissible conductor cross-sections are assigned to the specified terminal types.
• Terminal arrangement[1]		Refer to DIN VDE 0298-4 and EN 60204 for the permissible conductor cross-section for the specified current according to the installation type. The terminals used are finger-safe according to EN 50274.
• Terminal versions and connectable cross-sections[1]		Other terminal sizes than standard versions on request.
Mounting position		The permissible mounting position for each version is shown in the "Project Planning Aids"[1].

[1] See "Reference Manual for Single-Phase Transformers · Three-Phase Transformers".

Selecting the fuses:

Short-circuit protection on the primary or secondary side using DIAZED or NH fuse systems with characteristic gG for 4BU43 to 4BU59 power transformers in the performance range from 18 kVA to 400 kVA.

Determining the fuse size:

$$\text{Rated current } I_n = \frac{\text{Rated power } P_n}{\text{Rated voltage } U_{1N} \times \sqrt{3}}$$

Minimum fuse current = Rated current x 1.2
Maximum fuse current = Rated current x 1.5

Example:

4BU56 power transformer,
degree of protection IP00,
rated power P_n = 100 kVA,
rated voltage U_{1N} = 400 V,
rated current I_n = ?

$$I_n = \frac{P_n}{U_{1N} \times \sqrt{3}} = \frac{100000\ \text{VA}}{400\ \text{V} \times \sqrt{3}} = 144.3\ \text{A}$$

Minimum fuse current = 144.3 A x 1.2 = 173 A
Maximum fuse current = 144.3 A x 1.5 = 216 A

Selected fuse size: 200 A

For more technical specifications see
www.siemens.com/sirius-supplying → "Technical Information"

or

www.siemens.com/sirius/support
→ "Transformers and Power Supplies"
→ "Manuals/Operating Instructions".

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Operation characteristics

- According to DIN VDE 0532-6
- t_a = 40 °C/H

Transformer Type	Rated power P_n 50 Hz ... 60 Hz 1 000 m above sea level Degree of protection IP00 kVA	Core size	Voltage rise in no-load operation (operating temperature) u_A approx. %	Voltage drop on rated load[1] u_R approx. %	Short-circuit voltage[1] u_Z approx. %	Degree of efficiency η approx. %
			4BU.. .2/4BU.. .3[2]	4BU.. .2/4BU.. .3[2]	4BU.. .2/4BU.. .3[2]	4BU.. .2/4BU.. .3[2]
4BU43 3.	18	3UI 230/80	4.2/4.0	3.9/3.7	4.0/3.8	95
4BU43 4.	20	3UI 230/80	3.8/3.6	3.5/3.4	3.7/3.5	96
4BU43 5.	22.5	3UI 230/80	3.4/3.2	3.1/3.0	3.4	96
4BU45 3.	25	3UI 230/107	3.3/3.1	3.0/2.9	3.1/3.0	96
4BU45 4.	28	3UI 230/107	2.9/2.8	2.7/2.6	2.9/2.8	96
4BU47 3.	31.5	3UI 230/137	2.7/2.6	2.5/2.4	2.6/2.5	96/97
4BU47 4.	35.5	3UI 230/137	2.4/2.3	2.2	2.4/2.3	97
4BU47 5.	40	3UI 230/137	2.1/2.0	2.0/1.9	2.3/2.2	97
4BU52 3.	45	3UIS 220/120	3.4/3.2	3.1/3.0	3.9/3.8	96
4BU53 3.	50	3UIS 220/135	3.1/2.9	2.8/2.7	3.5	96/97
4BU53 4.	56	3UIS 220/135	2.7/2.6	2.5/2.4	3.6/3.5	97
4BU54 3.	63	3UIS 305/125	4.0/3.9	3.7/3.6	4.3/4.2	95/96
4BU54 4.	71	3UIS 305/125	3.6/3.4	3.3/3.2	4.2	96
4BU55 3.	80	3UIS 305/140	3.3/3.1	3.0/2.9	3.9	96
4BU56 3.	91	3UIS 305/160	3.0/2.9	2.8/2.7	3.6	96/97
4BU56 4.	100	3UIS 305/160	2.7/2.6	2.5	3.7	97
4BU58 3.	112	3UIS 395/150	4.4/4.2	4.0/3.9	4.9/4.8	95
4BU58 4.	125	3UIS 395/150	3.9/3.8	3.6/3.5	4.9/4.8	96
4BU58 5.	140	3UIS 395/150	3.5/3.4	3.2/3.1	5.1/5.0	96
4BU59 3.	160	3UIS 395/170	3.2/3.1	3.0/2.9	4.7	96

Higher ratings and other conditions on request.

Calculation of power loss P_V

$$P_V = \frac{P_n\,(100 - \eta)}{\eta}\ [\text{kW}]$$

[1] Winding reference temperature: 115 °C.

[2] 4BU.. .2 without cULus approval; 4BU.. .3 with cULus approval.

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SIRIUS 4BU matching transformers

Overview

- DIN VDE 0532-6
- 50/60 Hz AC
- Δ or Y (see "Selection and ordering data")
- t_a = 40 °C/H
- Degrees of protection IP00, IP20, IP23
- Busbar connections
- For more products see Industry Mall and Interactive Catalog CA 01 or www.mdexx.com.



SIRIUS 4BU matching transformer

Selection and ordering data

With one input voltage

Rated input voltage U_{1N} 3 AC 400 V, rated output voltage U_{2N} 3 AC Y400 V, t_a = 40 °C/H, degree of protection IP00

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 4M1

Rated power P_n	DT[1]	Vector group Dyn5		Cu weight per PU approx.	DT[1]	Vector group Yyn0		Cu weight per PU approx.
		Configurator				Configurator		
kVA		Order No.	Price per PU	kg		Order No.	Price per PU	kg
Degree of protection IP00								
18	X	**4BU43 32-2AA20-2DA0**		110.000	X	**4BU43 32-2AA20-2CA0**		99.000
20	X	**4BU43 42-2AA20-2DA0**		103.000	X	**4BU43 42-2AA20-2CA0**		103.000
22.5	X	**4BU43 52-2AA20-2DA0**		112.000	X	**4BU43 52-2AA20-2CA0**		112.000
25	X	**4BU45 32-2AA20-2DA0**		129.000	X	**4BU45 32-2AA20-2CA0**		129.000
28	X	**4BU45 42-2AA20-2DA0**		136.000	X	**4BU45 42-2AA20-2CA0**		136.000
31.5	X	**4BU47 32-2AA20-2DA0**		163.000	X	**4BU47 32-2AA20-2CA0**		163.000
35.5	X	**4BU47 42-2AA20-2DA0**		171.000	X	**4BU47 42-2AA20-2CA0**		171.000
40	X	**4BU47 52-2AA20-2DA0**		184.000	X	**4BU47 52-2AA20-2CA0**		184.000
45	X	**4BU52 32-2AA20-2DA0**		200.000	X	**4BU52 32-2AA20-2CA0**		181.000
50	X	**4BU53 32-2AA20-2DA0**		201.000	X	**4BU53 32-2AA20-2CA0**		201.000
56	X	**4BU53 42-2AA20-2DA0**		214.000	X	**4BU53 42-2AA20-2CA0**		214.000
63	X	**4BU54 32-2AA20-2DA0**		258.000	X	**4BU54 32-2AA20-2CA0**		290.000
71	X	**4BU54 42-2AA20-2DA0**		271.000	X	**4BU54 42-2AA20-2CA0**		271.000
80	X	**4BU55 32-2AA20-2DA0**		310.000	X	**4BU55 32-2AA20-2CA0**		301.000
91	X	**4BU56 32-2AA20-2DA0**		338.000	X	**4BU56 32-2AA20-2CA0**		338.000
100	X	**4BU56 42-2AA20-2DA0**		352.000	X	**4BU56 42-2AA20-2CA0**		352.000
112	X	**4BU58 32-2AA20-2DA0**		420.000	X	**4BU58 32-2AA20-2CA0**		420.000
125	X	**4BU58 42-2AA20-2DA0**		440.000	X	**4BU58 42-2AA20-2CA0**		434.000
140	X	**4BU58 52-2AA20-2DA0**		454.000	X	**4BU58 52-2AA20-2CA0**		454.000
160	X	**4BU59 32-2AA20-2DA0**		508.000	X	**4BU59 32-2AA20-2CA0**		508.000

For degrees of protection IP20 and IP23 see next page.

For more products see Industry Mall and Interactive Catalog CA 01 or www.mdexx.com.

For online configurator see www.siemens.com/sirius/configurators.

[1] The delivery time class depends on the quantity, see page 15/6 "Options".

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SIRIUS 4BU matching transformers

With one input voltage

Rated input voltage U_{1N} 3 AC 400 V, rated output voltage U_{2N} 3 AC Y 400 V, t_a = 40 °C/H, degrees of protection IP20 and IP23

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 4M1

Rated power P_n	DT[1]	Vector group Dyn5		Cu weight per PU approx.	DT[1]	Vector group Yyn0		Cu weight per PU approx.
		Configurator				Configurator		
kVA		Order No.	Price per PU	kg		Order No.	Price per PU	kg
Degree of protection IP20								
18	X	**4BU43 32-2AA20-2DB0**		143.000	X	**4BU43 32-2AA20-2CB0**		143.000
20	X	**4BU43 42-2AA20-2DB0**		147.000	X	**4BU43 42-2AA20-2CB0**		147.000
22.5	X	**4BU43 52-2AA20-2DB0**		156.000	X	**4BU43 52-2AA20-2CB0**		156.000
25	X	**4BU45 32-2AA20-2DB0**		173.000	X	**4BU45 32-2AA20-2CB0**		173.000
28	X	**4BU45 42-2AA20-2DB0**		180.000	X	**4BU45 42-2AA20-2CB0**		180.000
31.5	X	**4BU47 32-2AA20-2DB0**		207.000	X	**4BU47 32-2AA20-2CB0**		207.000
35.5	X	**4BU47 42-2AA20-2DB0**		215.000	X	**4BU47 42-2AA20-2CB0**		215.000
40	X	**4BU47 52-2AA20-2DB0**		235.000	X	**4BU47 52-2AA20-2CB0**		228.000
45	X	**4BU52 32-2AA20-2DB0**		232.000	X	**4BU52 32-2AA20-2CB0**		232.000
50	X	**4BU53 32-2AA20-2DB0**		252.000	X	**4BU53 32-2AA20-2CB0**		252.000
56	X	**4BU53 42-2AA20-2DB0**		265.000	X	**4BU53 42-2AA20-2CB0**		265.000
63	X	**4BU54 32-2AA20-2DB0**		319.000	X	**4BU54 32-2AA20-2CB0**		319.000
71	X	**4BU54 42-2AA20-2DB0**		332.000	X	**4BU54 42-2AA20-2CB0**		332.000
80	X	**4BU55 32-2AA20-2DB0**		362.000	X	**4BU55 32-2AA20-2CB0**		362.000
91	X	**4BU56 32-2AA20-2DB0**		399.000	X	**4BU56 32-2AA20-2CB0**		399.000
100	X	**4BU56 42-2AA20-2DB0**		413.000	X	**4BU56 42-2AA20-2CB0**		413.000
112	X	**4BU58 32-2AA20-2DB0**		525.000	X	**4BU58 32-2AA20-2CB0**		525.000
125	X	**4BU58 42-2AA20-2DB0**		539.000	X	**4BU58 42-2AA20-2CB0**		539.000
140	X	**4BU58 52-2AA20-2DB0**		559.000	X	**4BU58 52-2AA20-2CB0**		559.000
160	X	**4BU59 32-2AA20-2DB0**		613.000	X	**4BU59 32-2AA20-2CB0**		613.000
Degree of protection IP23								
16	X	**4BU43 32-2AA20-2DC0**		143.000	X	**4BU43 32-2AA20-2CC0**		143.000
18	X	**4BU43 42-2AA20-2DC0**		147.000	X	**4BU43 42-2AA20-2CC0**		147.000
20	X	**4BU43 52-2AA20-2DC0**		156.000	X	**4BU43 52-2AA20-2CC0**		156.000
22.5	X	**4BU45 32-2AA20-2DC0**		173.000	X	**4BU45 32-2AA20-2CC0**		173.000
25	X	**4BU45 42-2AA20-2DC0**		180.000	X	**4BU45 42-2AA20-2CC0**		180.000
28	X	**4BU47 32-2AA20-2DC0**		207.000	X	**4BU47 32-2AA20-2CC0**		207.000
32	X	**4BU47 42-2AA20-2DC0**		215.000	X	**4BU47 42-2AA20-2CC0**		215.000
36	X	**4BU47 52-2AA20-2DC0**		228.000	X	**4BU47 52-2AA20-2CC0**		228.000
40.5	X	**4BU52 32-2AA20-2DC0**		232.000	X	**4BU52 32-2AA20-2CC0**		232.000
45	X	**4BU53 32-2AA20-2DC0**		250.000	X	**4BU53 32-2AA20-2CC0**		252.000
50	X	**4BU53 42-2AA20-2DC0**		265.000	X	**4BU53 42-2AA20-2CC0**		265.000
56.5	X	**4BU54 32-2AA20-2DC0**		319.000	X	**4BU54 32-2AA20-2CC0**		319.000
63.5	X	**4BU54 42-2AA20-2DC0**		332.000	X	**4BU54 42-2AA20-2CC0**		332.000
72	X	**4BU55 32-2AA20-2DC0**		362.000	X	**4BU55 32-2AA20-2CC0**		362.000
81.5	X	**4BU56 32-2AA20-2DC0**		399.000	X	**4BU56 32-2AA20-2CC0**		399.000
90	X	**4BU56 42-2AA20-2DC0**		413.000	X	**4BU56 42-2AA20-2CC0**		413.000
100.5	X	**4BU58 32-2AA20-2DC0**		525.000	X	**4BU58 32-2AA20-2CC0**		525.000
112.5	X	**4BU58 42-2AA20-2DC0**		539.000	X	**4BU58 42-2AA20-2CC0**		539.000
126	X	**4BU58 52-2AA20-2DC0**		559.000	X	**4BU58 52-2AA20-2CC0**		559.000
144	X	**4BU59 32-2AA20-2DC0**		613.000	X	**4BU59 32-2AA20-2CC0**		613.000

For more products see Industry Mall and Interactive Catalog CA 01 or www.mdexx.com.

For online configurator see www.siemens.com/sirius/configurators.

[1] The delivery time class depends on the quantity, see page 15/6 "Options".

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 4BU matching transformers

Selection and ordering data

With one input voltage

Rated input voltage U_{1N} 3 AC 400 V ± 5 %, rated output voltage U_{2N} 3 AC Y 400 V, t_a = 40 °C/H, degrees of protection IP00 and IP20

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 4M1

Rated power P_n	DT[1]	Vector group Dyn5		Cu weight per PU approx.	DT[1]	Vector group Yyn0		Cu weight per PU approx.
		Configurator				Configurator		
kVA		Order No.	Price per PU	kg		Order No.	Price per PU	kg
Degree of protection IP00								
18	X	**4BU43 32-5AA20-2DA0**		101.000	X	**4BU43 32-5AA20-2CA0**		101.000
20	X	**4BU43 42-5AA20-2DA0**		105.000	X	**4BU43 42-5AA20-2CA0**		105.000
22.5	X	**4BU43 52-5AA20-2DA0**		115.000	X	**4BU43 52-5AA20-2CA0**		115.000
25	X	**4BU45 32-5AA20-2DA0**		131.000	X	**4BU45 32-5AA20-2CA0**		131.000
28	X	**4BU45 42-5AA20-2DA0**		139.000	X	**4BU45 42-5AA20-2CA0**		139.000
31.5	X	**4BU47 32-5AA20-2DA0**		166.000	X	**4BU47 32-5AA20-2CA0**		166.000
35.5	X	**4BU47 42-5AA20-2DA0**		174.000	X	**4BU47 42-5AA20-2CA0**		174.000
40	X	**4BU47 52-5AA20-2DA0**		188.000	X	**4BU47 52-5AA20-2CA0**		188.000
45	X	**4BU52 32-5AA20-2DA0**		185.000	X	**4BU52 32-5AA20-2CA0**		185.000
50	X	**4BU53 32-5AA20-2DA0**		205.000	X	**4BU53 32-5AA20-2CA0**		205.000
56	X	**4BU53 42-5AA20-2DA0**		230.000	X	**4BU53 42-5AA20-2CA0**		219.000
63	X	**4BU54 32-5AA20-2DA0**		262.000	X	**4BU54 32-5AA20-2CA0**		262.000
71	X	**4BU54 42-5AA20-2DA0**		276.000	X	**4BU54 42-5AA20-2CA0**		276.000
80	X	**4BU55 32-5AA20-2DA0**		306.000	X	**4BU55 32-5AA20-2CA0**		306.000
91	X	**4BU56 32-5AA20-2DA0**		343.000	X	**4BU56 32-5AA20-2CA0**		343.000
100	X	**4BU56 42-5AA20-2DA0**		359.000	X	**4BU56 42-5AA20-2CA0**		359.000
112	X	**4BU58 32-5AA20-2DA0**		425.000	X	**4BU58 32-5AA20-2CA0**		425.000
125	X	**4BU58 42-5AA20-2DA0**		440.000	X	**4BU58 42-5AA20-2CA0**		440.000
140	X	**4BU58 52-5AA20-2DA0**		462.000	X	**4BU58 52-5AA20-2CA0**		462.000
160	X	**4BU59 32-5AA20-2DA0**		516.000	X	**4BU59 32-5AA20-2CA0**		516.000
Degree of protection IP20								
18	X	**4BU43 32-5AA20-2DB0**		145.000	X	**4BU43 32-5AA20-2CB0**		145.000
20	X	**4BU43 42-5AA20-2DB0**		149.000	X	**4BU43 42-5AA20-2CB0**		149.000
22.5	X	**4BU43 52-5AA20-2DB0**		159.000	X	**4BU43 52-5AA20-2CB0**		159.000
25	X	**4BU45 32-5AA20-2DB0**		175.000	X	**4BU45 32-5AA20-2CB0**		175.000
28	X	**4BU45 42-5AA20-2DB0**		183.000	X	**4BU45 42-5AA20-2CB0**		183.000
31.5	X	**4BU47 32-5AA20-2DB0**		210.000	X	**4BU47 32-5AA20-2CB0**		210.000
35.5	X	**4BU47 42-5AA20-2DB0**		218.000	X	**4BU47 42-5AA20-2CB0**		218.000
40	X	**4BU47 52-5AA20-2DB0**		232.000	X	**4BU47 52-5AA20-2CB0**		232.000
45	X	**4BU52 32-5AA20-2DB0**		236.000	X	**4BU52 32-5AA20-2CB0**		236.000
50	X	**4BU53 32-5AA20-2DB0**		256.000	X	**4BU53 32-5AA20-2CB0**		256.000
56	X	**4BU53 42-5AA20-2DB0**		270.000	X	**4BU53 42-5AA20-2CB0**		270.000
63	X	**4BU54 32-5AA20-2DB0**		323.000	X	**4BU54 32-5AA20-2CB0**		323.000
71	X	**4BU54 42-5AA20-2DB0**		337.000	X	**4BU54 42-5AA20-2CB0**		337.000
80	X	**4BU55 32-5AA20-2DB0**		367.000	X	**4BU55 32-5AA20-2CB0**		367.000
91	X	**4BU56 32-5AA20-2DB0**		404.000	X	**4BU56 32-5AA20-2CB0**		404.000
100	X	**4BU56 42-5AA20-2DB0**		430.000	X	**4BU56 42-5AA20-2CB0**		430.000
112	X	**4BU58 32-5AA20-2DB0**		530.000	X	**4BU58 32-5AA20-2CB0**		530.000
125	X	**4BU58 42-5AA20-2DB0**		545.000	X	**4BU58 42-5AA20-2CB0**		545.000
140	X	**4BU58 52-5AA20-2DB0**		567.000	X	**4BU58 52-5AA20-2CB0**		567.000
160	X	**4BU59 32-5AA20-2DB0**		621.000	X	**4BU59 32-5AA20-2CB0**		621.000

For degree of protection IP23 see next page.

For more products see Industry Mall and Interactive Catalog CA 01 or www.mdexx.com.

For online configurator see www.siemens.com/sirius/configurators.

[1] The delivery time class depends on the quantity, see page 15/6 "Options".

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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With one input voltage

Rated input voltage U_{1N} 3 AC 400 V ± 5 %, rated output voltage U_{2N} 3 AC Y 400 V, t_a = 40 °C/H, degree of protection IP23

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 4M1

Rated power P_n	DT[1]	Vector group Dyn5		Cu weight per PU approx.	DT[1]	Vector group Yyn0		Cu weight per PU approx.
		Configurator				Configurator		
kVA		Order No.	Price per PU	kg		Order No.	Price per PU	kg
Degree of protection IP23								
16	X	**4BU43 32-5AA20-2DC0**	145.000		X	**4BU43 32-5AA20-2CC0**	145.000	
18	X	**4BU43 42-5AA20-2DC0**	149.000		X	**4BU43 42-5AA20-2CC0**	149.000	
20	X	**4BU43 52-5AA20-2DC0**	159.000		X	**4BU43 52-5AA20-2CC0**	159.000	
22.5	X	**4BU45 32-5AA20-2DC0**	175.000		X	**4BU45 32-5AA20-2CC0**	175.000	
25	X	**4BU45 42-5AA20-2DC0**	183.000		X	**4BU45 42-5AA20-2CC0**	183.000	
28	X	**4BU47 32-5AA20-2DC0**	210.000		X	**4BU47 32-5AA20-2CC0**	210.000	
32	X	**4BU47 42-5AA20-2DC0**	218.000		X	**4BU47 42-5AA20-2CC0**	218.000	
36	X	**4BU47 52-5AA20-2DC0**	232.000		X	**4BU47 52-5AA20-2CC0**	232.000	
40.5	X	**4BU52 32-5AA20-2DC0**	236.000		X	**4BU52 32-5AA20-2CC0**	236.000	
45	X	**4BU53 32-5AA20-2DC0**	256.000		X	**4BU53 32-5AA20-2CC0**	256.000	
50	X	**4BU53 42-5AA20-2DC0**	270.000		X	**4BU53 42-5AA20-2CC0**	270.000	
56.5	X	**4BU54 32-5AA20-2DC0**	323.000		X	**4BU54 32-5AA20-2CC0**	323.000	
63.5	X	**4BU54 42-5AA20-2DC0**	337.000		X	**4BU54 42-5AA20-2CC0**	337.000	
72	X	**4BU55 32-5AA20-2DC0**	367.000		X	**4BU55 32-5AA20-2CC0**	367.000	
81.5	X	**4BU56 32-5AA20-2DC0**	404.000		X	**4BU56 32-5AA20-2CC0**	404.000	
90	X	**4BU56 42-5AA20-2DC0**	420.000		X	**4BU56 42-5AA20-2CC0**	420.000	
100.5	X	**4BU58 32-5AA20-2DC0**	530.000		X	**4BU58 32-5AA20-2CC0**	530.000	
112.5	X	**4BU58 42-5AA20-2DC0**	545.000		X	**4BU58 42-5AA20-2CC0**	545.000	
126	X	**4BU58 52-5AA20-2DC0**	567.000		X	**4BU58 52-5AA20-2CC0**	567.000	
144	X	**4BU59 32-5AA20-2DC0**	621.000		X	**4BU59 32-5AA20-2CC0**	621.000	

For more products see Industry Mall and Interactive Catalog CA 01 or www.mdexx.com.

For online configurator see www.siemens.com/sirius/configurators.

[1] The delivery time class depends on the quantity, see page 15/6 "Options".

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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SIRIUS 4BU matching transformers with cURus approval

Overview

- DIN VDE 0532-6
- 50/60 Hz AC
- Δ or Y (see "Selection and ordering data")
- cULus (only degree of protection IP00)
- t_a = 40 °C/H
- Degrees of protection IP00, IP20, IP23
- Busbar connections
- For more products see Industry Mall and Interactive Catalog CA 01 or www.mdexx.com.



SIRIUS 4BU matching transformer

Selection and ordering data

With one input voltage

Rated input voltage U_{1N} 3 AC 480 V ± 5 %, rated output voltage U_{2N} 3 AC Y400 V, t_a = 40 °C/H, degree of protection IP00

cULus (only degree of protection IP00)

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 4M1

Rated power P_n	DT[1]	Vector group Dyn5		Cu weight per PU approx.	DT[1]	Vector group Yyn0		Cu weight per PU approx.
		Configurator				Configurator		
kVA		Order No.	Price per PU	kg		Order No.	Price per PU	kg
Degree of protection IP00 with cURus approval								
18	X	**4BU43 33-5EA20-2DA0**		115.000	X	**4BU43 33-5EA20-2CA0**		102.000
20	X	**4BU43 43-5EA20-2DA0**		109.000	X	**4BU43 43-5EA20-2CA0**		109.000
22.5	X	**4BU43 53-5EA20-2DA0**		120.000	X	**4BU43 53-5EA20-2CA0**		118.000
25	X	**4BU45 33-5EA20-2DA0**		135.000	X	**4BU45 33-5EA20-2CA0**		135.000
28	X	**4BU45 43-5EA20-2DA0**		143.000	X	**4BU45 43-5EA20-2CA0**		143.000
31.5	X	**4BU47 33-5EA20-2DA0**		169.000	X	**4BU47 33-5EA20-2CA0**		169.000
35.5	X	**4BU47 43-5EA20-2DA0**		179.000	X	**4BU47 43-5EA20-2CA0**		179.000
40	X	**4BU47 53-5EA20-2DA0**		194.000	X	**4BU47 53-5EA20-2CA0**		194.000
45	X	**4BU52 33-5EA20-2DA0**		191.000	X	**4BU52 33-5EA20-2CA0**		191.000
50	X	**4BU53 33-5EA20-2DA0**		212.000	X	**4BU53 33-5EA20-2CA0**		212.000
56	X	**4BU53 43-5EA20-2DA0**		229.000	X	**4BU53 43-5EA20-2CA0**		229.000
63	X	**4BU54 33-5EA20-2DA0**		267.000	X	**4BU54 33-5EA20-2CA0**		267.000
71	X	**4BU54 43-5EA20-2DA0**		282.000	X	**4BU54 43-5EA20-2CA0**		282.000
80	X	**4BU55 33-5EA20-2DA0**		314.000	X	**4BU55 33-5EA20-2CA0**		314.000
91	X	**4BU56 33-5EA20-2DA0**		353.000	X	**4BU56 33-5EA20-2CA0**		353.000
100	X	**4BU56 43-5EA20-2DA0**		370.000	X	**4BU56 43-5EA20-2CA0**		370.000
112	X	**4BU58 33-5EA20-2DA0**		430.000	X	**4BU58 33-5EA20-2CA0**		430.000
125	X	**4BU58 43-5EA20-2DA0**		449.000	X	**4BU58 43-5EA20-2CA0**		449.000
140	X	**4BU58 53-5EA20-2DA0**		470.000	X	**4BU58 53-5EA20-2CA0**		470.000
160	X	**4BU59 33-5EA20-2DA0**		527.000	X	**4BU59 33-5EA20-2CA0**		527.000

For degrees of protection IP20 and IP23 see next page.

For more products see Industry Mall and Interactive Catalog CA 01 or www.mdexx.com.

For online configurator see www.siemens.com/sirius/configurators.

[1] The delivery time class depends on the quantity, see page 15/6 "Options".

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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With one input voltage

Rated input voltage U_{1N} 3 AC 480 V ± 5 %, rated output voltage U_{2N} 3 AC Y 400 V, t_a = 40 °C/H, degree of protection IP20 and IP23 (without cURus approval)

PU (UNIT, SET, M) = 1
PS* = 1 unit
PG = 4M1

Rated power P_n	DT[1]	Vector group Dyn5		Cu weight per PU approx.	DT[1]	Vector group Yyn0		Cu weight per PU approx.
		Configurator				Configurator		
kVA		Order No.	Price per PU	kg		Order No.	Price per PU	kg
Degree of protection IP20 without cURus approval								
18	X	**4BU43 33-5EA20-2DB0**	146.000		X	**4BU43 33-5EA20-2CB0**		146.000
20	X	**4BU43 43-5EA20-2DB0**	153.000		X	**4BU43 43-5EA20-2CB0**		153.000
22.5	X	**4BU43 53-5EA20-2DB0**	162.000		X	**4BU43 53-5EA20-2CB0**		162.000
25	X	**4BU45 33-5EA20-2DB0**	180.000		X	**4BU45 33-5EA20-2CB0**		179.000
28	X	**4BU45 43-5EA20-2DB0**	187.000		X	**4BU45 43-5EA20-2CB0**		187.000
31.5	X	**4BU47 33-5EA20-2DB0**	213.000		X	**4BU47 33-5EA20-2CB0**		213.000
35.5	X	**4BU47 43-5EA20-2DB0**	223.000		X	**4BU47 43-5EA20-2CB0**		223.000
40	X	**4BU47 53-5EA20-2DB0**	238.000		X	**4BU47 53-5EA20-2CB0**		238.000
45	X	**4BU52 33-5EA20-2DB0**	242.000		X	**4BU52 33-5EA20-2CB0**		242.000
50	X	**4BU53 33-5EA20-2DB0**	263.000		X	**4BU53 33-5EA20-2CB0**		263.000
56	X	**4BU53 43-5EA20-2DB0**	280.000		X	**4BU53 43-5EA20-2CB0**		280.000
63	X	**4BU54 33-5EA20-2DB0**	328.000		X	**4BU54 33-5EA20-2CB0**		328.000
71	X	**4BU54 43-5EA20-2DB0**	343.000		X	**4BU54 43-5EA20-2CB0**		343.000
80	X	**4BU55 33-5EA20-2DB0**	375.000		X	**4BU55 33-5EA20-2CB0**		375.000
91	X	**4BU56 33-5EA20-2DB0**	414.000		X	**4BU56 33-5EA20-2CB0**		414.000
100	X	**4BU56 43-5EA20-2DB0**	431.000		X	**4BU56 43-5EA20-2CB0**		431.000
112	X	**4BU58 33-5EA20-2DB0**	535.000		X	**4BU58 33-5EA20-2CB0**		535.000
125	X	**4BU58 43-5EA20-2DB0**	554.000		X	**4BU58 43-5EA20-2CB0**		554.000
140	X	**4BU58 53-5EA20-2DB0**	575.000		X	**4BU58 53-5EA20-2CB0**		575.000
160	X	**4BU59 33-5EA20-2DB0**	632.000		X	**4BU59 33-5EA20-2CB0**		632.000
Degree of protection IP23 without cURus approval								
16	X	**4BU43 33-5EA20-2DC0**	146.000		X	**4BU43 33-5EA20-2CC0**		146.000
18	X	**4BU43 43-5EA20-2DC0**	153.000		X	**4BU43 43-5EA20-2CC0**		153.000
20	X	**4BU43 53-5EA20-2DC0**	162.000		X	**4BU43 53-5EA20-2CC0**		162.000
22.5	X	**4BU45 33-5EA20-2DC0**	179.000		X	**4BU45 33-5EA20-2CC0**		179.000
25	X	**4BU45 43-5EA20-2DC0**	187.000		X	**4BU45 43-5EA20-2CC0**		187.000
28	X	**4BU47 33-5EA20-2DC0**	213.000		X	**4BU47 33-5EA20-2CC0**		213.000
32	X	**4BU47 43-5EA20-2DC0**	223.000		X	**4BU47 43-5EA20-2CC0**		223.000
36	X	**4BU47 53-5EA20-2DC0**	238.000		X	**4BU47 53-5EA20-2CC0**		238.000
40.5	X	**4BU52 33-5EA20-2DC0**	242.000		X	**4BU52 33-5EA20-2CC0**		242.000
45	X	**4BU53 33-5EA20-2DC0**	263.000		X	**4BU53 33-5EA20-2CC0**		263.000
50	X	**4BU53 43-5EA20-2DC0**	280.000		X	**4BU53 43-5EA20-2CC0**		280.000
56.5	X	**4BU54 33-5EA20-2DC0**	328.000		X	**4BU54 33-5EA20-2CC0**		328.000
63.5	X	**4BU54 43-5EA20-2DC0**	343.000		X	**4BU54 43-5EA20-2CC0**		343.000
72	X	**4BU55 33-5EA20-2DC0**	375.000		X	**4BU55 33-5EA20-2CC0**		375.000
81.5	X	**4BU56 33-5EA20-2DC0**	414.000		X	**4BU56 33-5EA20-2CC0**		414.000
90	X	**4BU56 43-5EA20-2DC0**	431.000		X	**4BU56 43-5EA20-2CC0**		431.000
100.5	X	**4BU58 33-5EA20-2DC0**	535.000		X	**4BU58 33-5EA20-2CC0**		535.000
112.5	X	**4BU58 43-5EA20-2DC0**	554.000		X	**4BU58 43-5EA20-2CC0**		554.000
126	X	**4BU58 53-5EA20-2DC0**	575.000		X	**4BU58 53-5EA20-2CC0**		575.000
144	X	**4BU59 33-5EA20-2DC0**	632.000		X	**4BU59 33-5EA20-2CC0**		632.000

For more products see Industry Mall and Interactive Catalog CA 01 or www.mdexx.com.

For online configurator see www.siemens.com/sirius/configurators.

[1] The delivery time class depends on the quantity, see page 15/6 "Options".

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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Transformers with selectable voltages

Overview

- Power transformers with and without cULus approval configured as matching, auto or converter transformers with selectable input and output voltages from 100 V to 1 000 V (line-to-line voltage U_L) Y or Δ in the power range from 18 kVA to 1 700 kVA and additional options
- DIN VDE 0532-6
- cULus[1)]
- t_a = 40 °C/H and optional t_a = 55 °C/H
- For more products see Industry Mall and Interactive Catalog CA 01 or www.mdexx.com.



Power transformer with selectable voltages

[1)] cULus approvals for voltages ≤ 600 V (excluding tappings) and degree of protection IP00.

More information

Orders and enquiries for power transformers in customized versions or with special applications are handled exclusively by mdexx GmbH

Following versions can be ordered:

- Power transformers with rated outputs from 18 kVA to 1 700 kVA
- Power transformers with freely selectable
  - input/output voltages and
  - vector groups, e.g. Dyn5, Yyn0, etc.
- Autotransformers in vector groups YNa0 or Ya0 (please specify rated power or throughput rating)
- Degree of protection
  - IP00 or
  - in enclosure IP20, IP23 or other
- 50 Hz or deviating frequencies
- Additional separate windings and/or tappings
- Additional shield winding
- Thermistor transformer protection

Note:

Delivery time depends on the size of the transformer and the quantity ordered.

An enquiry form for customized transformers or transformers with special applications, e.g.

- Matching or power transformers according to DIN VDE 0532-6
- Special transformers for marine applications and container cranes
  Option: Vibration-resistant, low-noise version (available in enclosure only)
- Transformers for converter applications
- Special transformers according to IEC 60601-1 (VDE 0750) for medical equipment
- Special transformers for rail vehicles
- High-reactance transformers
- Autotransformers

is available at

www.mdexx.com/catalog/en/custom-inquiry

Please direct price enquiries and technical questions to:

trafo@mdexx.com

or send by fax to +49 (421) 5125-333.

mdexx GmbH will reply with all the data needed for you to place an order.

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Overview

With SIRIUS power supplies we offer a full range of first-class products. The complete type series ensure uniform voltages and minimum downtimes. They cover all important input voltages worldwide.

Connection methods

4AV.. non-stabilized power supplies are available with screw terminals/flat connectors.

Screw terminals

Flat connectors

The terminals are indicated in the corresponding tables by the symbols shown on orange backgrounds.

Order No. scheme

Digit of the Order No.		1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th		13th	14th
		□□□	□	□	□	□	–	□	□	□	□	□	–	□	□
Power supplies		**4 A V**													
Versions															
20 ... 26	Single-phase, filtered, t_a max. 60 °C/B, suitable for connection to public supply networks and industrial networks														
30 ... 35	Three-phase, filtered, t_a max. 60 °C/B, suitable for connection to public supply networks and industrial networks														
36, 38	Three-phase, unfiltered, t_a max. 60 °C/B, suitable for connection to public supply networks and industrial networks		□	□											
41	Single-phase, filtered, t_a = 40 °C/B, suitable for connection to industrial networks														
51	Three-phase, filtered, t_a = 40 °C/B, suitable for connection to industrial networks														
96	Three-phase, unfiltered, t_a = 50 °C/B														
98	Single-phase, unfiltered, t_a = 50 °C/B														
Power level					□	□									
Application								□							
Development status									□						
Impregnated transformer										□					
Serial number											□	□			
Connection type														□	
Mounting type/options															□
Example		**4 A V**	**2**	**0**	**0**	**0**	**–**	**2**	**E**	**B**	**0**	**0**	**–**	**0**	**A**

Note:

The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quoted in the catalog in the Selection and ordering data.

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4AV Non-Stabilized Power Supplies
Filtered for Supply of Electronic Controls

General data

Overview

4AV2, 4AV3, 4AV4 and 4AV5 power supplies deliver a non-stabilized DC voltage of 24 V DC based on single-phase or three-phase safety transformers with downstream rectifiers and capacitor filtering (4AV36 and 4AV38 without capacitor filtering).

Benefits

The rugged design of the 4AV units makes them extremely reliable. They are extremely stable when confronted with external mains failures and have a damping effect on EMC. They are also highly suitable for supplying capacitive loads, because when the loads are connected only minimal voltage dips occur.

Application

The 4AV2, 4AV3, 4AV4 and 4AV5 units are used for:

- Supplying general electrical loads
- Supplying control circuits
- Power supply to electronic controllers.
  They comply with the requirements of EN 61131-2 "Programmable logic controllers – equipment specifications and tests" and are suitable for SIMATIC or other systems.

Rated power and rated current

The specifications in the selection tables are based on fixed reference conditions in which the devices have the rated power or rated current:

- Uninterrupted duty P_n
- Frequency AC 50 Hz to 60 Hz
- Installation altitude up to 1 000 m above sea level
- Degree of protection IP00
- Ambient temperature t_a

Ambient conditions

The units are designed for mounting in enclosed controllers and electronics cabinets. They are climate-proof for installation in rooms with an external climate according to DIN 50010.

Limit values

- Ambient temperature with rated power and rated current for these types:
  - 4AV2 and 4AV3: Up to +60 °C
  - 4AV4 and 4AV5: Up to +40 °C
  - Minimum value for all types: –25 °C
- Relative air humidity:
  - At +40 °C occasionally up to 100 %
  - Annual average up to 80 %
  - Occasional condensation possible

Technical specifications

Single- and three-phase DC power supplies

Direct voltage 24 V DC Limit values	EN 61131-2	Typical value				Conditions
		4AV2	4AV3	4AV4	4AV5	
Ripple	≤ 5 %	2.2 ... 2.7 %	4.2 %	3.0 ... 3.7 %	4.2 %	At rated current
Direct voltage 24 V DC						
• Upper limit	30 V	≤ 28.8 V	≤ 28.8 V	≤ 30 V	≤ 30 V	For mains overvoltage +6% and no-load operation
• Lower limit						For mains undervoltage –10% and rated current
- arithmetic mean value	20.4 V	20.4 V	20.5 V	20.4 V	20.4 V	
- lower peak value	19.2 V	19.3 V	19.3 V	19.2 V	19.2 V	
• Rated value		23.5 V	23.5 V	23.5 V	23.5 V	For rated mains voltage and rated current

Current-carrying capacity of the power supplies with 3RT1 contactors for DC operation

- Sizes S00 to S3 with DC solenoid systems:
  power at closing = power when closed. The DC power supplies can be loaded up to their rated currents.
- Sizes S6 to S12:
  When operating the rectifiers at –10 % mains undervoltage

Contactor	Number of 3RT1[1] contactors that can be operated simultaneously with preloading																									
	4AV20/ 4AV21		4AV23		4AV22		4AV24		4AV26		4AV30		4AV31		4AV32		4AV33		4AV34		4AV35		4AV36		4AV38	
Type	①	②	①	②	①	②	①	②	①	②	①	②	①	②	①	②	①	②	①	②	①	②	①	②	①	②
3RT1. 5	--	--	--	--	1	1	2	1	3	1	2	1	3	2	4	2	7	5	8	5	14	10	22	16	42	30
3RT1. 6	--	--	--	--	1	1	1	1	2	1	1	1	2	1	2	1	4	3	4	3	7	5	11	8	22	15
3RT1. 7	--	--	--	--	--	--	1	--	1	--	1	--	1	1	2	1	3	2	3	2	5	4	9	6	16	12

① No-load operation

② Rated current

[1] The number of contactors can be significantly increased by using additional banks of capacitors which must be connected externally.

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Primary-side short-circuit protection, secondary-side short-circuit and overload protection

Rectifier unit	Ambient temperature t_a	Rated output current I_d	Primary-side protection against short circuits (line protection) by means of motor starter protector[1)2)] or fuse								Secondary-side protection against short-circuit and overload by means of motor starter protector or fuse	
			Type	Rated input voltage U_{1N}								
				575 V (600 V)	500 V	460 V (480 V)	400 V (415 V)	230 V (240 V)	200 V	115 V (120 V)		
Type	°C	A DC									Type	
Single-phase												
4AV21	60	1	3RV20 11-□□□10	--	--	--	0CA	0FA	--	0JA	Built-in electrical	--
			Set value in A	--	--	--	0.24	0.4	--	0.9	short-circuit/overload	
	40	1.2	3RV20 11-□□□10	--	--	--	0DA	0FA	--	0KA	protection fuse	
			Set value in A	--	--	--	0.29	0.48	--	1.1		
4AV20			3RV20 11-□□□10	--	--	--	0FA	0HA	--	1BA	3RV20 11-□□□10	1DA
	60	2.5	Set value in A	--	--	--	0.4	0.6	--	1.6	Set value in A	2.5
	40	3	Set value in A	--	--	--	0.48	0.72	--	1.9	Set value in A	3
4AV23			3RV20 11-□□□10	--	--	--	0HA	0JA	--	1CA	Built-in electrical	--
	60	3.5	Set value in A	--	--	--	0.55	0.7	--	2	short-circuit/overload	
	40	4.2	Set value in A	--	--	--	0.66	0.84	--	2.4	protection fuse	
4AV22			3RV20 11-□□□10	--	--	--	0HA	1AA	--	1DA	3RV20 11-□□□10	1GA
	60	5	Set value in A	--	--	--	0.6	1.1	--	2.4	Set value in A	5
	40	6	Set value in A	--	--	--	0.72	1.3	--	2.9	Set value in A	6
4AV24			3RV20 11-□□□10	--	--	--	1CA	1DA	--	1GA	3RV20 11-□□□10	1KA
	60	10	Set value in A	--	--	--	1.8	2.4	--	5	Set value in A	10
	40	12	Set value in A	--	--	--	2.2	2.9	--	6	Set value in A	12
4AV26			3RV20 11-□□□10	--	--	--	1CA	1EA	--	1HA	3RV20 21-□□□10	4BA
	60	15	Set value in A	--	--	--	2	3.2	--	6	Set value in A	15
	40	18	Set value in A	--	--	--	2.4	3.8	--	7.2	Set value in A	18
4AV41 01	40	1.5	3RV20 11-□□□10	--	--	--	0BA	0DA	--	--	Integrated blade-type	4 A
			Set value in A	--	--	--	0.15	0.27	--	--	fuse	
			Fuse gG in A	--	--	--	0.5	1	--	--	FK2	
4AV41 03	40	3	3RV20 11-□□□10	--	--	--	0GA	0HA	--	--	Integrated blade-type	7.5 A
			Set value in A	--	--	--	0.5	0.7	--	--	fuse	
			Fuse gG in A	--	--	--	1	2	--	--	FK2	
4AV41 06	40	6	3RV20 11-□□□10	--	--	--	0JA	0KA	--	--	Integrated blade-type	15 A
			Set value in A	--	--	--	0.8	1.2	--	--	fuse	
			Fuse gG in A	--	--	--	2	1	--	--	FK2	
4AV41 10	40	10	3RV20 11-□□□10	--	--	--	1BA	1CA	--	--	Integrated blade-type	25 A
			Set value in A	--	--	--	1.6	2.4	--	--	fuse	
			Fuse gG in A	--	--	--	4	4	--	--	FK2	
3-phase												
4AV30			3RV20 11-□□□10	0FA	0FA	0FA	0HA	0KA	0KA	--	3RV20 11-□□□10	1KA
	60	9/10	Set value in A	0.4	0.4	0.4	0.6	1	1	--	Set value in A	9/10
	40	11/12	Set value in A	0.48	0.48	0.48	0.72	1.2	1.2	--	Set value in A	11/12
4AV31			3RV20 11-□□□10	0HA	0HA	0HA	0KA	1BA	1CA	--	3RV20 21-□□□10	4BA
	60	13.5/15	Set value in A	0.6	0.6	0.6	1	1.6	2	--	Set value in A	14/15
	40	16/18	Set value in A	0.72	0.72	0.72	1.2	1.9	2.4	--	Set value in A	16/18
4AV32			3RV20 11-□□□10	0HA	0KA	0KA	0KA	1BA	1DA	--	3RV10 31-□□□10	4DA
	60	18/20	Set value in A	0.6	1	1	1	1.6	2.4	--	Set value in A	18/20
	40	21.5/24	Set value in A	0.72	1.2	1.2	1.2	1.9	2.9	--	Set value in A	21.5/24
4AV33			3RV20 11-□□□10	1CA	1CA	1CA	1CA	1EA	1FA	--	3RV10 31-□□□10	4FA
	60	27/30	Set value in A	1.8	1.8	1.8	2	3.2	4	--	Set value in A	28/30
	40	32.5/36	Set value in A	2.2	2.2	2.2	2.4	3.8	4.8	--	Set value in A	32.5/36
4AV34			3RV20 11-□□□10	1CA	1CA	1CA	1DA	1GA	1GA	--	3RV10 41-□□□10	4HA
	60	36/40	Set value in A	2	2	2	2.4	5	5	--	Set value in A	36/40
	40	43/48	Set value in A	2.4	2.4	2.4	2.9	6	6	--	Set value in A	43/48
4AV35			3RV20 11-□□□10	1DA	1DA	1EA	1FA	1HA	1HA	--	3RV10 41-□□□10	4JA
	60	45/50	Set value in A	2.4	2.4	3.2	4	6	6	--	Set value in A	45/50
	40	54/60	Set value in A	2.9	2.9	3.8	4.8	7.2	7.2	--	Set value in A	54/60
4AV36			3RV20 11-□□□10	--	1HA	--	1HA	--	--	--	3RV10 41-□□□10	4MA
	60	80	Set value in A	--	6	--	6	--	--	--	Set value in A	80
	40	96	Set value in A	--	7.2	--	72	--	--	--	Set value in A	96
4AV38	60	150	3RV20 11-□□□10	--	1KA	--	1KA	--	--	--	3VL27 16-1DC33-0AA0	
			Set value in A	--	10	--	12	--	--	--	Set value in A	150/800
	40	180	3RV20 21-□□□10	--	4AA	--	4AA	--	--	--	3VL37 20-1DC36-0AA0	
			Set value in A	--	12	--	14	--	---	--	Set value in A	180/1 000
4AV51 25	40	25	3RV20 11-□□□10	--	--	--	1BA	--	--	--	3RV10 31-□□□10	4EA
			Set value in A	--	--	--	1.6	--	--	--	Set value in A	25
			Fuse gG in A	--	--	--	2	--	--	--	Fuse gG in A	25
4AV51 35	40	35	3RV20 11-□□□10	--	--	--	1CA	--	--	--	3RV10 31-□□□10	4FA
			Set value in A	--	--	--	2.4	--	--	--	Set value in A	35
			Fuse gG in A	--	--	--	4	--	--	--	Fuse gG in A	35

1) In the event of a short circuit on the supply lines between the protective device and the input side of the unit, the rated short-circuit breaking capacity of the protection equipment must be taken into account with regard to the maximum possible prospective short-circuit current at the place of installation.

2) For circuit recommendation for single-phase power supplies, see circuit diagram on page 15/8.

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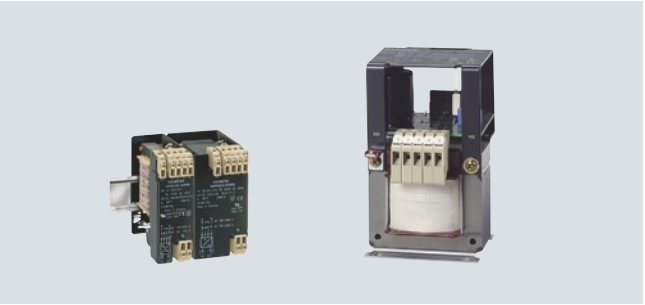
4AV Non-Stabilized Power Supplies

Filtered for Supply of Electronic Controls

SIRIUS 4AV2, 4AV4 power supplies, filtered, single-phase

Overview

- Rated output voltage U_{2N} 24 V DC according to EN 61131-2[1] and SIMATIC for input voltage +6 % to –10 % and load 0 % to 100 %
- Safety transformers according to EN 61558-2-6
- 4AV21, 4AV23: cULus at 60 °C, ;
  4AV20, 4AV22, 4AV24, 4AV26: cULus at 60 °C, ;
  4AV41:
- 4AV2: t_a = max. 60 °C/B,
  4AV41: t_a = 40 °C/B
- Varistor suppressor circuit
- Status LED
- EMC according to EN 62041:
  - 4AV2: Suitable for connection to the public supply (residential environments) and industrial networks (industrial environments):
  - 4AV4: Suitable for connection to industrial networks (industrial environments)
- Ripple < 5 %
- For more products see Industry Mall and Interactive Catalog CA 01 or www.mdexx.com.



SIRIUS 4AV21, 4AV23 (left) and 4AV20, 4AV22 to 4AV24 (right) power supplies

[1] EN 61131-2: equipment specification for power supply and interface for programmable controllers. Limit values for 24 V DC see "Reference Manual for Stabilized · Unstabilized Power Supplies".

Selection and ordering data

Rated input voltage U_{1N}[1] 230 (240)-115 (120) V, rated output voltage U_{2N} 24 V DC

cULus,

Rated output current I_d 60 °C/B EN 61558 cULus	Rated output current I_d 40 °C/B EN 61558	DT[2]	Screw terminals/ flat connectors / Configurator — Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.
A DC	A DC							kg
Integrated standard rail mounting								
1	1.2	A	**4AV21 02-2EB00-0A**		1	1 unit	4M1	1.500
3.5	4.2	A	**4AV23 02-2EB00-0A**		1	1 unit	4M1	2.500

For online configurator see www.siemens.com/sirius/configurators.

[1] During operation at the mains voltages listed in brackets, the upper limit for 24 V DC according to EN 61131-2 at +6 % mains voltage is met for a basic load of 10 %. Under no-load operation, 30.6 V can be achieved.

[2] The delivery time class depends on the quantity, see page 15/6 "Options".

Rated input voltage U_{1N}[1] 400 (415) V, rated output voltage U_{2N} 24 V DC

cULus,

Rated output current I_d 60 °C/B EN 61558 cULus	Rated output current I_d 40 °C/B EN 61558	DT[2]	Screw terminals/ flat connectors / Configurator — Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.
A DC	A DC							kg
Integrated standard rail mounting								
1	1.2	A	**4AV21 06-2EB00-0A**		1	1 unit	4M1	1.500
3.5	4.2	A	**4AV23 06-2EB00-0A**		1	1 unit	4M1	2.500

For online configurator see www.siemens.com/sirius/configurators.

[1] During operation at the mains voltages listed in brackets, the upper limit for 24 V DC according to EN 61131-2 at +6 % mains voltage is met for a basic load of 10 %. Under no-load operation, 30.6 V can be achieved.

[2] The delivery time class depends on the quantity, see page 15/6 "Options".

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Rated input voltage U_{1N}[1] 400 (415)-230 (240) V with tapping ±15 V, rated output voltage U_{2N} 24 V DC

4AV2: cULus, ; ***4AV41:***

Rated output current I_d 60 °C/B EN 61558 cULus A DC	40 °C/B EN 61558 A DC	DT[2]	Screw terminals/ flat connectors / Configurator Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx. kg
Screw mounting[3]								
2.5	3	A	**4AV20 00-2EB00-0A**		1	1 unit	4M1	2.300
5	6	A	**4AV22 00-2EB00-0A**		1	1 unit	4M1	4.900
10	12	A	**4AV24 00-2EB00-0A**		1	1 unit	4M1	7.500
15	18	A	**4AV26 00-2EB00-0A**		1	1 unit	4M1	9.800
--	1.5	X	**4AV41 01-2EB00-0A**		1	1 unit	4M1	1.400
--	3	A	**4AV41 03-2EB00-0A**		1	1 unit	4M1	2.300
--	6	A	**4AV41 06-2EB00-0A**		1	1 unit	4M1	4.000
--	10	A	**4AV41 10-2EB00-0A**		1	1 unit	4M1	5.300
Standard rail mounting								
2.5	3	A	**4AV20 00-2EB00-0A**		1	1 unit	4M1	2.300
5	6	A	**4AV22 00-2EB00-0B**		1	1 unit	4M1	4.900
10	12	X	**4AV24 00-2EB00-0B**		1	1 unit	4M1	7.500
--	1.5	X	**4AV41 01-2EB00-0B**		1	1 unit	4M1	1.400
--	3	A	**4AV41 03-2EB00-0A**		1	1 unit	4M1	2.300
--	6	A	**4AV41 06-2EB00-0A**		1	1 unit	4M1	4.000
--	10	X	**4AV41 10-2EB00-0B**		1	1 unit	4M1	5.300

For online configurator see www.siemens.com/sirius/configurators.

1) During operation at the mains voltages listed in brackets, the upper limit for 24 V DC according to EN 61131-2 at +6 % mains voltage is met for a basic load of 10 %. Under no-load operation with types 4AV4, 31.4 V can be achieved.

2) The delivery time class depends on the quantity, see page 15/6 "Options".

3) Types 4AV20, 4AV41 03 and 4AV41 06 are equipped with an integrated standard rail mounting as standard.

Rated input voltage U_{1N} 400 (415)-230 (240)-115 (120) V, rated output voltage U_{2N} 24 V DC

cULus,

Rated output current I_d 60 °C/B EN 61558 cULus A DC	40 °C/B EN 61558 A DC	DT[1]	Screw terminals/ flat connectors / Configurator Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx. kg
Screw mounting[2]								
2.5	3	A	**4AV20 01-2EB00-0A**		1	1 unit	4M1	2.300
5	6	A	**4AV22 01-2EB00-0A**		1	1 unit	4M1	4.900
10	12	A	**4AV24 01-2EB00-0A**		1	1 unit	4M1	7.500
15	18	A	**4AV26 01-2EB00-0A**		1	1 unit	4M1	9.800
Standard rail mounting								
2.5	3	A	**4AV20 01-2EB00-0A**		1	1 unit	4M1	2.300
5	6	X	**4AV22 01-2EB00-0B**		1	1 unit	4M1	4.900
10	12	X	**4AV24 01-2EB00-0B**		1	1 unit	4M1	7.500

For online configurator see www.siemens.com/sirius/configurators.

1) The delivery time class depends on the quantity, see page 15/6 "Options".

2) Types 4AV20 are equipped with an integrated standard rail mounting as standard.

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4AV Non-Stabilized Power Supplies

Filtered for Supply of Electronic Controls

SIRIUS 4AV3, 4AV5 power supplies, filtered, three-phase

Overview

- Rated output voltage U_{2N} 24 V DC according to EN 61131-2[1)] and SIMATIC for input voltage +6 % to –10 % and load 0 % to 100 %
- Safety transformers according to EN 61558-2-6
- 4AV30 to 4AV35: cULus at 60 °C, ;
  4AV36, 4AV38, 4AV51:
- 4AV3: t_a = max. 60 °C/B,
  4AV51: t_a = 40 °C/B
- Varistor suppressor circuit
- Status LED
- EMC according to EN 62041:
  - 4AV3: suitable for connection to the public supply (residential environments) and industrial networks (industrial environments)
  - 4AV5: suitable for connection to industrial networks (industrial environments)
- Ripple < 5 %
- For more products see Industry Mall and Interactive Catalog CA 01 or www.mdexx.com.



SIRIUS 4AV30 to 4AV33 (left) and 4AV38 (right) power supplies

1) EN 61131-2: equipment specification for power supply and interface for programmable controllers. For limit values for 24 V DC see "Reference Manual for Stabilized · Unstabilized Power Supplies".

Selection and ordering data

Rated input voltage U_{1N} Y 400 (415) V with tapping ±20 V, Δ 230 V with tapping ±10 V, rated output voltage U_{2N} 24 V DC

cULus,

Rated output current I_d 60 °C/B EN 61558 cULus	Rated output current I_d 40 °C/B EN 61558	Additional capacitance	Ripple	Back-up time for $U_1 = U_{1N}$ –10 %	DT[1)]	Screw terminals/ flat connectors / Configurator — Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.
A DC	A DC	µF	%	ms							kg
Standard version											
10	12	--	< 5	--	A	**4AV30 00-2EB00-0A**		1	1 unit	4M1	5.000
15	18	--	< 5	--	A	**4AV31 00-2EB00-0A**		1	1 unit	4M1	6.500
20	24	--	< 5	--	A	**4AV32 00-2EB00-0A**		1	1 unit	4M1	8.000
30	36	--	< 5	--	A	**4AV33 00-2EB00-0A**		1	1 unit	4M1	11.000
40	48	--	< 5	--	A	**4AV34 00-2FB00-0A**		1	1 unit	4M1	17.000
50	60	--	< 5	--	A	**4AV35 00-2FB00-0A**		1	1 unit	4M1	21.000
Additional capacitors (aluminum electrolyte)											
10	12	10 000	2	1	X	**4AV30 00-2EB00-0C**		1	1 unit	4M1	5.200
15	18	10 000	3	0.6	X	**4AV31 00-2EB00-0C**		1	1 unit	4M1	6.700
20	24	10 000	3	0.4	X	**4AV32 00-2EB00-0C**		1	1 unit	4M1	8.200
30	36	10 000	4	0.7	X	**4AV33 00-2EB00-0C**		1	1 unit	4M1	11.200
40	48	10 000	3	0.7	X	**4AV34 00-2FB00-0C**		1	1 unit	4M1	17.200
50	60	10 000	4	0.3	X	**4AV35 00-2FB00-0C**		1	1 unit	4M1	21.200

For online configurator see www.siemens.com/sirius/configurators.

1) The delivery time class depends on the quantity, see page 15/6 "Options".

Rated input voltage U_{1N} 400 (415) V with tapping ±20 V, rated output voltage U_{2N} 24 V DC

Rated output current I_d 60 °C/B EN 61558	Rated output current I_d 40 °C/B EN 61558	Ripple	DT[1)]	Screw terminals/ flat connectors / Configurator — Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.
A DC	A DC	%							kg
Standard version									
--	25	< 5	A	**4AV51 25-2EB00-0A**		1	1 unit	4M1	10.300
--	35	< 5	A	**4AV51 35-2EB00-0A**		1	1 unit	4M1	14.500

For online configurator see www.siemens.com/sirius/configurators.

1) The delivery time class depends on the quantity, see page 15/6 "Options".

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Rated input voltage U_{1N} 500-400 (415) V, rated output voltage U_{2N} 24 V DC

cULus,

Rated output current I_d 60 °C/B EN 61558 cULus	Rated output current I_d 40 °C/B EN 61558	Additional capacitance	Ripple	Back-up time for $U_1 = U_{1N}$ −10 %	DT[1]	Screw terminals/ flat connectors / Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.
A DC	A DC	µF	%	ms							kg
Standard version											
15	18	--	< 5	--	A	**4AV31 01-2EB00-0A**		1	1 unit	4M1	6.500
30	36	--	< 5	--	A	**4AV33 01-2EB00-0A**		1	1 unit	4M1	11.000
50	60	--	< 5	--	A	**4AV35 01-2FB00-0A**		1	1 unit	4M1	21.000
Additional capacitors (aluminum electrolyte)											
15	18	10 000	3	0.6	X	**4AV31 01-2EB00-0C**		1	1 unit	4M1	6.700
30	36	10 000	4	0.7	X	**4AV33 01-2EB00-0C**		1	1 unit	4M1	11.200
50	60	10 000	4	0.3	X	**4AV35 01-2FB00-0C**		1	1 unit	4M1	21.200

For online configurator see www.siemens.com/sirius/configurators.

[1] The delivery time class depends on the quantity, see page 15/6 "Options".

Rated input voltage U_{1N} 500-400 (415) V, rated output voltage U_{2N} 24 V DC

Rated output current I_d 60 °C/B EN 61558	Rated output current I_d 40 °C/B EN 61558	Additional capacitance	Ripple	Back-up time for $U_1 = U_{1N}$ −10 %	DT[1]	Screw terminals/ flat connectors / Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.
A DC	A DC	µF	%	ms							kg
Standard versions (unfiltered)											
80	96	--	< 5	--	A	**4AV36 01-2EB00-0A**		1	1 unit	4M1	32.000
150	180	--	< 5	--	X	**4AV38 01-2EB00-0A**		1	1 unit	4M1	46.000
Additional capacitors (aluminum electrolyte)											
80	96	2 × 10 000	4	0.2	X	**4AV36 01-2EB00-0C**		1	1 unit	4M1	32.400
150	180	3 × 10 000	4	0.2	X	**4AV38 01-2EB00-0C**		1	1 unit	4M1	46.600

For online configurator see www.siemens.com/sirius/configurators.

[1] The delivery time class depends on the quantity, see page 15/6 "Options".

Rated input voltage U_{1N} 575 (600)-500-460 (480)-400 (415)-230 (240)-200 V, rated output voltage U_{2N} 24 V DC

cULus,

Rated output current I_d 60 °C/B EN 61558 cULus	Rated output current I_d 40 °C/B EN 61558	Additional capacitance	Ripple	Back-up time for $U_1 = U_{1N}$ −10 %	DT[1]	Screw terminals/ flat connectors / Configurator / Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.
A DC	A DC	µF	%	ms							kg
Standard version											
9	11	--	< 5	--	A	**4AV30 02-2EB00-0A**		1	1 unit	4M1	5.000
13.5	16	--	< 5	--	A	**4AV31 02-2EB00-0A**		1	1 unit	4M1	6.500
18	21.5	--	< 5	--	A	**4AV32 02-2EB00-0A**		1	1 unit	4M1	8.000
27	32.5	--	< 5	--	A	**4AV33 02-2EB00-0A**		1	1 unit	4M1	11.000
36	43	--	< 5	--	A	**4AV34 02-2FB00-0A**		1	1 unit	4M1	17.000
45	54	--	< 5	--	A	**4AV35 02-2FB00-0A**		1	1 unit	4M1	21.000
Additional capacitors (aluminum electrolyte)											
9	11	10 000	2	1	X	**4AV30 02-2EB00-0C**		1	1 unit	4M1	5.200
13.5	16	10 000	3	0.6	X	**4AV31 02-2EB00-0C**		1	1 unit	4M1	6.700
18	21.5	10 000	3	0.4	X	**4AV32 02-2EB00-0C**		1	1 unit	4M1	8.200
27	32.5	10 000	4	0.7	X	**4AV33 02-2EB00-0C**		1	1 unit	4M1	11.200
36	43	10 000	3	0.7	X	**4AV34 02-2FB00-0C**		1	1 unit	4M1	17.200
45	54	10 000	4	0.3	X	**4AV35 02-2FB00-0C**		1	1 unit	4M1	21.200

For online configurator see www.siemens.com/sirius/configurators.

[1] The delivery time class depends on the quantity, see page 15/6 "Options".

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SIRIUS 4AV98 power supplies, unfiltered, single-phase

Overview

The 4AV98 power supplies comprise single-phase safety transformers according to EN 61558-2-6 with downstream bridge connection rectifiers without capacitor filtering.

- Rated output voltage U_d 24 V DC
- Safety transformers according to EN 61558-2-6
-
- t_a = 50 °C/B
- Varistor suppressor circuit
- Short-circuit and overload protection on the output side with top-mounted fuse
- Ripple 48 %
- For more products see Industry Mall and Interactive Catalog CA 01 or www.mdexx.com.



SIRIUS 4AV98 06-6CB00-2N power supply

Application

The single-phase 4AV98 devices are especially suitable for supplying resistive and inductive loads whose operational voltages place no special demands with regard to ripple.

Rated power and rated current

The specifications in the selection tables are based on fixed reference conditions in which the devices have the rated power or rated current:

- Uninterrupted duty P_n
- Frequency AC 50 Hz to 60 Hz
- Installation altitude up to 1 000 m above sea level
- Degree of protection IP00
- Ambient temperature t_a

Ambient conditions

The devices are climate-proof for installation in rooms with an external climate according to DIN 50010.

Limit values:

- Ambient temperature
  - At rated power or rated current: +50 °C
  - Minimum value: –25 °C
- Relative air humidity
  - At +40 °C occasionally up to 100 %
  - Annual average up to 80 %
  - Occasional condensation possible

Selection and ordering data

Rated input voltage U_{1N} 230 V, rated output voltage U_d 24 V DC

Rated power P_{2N}	Voltage rise during no-load operation u_A	DT[1]	Screw terminals/ flat connectors Configurator Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.
W	%							kg
50	24	X	**4AV98 06-4CB00-2N**		1	1 unit	4M1	0.900
80	18	X	**4AV98 06-5CB00-2N**		1	1 unit	4M1	1.600
125	14	X	**4AV98 06-6CB00-2N**		1	1 unit	4M1	2.300
200	11	X	**4AV98 06-7CB00-2N**		1	1 unit	4M1	3.300
315	10	X	**4AV98 06-8CB00-2N**		1	1 unit	4M1	4.900
500	9	X	**4AV98 00-5CB00-2N**		1	1 unit	4M1	10.000

For online configurator see www.siemens.com/sirius/configurators.

[1] The delivery time class depends on the quantity, see page 15/6 "Options".

Rated input voltage U_{1N} 400 V, rated output voltage U_d 24 V DC

Rated power P_{2N}	Voltage rise during no-load operation u_A	DT[1]	Screw terminals/ flat connectors Configurator Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.
W	%							kg
50	24	X	**4AV98 07-0CB00-2N**		1	1 unit	4M1	0.900
80	18	X	**4AV98 07-1CB00-2N**		1	1 unit	4M1	1.600
125	14	X	**4AV98 07-2CB00-2N**		1	1 unit	4M1	2.300
200	11	X	**4AV98 07-3CB00-2N**		1	1 unit	4M1	3.300
315	10	X	**4AV98 07-4CB00-2N**		1	1 unit	4M1	4.900
500	9	X	**4AV98 02-5CB00-2N**		1	1 unit	4M1	10.000

For online configurator see www.siemens.com/sirius/configurators.

[1] The delivery time class depends on the quantity, see page 15/6 "Options".

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

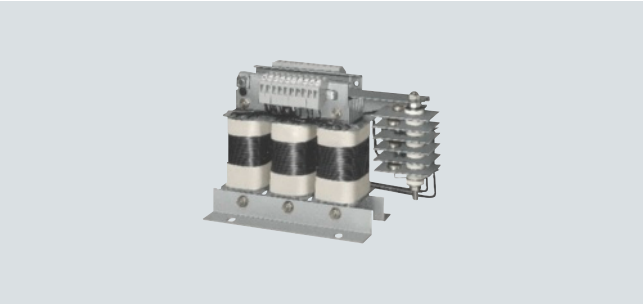
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SIRIUS 4AV96 power supplies, unfiltered, three-phase

Overview

The 4AV96 power supplies comprise three-phase safety transformers according to EN 61558-2-6 with downstream bridge connection rectifiers without capacitor filtering.

- Rated output voltage U_d 30-27-24 V DC
- Safety transformers according to EN 61558-2-6
-
- t_a = 50 °C/B
- Shield winding between input and output winding
- Varistor suppressor circuit
- Designed and approved according to VW equipment specification
- Ripple < 5 %
- For more products see Industry Mall and Interactive Catalog CA 01 or www.mdexx.com.



SIRIUS 4AV96 04-.CB00 power supply

Application

VW approval

The 4AV96 three-phase units are designed and approved in accordance with the VW equipment specifications.

Rated power and rated current

The specifications in the selection tables are based on fixed reference conditions in which the devices have the rated power or rated current:

- Uninterrupted duty P_n
- Frequency AC 50 Hz to 60 Hz
- Installation altitude up to 1 000 m above sea level
- Degree of protection IP00
- Ambient temperature t_a

Ambient conditions

The devices are climate-proof for installation in rooms with an external climate according to DIN 50010.

Limit values:

- Ambient temperature
  - At rated power or rated current: +50 °C
  - Minimum value: –25 °C
- Relative air humidity
  - At +40 °C occasionally up to 100 %
  - Annual average up to 80 %
  - Occasional condensation possible

Technical specifications

Primary-side short-circuit and overload protection

Rectifier unit	Rated output current I_d	Primary-side short-circuit and overload protection for the rectifier with motor starter protector	
		Motor starter protectors	Set value at 400 V AC
Type	A DC	Type	A
4AV96 04-1CB00-2N	4	3RV20 11-0EA10	0.28
4AV96 04-5CB00-2N	12	3RV20 11-0JA10	0.8
4AV96 04-2CB00-2N	25	3RV20 11-1CA10	1.8

Selection and ordering data

Rated input voltage U_{1N} 400 V with tapping ±5 %, rated output voltage U_d 30-27-24 V DC

Rated output current I_d	Voltage rise during no-load operation u_A	VW material No.	DT[1]	**Screw terminals/ flat connectors**		PU (UNIT, SET, M)	PS*	PG	Cu weight per PU approx.
				Configurator					
				Order No.	Price per PU				
A DC	V								kg
4	3.5	6142	X	**4AV96 04-1CB00-2N**		1	1 unit	4M1	3.500
12	3.3	6141	X	**4AV96 04-5CB00-2N**		1	1 unit	4M1	6.900
25	3.1	6145	X	**4AV96 04-2CB00-2N**		1	1 unit	4M1	10.600

For online configurator see www.siemens.com/sirius/configurators.

[1] The delivery time class depends on the quantity, see page 15/6 "Options".

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LOGO!Power single-phase

Overview

With LOGO!Power power supplies it is possible not only for 24 V loads to benefit from the advantages of a stabilized power supply - loads with a 5 V, 12 V and 15 V supply voltage can now do likewise. For each of these three voltages there are two levels of current available, and for 24 V there is even a 4 A version in a width of only 90 mm.

The primary switched power supplies can be used for a wide range of different applications: In automation systems for industry and buildings, solar technology, measurement and closed-loop control, sensors, for supplying electronic circuits in TTL technology, etc.

Advantages of LOGO!Power power supplies:

- 2 performance classes each with 5 V, 12 V and 15 V; 3 performance classes with 24 V
- Compact design with 54 mm, 72 mm or 90 mm width
- Flat step profile, ideal also for mounting in small distribution boards
- Design adapted to LOGO!
- Constant current in case of overloading, for reliable connection of difficult loads such as DC/DC transformers and motors
- Large setting range for the output voltage, using potentiometers which are easy to reach from the front
- Green LED indicator for "output voltage OK"
- For universal use – in industry and public low-voltage systems – worldwide
- Wide range input from 85 to 264 V AC for virtually any network in the world
- Large temperature range from –20 °C to +70 °C for universal use
- High EMC standards
- Extensive approvals and certifications according to CE, UL/cUL, FM, GL (shipbuilding) and ATEX
- Constant stabilized output voltage protects connected loads
- Parallel switching option permitted to increase performance

Selection and ordering data



Enclosure 54 mm wide



Enclosure 72 mm wide



Enclosure 90 mm wide

Version	Inputs Rated voltage $U_{e\ Rated}$	Outputs Rated voltage $U_{a\ Rated}$	Rated current $I_{a\ Rated}$	Dimensions (W x H x D) mm	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Power supplies 5 V										
3 A	100 … 240 V AC (85 … 264 V)	5 V DC ±3 %	3 A	54 x 90 x 55	A	**6EP1 311-1SH03**		1	1 unit	583
6.3 A	100 … 240 V AC (85 … 264 V)	5 V DC ±3 %	6.3 A	72 x 90 x 55	A	**6EP1 311-1SH13**		1	1 unit	583
Power supplies 12 V										
1.9 A	100 … 240 V AC (85 … 264 V)	12 V DC ±3 %	1.9 A	54 x 90 x 55	A	**6EP1 321-1SH03**		1	1 unit	583
4.5 A	100 … 240 V AC (85 … 264 V)	12 V DC ±3 %	4.5 A	72 x 90 x 55	A	**6EP1 322-1SH03**		1	1 unit	583
Power supplies 15 V										
1.9 A	100 … 240 V AC (85 … 264 V)	15 V DC ±3 %	1.9 A	54 x 90 x 55	A	**6EP1 351-1SH03**		1	1 unit	583
4 A	100 … 240 V AC (85 … 264 V)	15 V DC ±3 %	4 A	72 x 90 x 55	A	**6EP1 352-1SH03**		1	1 unit	583
Power supplies 24 V										
1.3 A	100 … 240 V AC (85 … 264 V)	24 V DC ±3 %	1.3 A	54 x 90 x 55	A	**6EP1 331-1SH03**		1	1 unit	583
2.5 A	100 … 240 V AC (85 … 264 V)	24 V DC ±3 %	2.5 A	72 x 90 x 55	A	**6EP1 332-1SH43**		1	1 unit	583
4 A	100 … 240 V AC (85 … 264 V)	24 V DC ±3 %	4 A	90 x 90 x 55	A	**6EP1 332-1SH52**		1	1 unit	583

For other units and versions see Catalog KT 10.1.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

The new SITOP PSU100C power supply series for the low performance range features an extremely space-saving, narrow design which makes it suitable in particular for distributed applications in switchboxes or small control cabinets. The switching power supply units are characterized by low power loss over the entire load range. With losses being extremely small even in no-load operation, these units are predestined for example for supplying machines and plants which are often operated in standby mode. The switching power supply units have a wide range input for AC and DC networks, with plug-in terminals which facilitate easy electrical connection.

- 24 V/0.6 A, 1.3 A, 2.5 A and 4 A; 12 V/2 A and 6.5 A
- Small mounting area thanks to narrow design
- Wide range input for 85 V to 264 V AC and 110 V to 300 V DC
- High degree of efficiency over the entire load range, up to 28 % energy savings compared to comparable units
- Low energy consumption in no-load operation and stand-by, possible energy savings of up to 53 %
- Adjustable output voltage
- Green LED for "output voltage OK"
- Plug-in terminals
- Temperature range from -20 °C to +70 °C
- Comprehensive certification, e.g. ATEX

Selection and ordering data

	Version	Inputs Rated voltage $U_{e\ Rated}$	Outputs Rated voltage $U_{a\ Rated}$	Rated current $I_{a\ Rated}$	Dimensions (W x H x D) mm	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Power supplies 24 V											
 6EP1 331-5BA00	**0.6 A**	100 ... 230 V AC (85 ... 264 V AC/ 110 ... 300 V DC)	24 V DC ±3 %	0.6 A	22.5 x 80 x 100	A	**6EP1 331-5BA00**		1	1 unit	584
 6EP1 331-5BA10	**1.3 A**	100 ... 230 V AC (85 ... 264 V AC/ 110 ... 300 V DC)	24 V DC ±3 %	1.3 A	30 x 80 x 100	A	**6EP1 331-5BA10**		1	1 unit	584
 6EP1 332-5BA00	**2.5 A**	100 ... 230 V AC (85 ... 264 V AC/ 110 ... 300 V DC)	24 V DC ±3 %	2.5 A	45 x 80 x 100	A	**6EP1 332-5BA00**		1	1 unit	584
 6EP1 332-5BA10	**4 A**	100 ... 230 V AC (85 ... 264 V AC/ 110 ... 300 V DC)	24 V DC ±3 %	4 A	52.5 x 80 x 100	A	**6EP1 332-5BA10**		1	1 unit	584
Power supplies 12 V											
 6EP1 321-5BA00	**2 A**	100 ... 230 V AC (85 ... 264 V AC/ 110 ... 300 V DC)	12 V DC ±3 %	2 A	30 x 80 x 100	A	**6EP1 321-5BA00**		1	1 unit	584
 6EP1 322-5BA10	**6.5 A**	100 ... 230 V AC (85 ... 264 V AC/ 110 ... 300 V DC)	12 V DC ±3 %	6.5 A	52.5 x 80 x 100	A	**6EP1 322-5BA10**		1	1 unit	584

For other units and versions see Catalog KT 10.1.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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SITOP smart, single-phase and three-phase

Overview

Small in size, big in performance. SITOP smart requires little room on the standard mounting rail and offers high functionality at an attractive price. With its good-natured overload behavior, even loads with a high inrush current can be smoothly switched on. If required, 50 % extra power can be supplied for a duration of 5 s. In addition, the 24 V versions will permanently supply 120 % of the rated power provided the ambient temperature does not exceed 45 °C.

- For 24 V standard applications up to 40 A
- Compact design for small mounting area, no lateral clearance required
- Easy standard rail mounting
- Smooth switching on of loads with high inrush current such as DC/DC converters and motors
- More performance thanks to permanent 120 % of rated power up to an ambient temperature of 45 °C (24 V versions)
- Large setting range for the output voltage, using potentiometers which are easy to reach from the front
- Parallel switching option to increase performance
- Extensive certifications according to UL, CSA, GL (Germanischer Lloyd) and ATEX directives (Atmosphère Explosible)
- For universal use – in industry and public low-voltage systems – worldwide
- Can be combined with SITOP expansion modules and the uninterruptible power supplies (24 V versions)
- Versions for use in severe ambient conditions (SIPLUS extreme)

Selection and ordering data

	Version	Inputs Rated voltage $U_{e\ Rated}$	Outputs Rated voltage $U_{a\ Rated}$	Rated current $I_{a\ Rated}$	Dimensions (W x H x D) mm	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Power supplies 24 V											
 6EP1 332-2BA10	Limitation of input current harmonics according to EN 61000-3-2										
	2.5 A	120/230 V AC (85 ... 132 V AC/ 170 ... 264 V AC)	24 V DC ±3 %	2 A	32.5 x 125 x 125	▶	**6EP1 332-2BA10**		1	1 unit	582
 6EP1 333-2.A10	Limitation of input current harmonics according to EN 61000-3-2										
	5 A	120/230 V AC (85 ... 132 V AC/ 170 ... 264 V AC)	24 V DC ±3 %	5 A	50 x 125 x 125	▶	**6EP1 333-2BA01**		1	1 unit	582
	5 A	120/230 V AC (85 ... 132 V AC/ 170 ... 264 V AC)	24 V DC ±3 %	5 A	50 x 125 x 125	▶	**6EP1 333-2AA01**		1	1 unit	582
 6EP1 334-2BA01, 6AG1334-2BA01-4AA0	Limitation of input current harmonics according to EN 61000-3-2										
	10 A	120/230 V AC (85 ... 132 V AC/ 170 ... 264 V AC)	24 V DC ±3 %	10 A	70 x 125 x 125						
	• SITOP smart					▶	**6EP1 334-2BA01**		1	1 unit	582
	• SIPLUS extreme for use in severe ambient conditions (corrosive gases, salt spray, condensation, dust, biologically active substances, except fauna)					D	**6AG1334-2BA01-4AA0**		1	1 unit	471
 6EP1 334-2AA01	**10 A**	120/230 V AC (85 ... 132 V AC/ 170 ... 264 V AC)	24 V DC ±3 %	10 A	70 x 125 x 125	▶	**6EP1 334-2AA01**		1	1 unit	582
 6EP1 434-2BA10	**10 A**	3 AC 400 ... 500 V (3 AC 340 ... 550 V)	24 V DC ±3 %	10 A	90 x 145 x 150	A	**6EP1 434-2BA10**		1	1 unit	582
 6EP1 436-2BA10	**20 A**	3 AC 400 ... 500 V (3 AC 340 ... 550 V)	24 V DC ±3 %	20 A	90 x 145 x 150	A	**6EP1 436-2BA10**		1	1 unit	582
 6EP1 437-2BA20	**40 A**	3 AC 400 ... 500 V (3 AC 360 ... 550 V)	24 V DC ±3 %	40 A	150 x 145 x 150	A	**6EP1 437-2BA20**		1	1 unit	582

For other units and versions see Catalog KT 10.1.

For more information on SIPLUS extreme power supplies see www.siemens.com/siplus-extreme.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

Compact basic units for single-phase, two-phase or three-phase connections and output currents from 5 A to 40 A form the basis of the SITOP modular stabilized power supplies. Depending on the requirements, SITOP expansion modules can be connected in addition.

The compact design of the primary switched power supply requires only a small mounting surface. The rugged metal enclosure is also suitable for the harshest industrial applications. The standard mounting rail fixture is made likewise of metal. Mounting is therefore fast, easy and vibration-proof. Reliability and quality are further characteristics of the electronic design.

The large input voltage range and the international certifications enable operation in virtually any network worldwide. The single-phase basic units 5 A and 10 A have an ultra-wide input range up to 550 V, which even enables connection to 2 phases.

- Rugged metal enclosure for standard rail mounting
- 5 A and 10 A units with ultra-wide input range up to 500 V AC for single-phase and two-phase operation
- 20 A and 40 A units with wide input range for single-phase or three-phase connection.
- Limitation of input current harmonics according to EN 61000-3-2; (except 6EP1 337-3BA00)
- Adjustable output voltage up to 28.8 V
- 3-way status LED
- Selectable short-circuit response, constant current or latching disconnection
- Changeover for parallel operation
- 20 A and 40 A units with single-phase and three-phase connection, new 20 A and 40 A devices in compact design (70 mm and 150 mm wide)
- Can be combined with SITOP expansion modules and the uninterruptible power supplies
- Versions for use in severe ambient conditions (SIPLUS extreme)

Selection and ordering data

	Version	Inputs Rated voltage $U_{e\ Rated}$	Outputs Rated voltage $U_{a\ Rated}$	Rated current $I_{a\ Rated}$	Dimensions (W x H x D) mm	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Power supplies 24 V											
 6EP1 331-3BA00, 6AG1933-3BA00-2AA0	**5 A**	120/230 ... 500 V AC (85 ... 264 V AC/ 176 ... 550 V AC)	24 V DC ±3 %	5 A	70 x 125 x 125						
	• SIPLUS modular					►	**6EP1 333-3BA00**		1	1 unit	581
	• SIPLUS extreme for use in severe ambient conditions (corrosive gases, salt spray, condensation, dust, biologically active substances, except fauna) and in the extended temperature range -40 ... +70 °C					D	**6AG1933-3BA00-2AA0**		1	1 unit	471
 6EP1 334-3BA00, 6AG1334-3BA00-2AA0	**10 A**	120/230 ... 500 V AC (85 ... 264 V AC/ 176 ... 550 V AC)	24 V DC ±3 %	10 A	90 x 125 x 125						
	• SIPLUS modular					►	**6EP1 334-3BA00**		1	1 unit	581
	• SIPLUS extreme for use in severe ambient conditions (corrosive gases, salt spray, condensation, dust, biologically active substances, except fauna) and in the extended temperature range -40 ... +60 °C					D	**6AG1334-3BA00-2AA0**		1	1 unit	471
 6EP1 336-3BA10	**20 A**	120/230 ... 500 VAC (85 ... 275 V AC or 88 ... 350 V DC)	24 V DC ±3 %	20 A	90 x 125 x 125	A	**6EP1 336-3BA10**		1	1 unit	581
 6EP1 336-3BA00, 6AG1336-3BA00-.AA0	**20 A**	120/230 V AC (85 ... 132 V AC/ 176 ... 264 V AC)	24 V DC ±3 %	20 A	160 x 125 x 125						
	• SITOP modular					►	**6EP1 336-3BA00**		1	1 unit	581
	• SIPLUS extreme for use in severe ambient conditions (corrosive gases, salt spray, condensation, dust, biologically active substances, except fauna)					D	**6AG1936-3BA00-4AA0**		1	1 unit	471
	- and in the extended temperature range: -40 ... +70 °C					D	**6AG1336-3BA00-7AA0**		1	1 unit	471

For more power supplies 24 V and 48 V see next page.

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SITOP modular
single-, two- and three-phase

	Version	Inputs Rated voltage $U_{e\ Rated}$	Outputs Rated voltage $U_{a\ Rated}$	Rated current $I_{a\ Rated}$	Dimensions (W x H x D) mm	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Power supplies 24 V (continued)											
 6EP1 436-3BA00, 6AG1436-3BA00-7AA0	**20 A**	3 AC 400 ... 500 V (3 AC 320 ... 550 V)	24 V DC ±3 %	20 A	160 x 125 x 125						
	• SITOP modular					►	**6EP1 436-3BA00**		1	1 unit	581
	• SIPLUS extreme for use in severe ambient conditions (corrosive gases, salt spray, condensation, dust, biologically active substances, except fauna) and in the extended temperature range -25 ... +70 °C					D	**6AG1436-3BA00-7AA0**		1	1 unit	471
 6EP1 436-3BA10	**20 A**	3 AC 400 ... 500 V (3 AC 320 ... 575 V)	24 V DC ±3 %	20 A	70 x 125 x 125	A	**6EP1 436-3BA10**		1	1 unit	581
 6EP1 337-3BA00	**40 A**	120/230 V AC (85 ... 132 V AC/ 176 ... 264 V AC)	24 V DC ±3 %	40 A	240 x 125 x 125	►	**6EP1 337-3BA00**		1	1 unit	581
 6EP1 437-3BA10	**40 A**	3 AC 400 ... 500 V (3 AC 320 ... 575 V)	24 V DC ±3 %	40 A	150 x 125 x 150	A	**6EP1 437-3BA10**		1	1 unit	581
 6EP1 437-3BA00	**40 A**	3 AC 400 ... 500 V (3 AC 320 ... 550 V)	24 V DC ±3 %	40 A	240 x 125 x 125	►	**6EP1 437-3BA00**		1	1 unit	581
Power supplies 48 V											
 6EP1 331-3BA00	**10 A**	3 AC 400 ... 500 V (3 AC 320 ... 575 V)	48 V DC ±3 %	10 A	70 x 125 x 125	A	**6EP1 456-3BA00**		1	1 unit	581
 6EP1 334-3BA00	**20 A**	3 AC 400 ... 500 V (3 AC 340 ... 550 V)	48 V DC ±3 %	20 A	240 x 125 x 125	A	**6EP1 434-2BA10**		1	1 unit	582

For other units and versions see Catalog KT 10.1.

For more information about SIPLUS extreme see www.siemens.com/siplus-extreme.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

SITOP flexi with steplessly adjustable output voltage: one standard unit for various special voltages.

Selection and ordering data

	Version	Inputs Rated voltage $U_{e\ Rated}$	Outputs Rated voltage $U_{a\ Rated}$	Rated current $I_{a\ Rated}$	Dimensions (W x H x D) mm	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Power supplies 3 V to 52 V											
 6EP1 353-2BA00	Limitation of input current harmonics according to EN 61000-3-2; adjustable output voltage 3 V to 52 V, output max. 10 A or 120 W										
	Max. 10 A or 120 W	120/230 V AC (85 ... 132 V/ 170 ... 264 V)	3 ... 52 V DC ±1 %	10 A	75 x 125 x 125 ►		**6EP1 353-2BA00**		1	1 unit	582

For other units and versions see Catalog KT 10.1.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Expansion modules

Overview

The SITOP expansion modules offer further functions:

The signaling module can be snapped onto the side of the 6EP1 ...-3BA00 basic unit; with floating signaling contacts "Output voltage OK" and "Ready OK"; with signal input for remote ON/OFF switching of the basic unit.

The redundancy module uses diodes to disconnect the basic units from one another so that a redundant 24 V power supply can be constructed.

The two SITOP PSE200U selectivity modules and the SITOP select diagnostics module are used in combination with 24 V power supplies for distributing the load current among up to 4 current branches per module and for monitoring the individual partial currents. Overloads or short circuits in individual branches are selectively switched off and the remaining load current paths remain unaffected. Individually adjustable rated current, LED, group alarm contact, standard rail mounting.

The buffer module bridges mains interruptions in the range of seconds. Buffer time 200 ms at 40 A, up to 1.6 s at 5 A load current. Multiplication possible through parallel circuit, maximum buffer time 10 s.

Versions for use in severe ambient conditions (SIPLUS extreme) are available.

Selection and ordering data

	Inputs Rated voltage $U_{e\ Rated}$	Outputs Rated voltage $U_{a\ Rated}$	Rated current $I_{a\ Rated}$	Dimensions (W × H × D) mm	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Signaling modules										
	--	--	--	25 × 125 × 125						
	• SITOP signaling modules				►	**6EP1 961-3BA10**		1	1 unit	581
	• SIPLUS extreme									
	- For use in severe ambient conditions (corrosive gases, salt spray, condensation, dust, biologically active substances, except fauna) and in the extended temperature range -25 ... +70 °C				D	**6AG1961-3BA10-7AA0**		1	1 unit	471
6EP1 961-3BA10, 6AG1961-3BA10-.AA0	- With hard gold-plated contacts				D	**6AG1961-3BA10-6AA0**		1	1 unit	471
Redundancy modules										
	24 V DC (24 ... 28.8 V)	U_e – approx. 0.5 V	20 A	70 × 125 × 125						
	• SITOP redundancy modules				A	**6EP1 961-3BA21**		1	1 unit	588
	• SIPLUS extreme for use in severe ambient conditions (corrosive gases, salt spray, condensation, dust, biologically active substances, except fauna)				D	**6AG1961-3BA21-4AX0**		1	1 unit	471
6EP1 961-3BA21, 6AG1961-3BA01-7AA0	- and in the extended temperature range: -40 ... +70 °C				D	**6AG1961-3BA21-7AX0**		1	1 unit	471
SITOP PSE200U selectivity modules										
	24 V DC (22 ... 30 V)	--	4 x 3 A (0.5 ... 3 A)	72 × 80 × 72	A	**6EP1 961-2BA11**		1	1 unit	586
	24 V DC (22 ... 30 V)	--	4 x 10 A (3 ... 10 A)	72 × 80 × 72	A	**6EP1 961-2BA21**		1	1 unit	586
6EP1 961-2BA.1										
SITOP select diagnostics modules										
	24 V DC (24 ... 28.8 V)	--	4 x 10 A (2 ... 10 A)	72 × 90 × 90	►	**6EP1 961-2BA00**		1	1 unit	586
6EP1 961-2BA00										
Buffer modules										
	24 V DC (24 ... 28.8 V)	U_e – approx. 1 V	40 A	70 × 125 × 125						
	• SITOP buffer modules				A	**6EP1 961-3BA01**		1	1 unit	588
	• As SIPLUS extreme version for use in severe ambient conditions (corrosive gases, salt spray, condensation, dust, biologically active substances, except fauna) and in the extended temperature range -25 ... +70 °C				D	**6AG1961-3BA01-7AA0**		1	1 unit	471
6EP1 961-3BA01, 6AG1961-3BA01-7AA0										

For other units and versions see Catalog KT 10.1.

For more information on SIPLUS extreme power supplies see www.siemens.com/siplus-extreme.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview

To combat prolonged mains failures the 24 V SITOP power supply units can be upgraded into a DC-UPS uninterruptible power supply.

SITOP offers two systems for this purpose:

- Battery modules as energy stores which provide a buffer in the hours range
- Capacitors for 24 V buffering in the minutes range

The combination is used for example in machine-tool building, in the textile industry, on all types of production lines and filling plants, and in conjunction with 24 V industrial PCs. They prevent the negative consequences which often result from mains failures.

For the SIMATIC IPC this means that all running applications, including the operating system, can be shut down under stabilized conditions.

The DC-UPS 24 V uninterruptible power supply with battery modules is comprised of DC-UPS modules with 6 A, 15 A or 40 A output current and the battery modules 1.2 Ah, 3.2 Ah, 7 Ah and 12 Ah (containing lead rechargeable batteries with corrosion-resistant lead-calcium high-performance grid plates and glass fiber fleece) and 2.5 Ah (containing "high-temperature rechargeable batteries" type Reinblei).

Versions for use in severe ambient conditions (SIPLUS extreme) are available.

Selection and ordering data

	Version	Inputs Rated voltage $U_{e\ Rated}$	Outputs Rated voltage $U_{a\ Rated}$	Rated current $I_{a\ Rated}$	Dimensions (W × H × D) mm	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
DC UPS modules											
 6EP1 931-2DC..	**6 A**	24 V DC (22 ... 29 V)	24 V DC (mains operation: 21.5 ... 28.5 V, battery operation: 27.0 ... 18.5 V)	6 A	50 × 125 × 125						
	• SITOP DC UPS modules					▶	**6EP1 931-2DC21**		1	1 unit	585
	- With serial interface					▶	**6EP1 931-2DC31**		1	1 unit	585
	- With USB interface					▶	**6EP1 931-2DC42**		1	1 unit	585
 6EP1 931-2EC.., 6AG1931-3EC21-2AA0	**15 A**	24 V DC (22 ... 29 V)	24 V DC (mains operation: 21.5 ... 28.5 V, battery operation: 27.0 V ... 18.5 V)	15 A	50 × 125 × 125						
	• SITOP DC UPS modules					▶	**6EP1 931-2EC21**		1	1 unit	585
	- With serial interface					▶	**6EP1 931-2EC31**		1	1 unit	585
	- With USB interface					▶	**6EP1 931-2EC42**		1	1 unit	585
	• SIPLUS extreme for use in severe ambient conditions (corrosive gases, salt spray, condensation, dust, biologically active substances, except fauna) and in the extended temperature range -25 ... +60 °C					D	**6AG1931-2EC21-2AA0**		1	1 unit	471
 6EP1 931-2FC.., 6AG1931-3FC21-7AA0	**40 A**	24 V DC (22 ... 29 V)	24 V DC (mains operation: 21.5 ... 28.5 V, battery operation: 27.0 ... 18.5 V)	40 A	102 x 125 x 125						
	• SITOP DC UPS modules					▶	**6EP1 931-2FC21**		1	1 unit	585
	- With USB interface					▶	**6EP1 931-2FC42**		1	1 unit	585
	• SIPLUS extreme for use in severe ambient conditions (corrosive gases, salt spray, condensation, dust, biologically active substances, except fauna) and in the extended temperature range -25 ... +70 °C					D	**6AG1931-2FC21-7AA0**		1	1 unit	471

For battery modules and capacitors see next page.

For more information on SIPLUS extreme power supplies see www.siemens.com/siplus-extreme.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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DC-UPS uninterruptible power supplies

Battery modules as energy stores

	Version	Charging voltage at +25 °C U_{Charge}	Output Rated voltage $U_{a\ Rated}$	Dimensions (W × H × D) mm	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
SITOP battery modules										
	For DC-UPS modules 6 A and 15 A									
 6EP1 935-6MC01	**1.2 Ah**	27.0 V DC	24 V DC (end of charge voltage: 27.0 V, exhaustive discharge protection: 18.5 V)	96 × 106 × 108	►	**6EP1 935-6MC01**		1	1 unit	585
 6EP1 935-6ME21	**2.5 Ah/ high temperature rechargeable battery**	27.7 V DC	24 V DC (end of charge voltage: 27.7 V, exhaustive discharge protection: 18.5 V)	265 × 151 × 91	►	**6EP1 935-6MD31**		1	1 unit	585
	3.2 Ah	27.0 V DC	24 V DC (end of charge voltage: 27.0 V, exhaustive discharge protection: 18.5 V)	190 × 151 × 82	►	**6EP1 935-6MD11**		1	1 unit	585
	For DC-UPS modules 6 A to 40 A									
	7 Ah	27.0 V DC	24 V DC (end of charge voltage: 27.0 V, exhaustive discharge protection: 18.5 V)	186 x 168 x 121	►	**6EP1 935-6ME21**		1	1 unit	585
	12 Ah	27.0 V DC		253 x 168 x 121	►	**6EP1 935-6MF01**		1	1 unit	585

Capacitors as energy stores

The maintenance-free SITOP UPS500 with capacitors are especially suited as buffers for use at high ambient temperatures.

The highly capacitive double-layer capacitors store enough energy to shut down PC-based systems safely. Another advantage of the double-layer capacitors is their shorter charging times.

For use in the control cabinet, the SITOP UPS500S 15 A basic unit comes in a 2.5 and 5 kWs version. For longer buffer times it is possible to attach up to three SITOP UPS501S expansion modules with 5 kWs. The SITOP UPS500P basic units have degree of protection IP65 and are suitable for distributed use.

	Version	Inputs Rated voltage $U_{e\ Rated}$	Outputs Rated voltage $U_{a\ Rated}$	Rated current $I_{a\ Rated}$	Dimensions (W × H × D) mm	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	SITOP UPS500S basic units 15 A										
 6EP1 933-2EC.1, 6EP1 935-5PG01	**2.5 kWs**	24 V DC (22 ... 29 V) infeed through SITOP 24 V DC	24 V DC ±3 %	15.2 A + approx. 2.3 A (charging mode)	120 × 125 × 125	A	**6EP1 933-2EC41**		1	1 unit	585
	5 kWs				120 × 125 × 125	A	**6EP1 933-2EC51**		1	1 unit	585
	SITOP UPS501 expansion modules										
	5 kWs	Infeed through basic unit	--	--	120 × 125 × 125	A	**6EP1 935-5PG01**		1	1 unit	585
	SITOP UPS500P basic units 7 A, degree of protection IP65										
 6EP1 933-2NC.1	**5 kWs**	24 V DC (22.5 ... 29 V) infeed through SITOP 24 V	24 V DC ±3 %	7 A + approx. 2 A (charging mode)	400 (without plug) x 80 x 80	A	**6EP1 933-2NC01**		1	1 unit	585
	10 kWs				400 (without plug) x 80 x 80	A	**6EP1 933-2NC11**		1	1 unit	585
	Connector set for SITOP UPS500P[1)] with input and output connector and assembled UPS cable in 2 m length					A	**6EP1 975-2ES00**		1	1 unit	585

[1)] The connector set must be ordered as optional equipment.

For other units and versions see Catalog KT 10.1.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



SIPLUS HCS heating control systems

SIPLUS HCS heating control systems: Industrial heating processes – very high precision and efficiency

In manufacturing processes where temperature plays a crucial role, deviations of just a few degrees can cause enormous quality problems. To counteract adverse effects and keep the reject rate as low as possible, extremely precise, reliable and individual control of resistive loads is imperative.

The SIPLUS HCS heating control systems feature well-engineered technology and were developed for the control and switching of heating elements in industry, such as quartz, ceramic, flash, halogen and infrared emitting devices.

They are of modular design (for central or distributed use) and can be adapted to the individual specific requirements.

Three heating control systems are available:

- HCS716I – the compact solution for small to medium ratings
- HCS724I – the powerful solution
- HCS300I – the industrial heating control system

Highlights at a glance:

- SIPLUS HCS: the powerful, modular heating control systems for controlling resistive loads
- High-precision, reliable system for centralized or distributed use
- Simple integration into existing automation systems such as SIMATIC and SIMOTION
- Flexible and easy – from planning right through to operation

For more information see Industry Mall or on the Internet at www.siemens.com/siplus-hcs.

Benefits

Minimized overhead for commissioning and service

- Low wiring outlay and service-friendly design of system components
- Simple configuration by means of efficient engineering software
- Intelligent diagnostics options for swift detection of faults

High security for investment as part of service-proven automation concepts

- Part of Totally Integrated Automation
- Integrated PROFIBUS interface for easy integration into existing automation systems such as SIMATIC and SIMOTION
- Worldwide support and service with comprehensive test equipment

Application

The SIPLUS HCS heating control systems are designed for use in the SIMATIC industrial automation system and the SIMOTION motion control system.

They are used above all in these industries and plants:

- Plastics industry: thermoforming, blow molding, injection molding and extrusion
- Automotive industry: drying tunnels in paintshops
- Food and beverage industry, e.g. baking lines, packing lines, PET blow molding plants

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General data

Overview



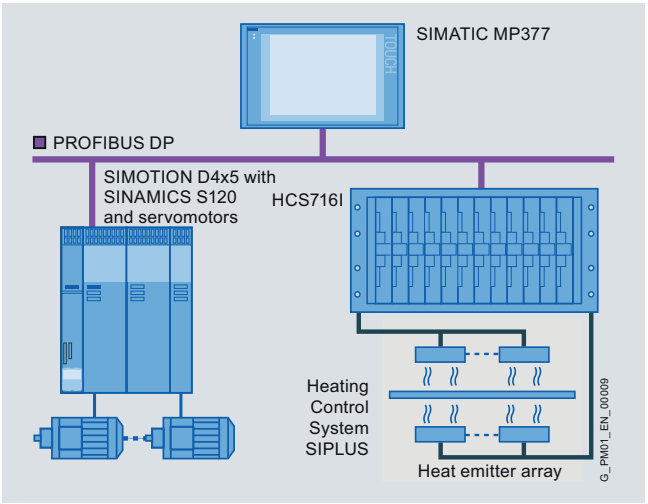
SIPLUS HCS716I heating control systems

The SIPLUS HCS716I heating control system was developed as a cost-optimized controller of heat emitter arrays in thermoforming machines. It is suitable for all generally available radiation devices such as quartz, quartz material, ceramic, halogen and infrared radiation devices.

The SIPLUS HCS716I can be used wherever low-cost, resistive loads of small to medium output require switching in an industrial environment.

The main components of the SIPLUS HCS716I heating control system are:

- 19" rack with bus pcb for accommodating up to 12 power output modules, control module and CPU
- Power output modules in double-height Eurocard format with 8/16 output channels
- Fan unit with three fans (option)
- Communication over PROFIBUS DP, e.g. with SIMOTION, SIMATIC S7, or industrial PC
- Plug-in card system on the front



Application example with SIMOTION, SINAMICS and SIPLUS HCS716I

Application

The SIPLUS HCS716I heating control system is used, for example, to switch the small and medium output heat emitter arrays in thermoforming machines, drying ovens and packaging machines.

The SIPLUS HCS716I is a distributed I/O unit (slave) that communicates over the PROFIBUS DP fieldbus with a higher-level control system (master) such as SIMATIC S7/SIMOTION.

Technical specifications

Climatic ambient conditions		
Operating temperature		
• Permissible range	°C	0 ... 55
• Relative humidity at 25 °C	%	95
• Temperature gradient	K/h	≤ 10
Storage temperature		
• Permissible range	°C	-40 ... 70
• Relative humidity at 25 °C	%	95
• Temperature gradient	K/h	≤ 20
Air pressure during operation		
• Minimum	hPa	860 (=1 500 m NN) (cooling efficiency limited at lower atmospheric pressure)
• Max.	hPa	1 080
Air pressure during storage		
• Minimum	hPa	660 (=3 500 m NN)
• Max.	hPa	1 080
Ventilation		Self ventilation or forced ventilation
Mechanical ambient conditions		
Vibrations during operation (stationary use)		IEC 60068-2-6 Test FC (10 cycles per axis)
• 10 ... 58 Hz	mm	0.075 amplitude
• 58 ... 150 Hz	m/s^2	9.8 (=1 *g* constant acceleration)
Vibrations during transport/ storage (in transport packaging)		IEC 60068-2-6 Test FC (10 cycles per axis)
• 5 ... 9 Hz	mm	3.5 amplitude
• 9 ... 500 Hz	m/s^2	9.8 (=1 *g* constant acceleration)
Shock during operation (stationary use)		IEC 60068-2-27 Test EA 150 $m/s^2 \approx 15$ *g*, half-sine Duration 11 ms, 3 impacts per axis and direction
Shock during transport/ storage (in transport packaging)		IEC 60068-2-29 Test EB 250 $m/s^2 \approx 25$ *g*, half-sine Duration 6 ms, 1 000 impacts per axis and direction
Electromagnetic compatibility (Heating control is installed in control cabinet)		
Noise suppression (emitted interference)		IEC 61000-6-4 Group 1; Class A
Interference immunity to conducted disturbance (burst)		EN 61000-4-4
• AC voltage power supply lines	kV	2 with coupling network
• Signal cables which exit the device	kV	1 with coupling tongs
Interference immunity to conducted disturbance (induced by radio-frequency fields)		Acc. to EN 61000-4-6: 10 V (0.15 ... 80 MHz)
Interference immunity to electrostatic discharge (ESD) (test conducted on frame only)		EN 61000-4-2
• Contact discharge	kV	4
• Air discharge	kV	8
Immunity to high-frequency interference	V/m V/m V/m	EN 61000-4-3 10 (80 ... 1 000 MHz) 3 (1.4 ... 2.0 GHz) 1 (2.0 ... 2.7 GHz)
Interference immunity to high-energy pulses (surge)		EN 61000-4-5
• Power supply lines, signal cables		
- Symmetrical	kV	1
- Asymmetrical	kV	2
• PROFIBUS cable		
- Asymmetrical	kV	1

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Overview

The rack is the mechanical framework of the SIPLUS HCS716I and contains all the modules required to control the power outputs.

Three different versions are available:

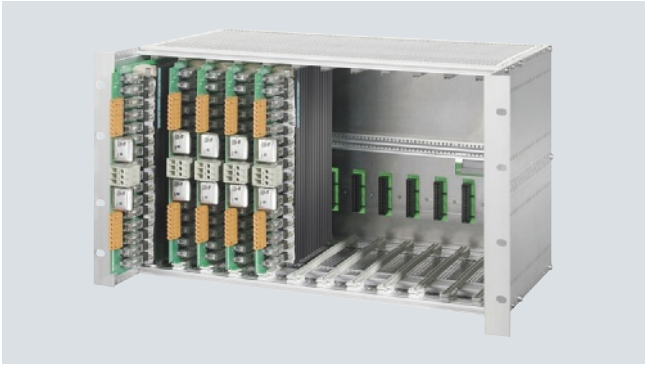
- Rack hinged frame
- Rack mounting frame
- Rack mounting frame without flange

Performance features

- Accommodation of up to 12 power output modules LA716, LA716I or LA716I HP
- Communication through PROFIBUS DP interface

Rack hinged frame

The CPU module and the control module are at the rear of the rack. This rack is suitable for installation in a hinged frame.



Rack mounting frame

The CPU module and the control module are on the right-hand side of the rack. This rack is suitable for direct installation in a control cabinet.



Rack mounting frame without flange

The CPU module and the control module are again on the right-hand side of the rack. This rack is suitable for installation in a control cabinet. In contrast to the mounting frame rack, this version has no mounting bracket (flange) at the front.



Technical specifications

Control supply voltage		
Input voltage		
• Rated value	V AC	230
• Permissible range	V AC	187 ... 264
Frequency		
• Rated value	Hz	50/60
• Permissible range	Hz	47 ... 63
Non-periodic overvoltage (according to EN 60204, Part 1)		
• Limit value		2 x U_{rated}
• Duration (single pulse)	ms	1.5
• Rise/fall time		500 ns ... 500 µs
Brief voltage interruption (initial state: lower limit of rated voltage = 187 V)		
• Interruption time, max.	ms	20
• Restoration time, min.	s	1
• Events per hour, max.		10
Power consumption of the control electronics, max.	W	15
Total switching capacity at $T_u \leq 45$ °C, max. (the total switching capacity depends on the power output module used, flow rate > 2 m/s)		
• Without ventilation	kW	67
• With ventilation	kW	176
Mechanical data		
Degree of protection		
• For device		IP00
• For control cabinet		At least IP20
Protection class for control cabinet		EN 61140 protection class I
Dimensions (W x H x D)		
• Hinged frame	mm	483 x 266 x 350
• Mounting frame	mm	510 x 310 x 330
• Mounting frame without flange	mm	510 x 310 x 290

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Racks

Selection and ordering data

	Number of slots	Type of power output connectable	Interface version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Rack hinged frame									
 6BK1 700-2AA00-0AA1	12	LA716 / LA716I / LA716I HP	PROFIBUS DP	C	**6BK1 700-2AA00-0AA1**		1	1 unit	478
Rack mounting frame									
 6BK1 700-2AA10-0AA1	12	LA716 / LA716I / LA716I HP	PROFIBUS DP	C	**6BK1 700-2AA10-0AA1**		1	1 unit	478
Rack mounting frame without flange									
 6BK1 700-2AA70-0AA0	12	LA716 / LA716I / LA716I HP	PROFIBUS DP	C	**6BK1 700-2AA70-0AA0**		1	1 unit	478

Accessories

Version	Type
Fan units	
• 230 V AC with 3 fans	On request [1]
• 115 … 230 V AC/24 V DC with 3 fans and speed monitoring	On request [1]

[1] Fan units are available from: HEITEC AG Eckental-Eschenau see www.heitec.de.

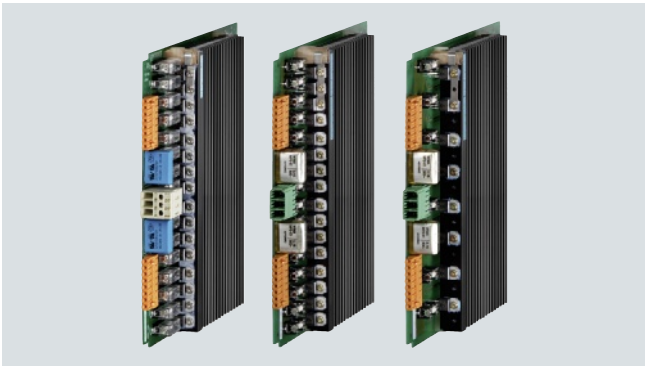
More information

For more information see Industry Mall or on the Internet at www.siemens.com/siplus-hcs.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



LA716, LA716I and LA716I HP power output modules

The power output modules are an important component of the heating control system.

Three different power output modules can be used depending on the application:

- LA716 – the universal version:
  It provides 16 channels for switching on resistive loads.
  A maximum of 650 W can be used for each output channel.
- LA716I – the innovative version:
  It also provides 16 channels for switching on resistive loads.
  A maximum of 1 150 W can be used for each output channel.
- LA716I HP – the high-power version:
  It provides 8 channels for switching on resistive loads. A maximum of 2 300 W can be used for each output channel.

Technical specifications

Type		LA716	LA716I	LA716I HP
Control supply voltage				
For control unit		Provided internally via the bus module		
Power outputs				
Number per power output module		16		8
Electrical separation				
• From the control unit		Using opto-triacs and optocouplers which are specified according to EN 60747-5-2		
• Of power outputs from each other		No		
Load voltage				
• Rated value	V AC	230		
• Permissible range	V	187 ... 264 (TN system)		
• Frequency	Hz	50/60 (47 ... 63)		
Output voltage		Solid shafts switched during the zero crossover		
Output current per phase, max.	A	23	32	
Output current per output				
• Rated value	A	2.8	5	10
• Permissible range	A	0.1 ... 2.8	0.1 ... 5	0.1 ... 10
• Residual current	mA	≤ 10		
Switching capacity per channel at 230 V, max.	W	650	1 150	2 300
Resolution at the power outputs	%	1		
Loads				
• Load type		Resistive load with a maximum of 15 times the cold current in the first half wave (In the case of flash emitters, this can lead to a reduction of the permissible switching capacity. These emitters can be measured by Siemens.)		
• Overload		5 times the rated current for 20 ms		
Protective measures				
• Thermal monitoring		Yes (by NTC thermistor)		
- Response threshold		93 °C ± 5 K		
• Short-circuit protection		One quick-response 5 A/ 250 V fuse per output		One quick-response 10 A/ 250 V fuse per output
• Overvoltage protection		Yes		
Connecting cables				
• Resistor $R_{max.}$	Ω	14 (this ensures short-circuit protection)		
Mechanical data				
Degree of protection according to DIN 40050		IP00		
Dimensions (W x H x D)	mm	31 x 233.4 x 250	31 x 233.4 x 252 (without mating connector)	

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Power output modules

Selection and ordering data

	Number of outputs	Power carrying capacity per output max.	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
		W						
LA716 power output module								
 6BK1 700-2BA70-0AA1	16	650	C	**6BK1 700-2BA70-0AA1**		1	1 unit	478
LA716I power output module								
 6BK1 700-4BA80-0AA0	16	1 150	C	**6BK1 700-4BA80-0AA0**		1	1 unit	478
LA716I HP power output module								
 6BK1 700-4BA80-0AA0	8	2 300	C	**6BK1 700-4CA00-0AA0**		1	1 unit	478

Accessories

Version	LA716	LA716I	LA716I HP	Type
Fuse				
• 5 A quick/250 V	✓	✓	--	200021116
• 10 A quick/250 V	--	--	✓	A5E00186303
Mating connectors				
• 3-pin for mains connection	--	✓	✓	A5E30280233
• 8-pin for connection of the heat emitters	✓	✓	✓	A5E00507233

More information

For more information see Industry Mall or on the Internet at www.siemens.com/siplus-hcs.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



SIPLUS HCS724I heating control systems

The SIPLUS HCS724I heating control system controls and switches heat emitter arrays and other resistive loads of medium to high output in the industrial environment. It is connected through PROFIBUS DP and can be used together with for example SIMATIC S7 to form a highly modern and powerful automation system.

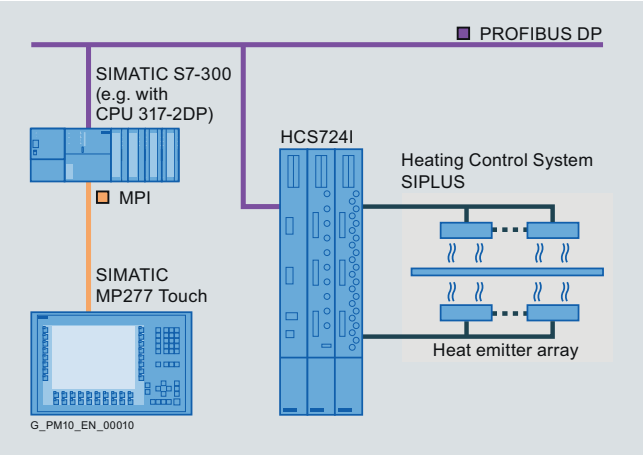
As an option, a NE724I line-voltage sensing module can be integrated in order to compensate automatically and internally for variations in the line voltage.

The main components of the SIPLUS HCS724I heating control system are:

- ZA724I central interface module
- Up to 16 LA724I/LA724I HP/LA724I SSR power output modules can be connected through the ZA724I central interface module
- NE724I line-voltage sensing module (option)
- LM724 fan module (option)
- SM724I current measuring module (option)
- Communication over PROFIBUS DP, e.g. with SIMOTION, SIMATIC S7, or industrial PC

The ZA724I central interface module and the LA724I/LA724I HP/LA724I SSR power output modules are installed in a metal enclosure and mounted on a mounting plate in the control cabinet.

Customized, distributed solutions are also possible.



Application example with SIMOTION, SINAMICS and SIPLUS HCS724I

Application

The SIPLUS HCS724I heating control system is used for example for controlling heat emitter arrays in

- Thermoforming machines
- Blow-molding machines
- Plastic welding machines
- Drying ovens

More information

For more information see Industry Mall or on the Internet at www.siemens.com/siplus-hcs.

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General data

Technical specifications

Climatic ambient conditions		
Operating temperature		
• Permissible range	°C	0 ... 55
• Relative humidity at 25 °C	%	95
• Temperature gradient	K/h	≤ 10
Storage temperature		
• Permissible range	°C	-40 ... 70
• Relative humidity at 25 °C	%	95
• Temperature gradient	K/h	≤ 20
Air pressure during operation		
• Min.	hPa	860 (=1 500 m NN) (cooling efficiency limited at lower atmospheric pressure)
• Max.	hPa	1 080
Air pressure during storage		
• Min.	hPa	660 (=3 500 m NN)
• Max.		1 080
Ventilation	hPa	Self ventilation or forced ventilation
Mechanical ambient conditions		
Vibrations during operation (stationary use)		IEC 60068-2-6 Test FC (10 cycles per axis)
• 10...58 Hz	mm	0.075 amplitude
• 58...150 Hz	m/s^2	9.8 (=1 *g* constant acceleration)
Vibrations during transport/storage (in transport packaging)		IEC 60068-2-6 Test FC (10 cycles per axis)
• 5...9 Hz	mm	3.5 amplitude
• 9...500 Hz	m/s^2	9.8 (=1 *g* constant acceleration)
Shock during operation (stationary use)		IEC 60068-2-27 Test EA 150 m/s^2 ≈ 15 *g*, half-sine Duration 11 ms, 3 impacts per axis and direction
Shock during transport/storage (in transport packaging)		IEC 60068-2-29 Test EB 250 m/s^2 ≈ 25 *g*, half-sine Duration 6 ms, 1 000 impacts per axis and direction
Electromagnetic compatibility		
Noise suppression (emitted interference)		Limit value class A acc. to EN 55011 Group 1
Interference immunity to conducted disturbance (burst)		EN 61000-4-4
• AC voltage power supply lines	kV	2 with coupling network
• Signal cables which exit the device	kV	2 with coupling tongs
Interference immunity to conducted disturbance (induced by radio-frequency fields)		Acc. to EN 61000-4-6: 10 V (0.15 ... 80 MHz)
Interference immunity to electrostatic discharge (ESD)		EN 61000-4-2
• Contact discharge	kV	4
• Air discharge	kV	8
Immunity to high-frequency interference	V/m V/m V/m	EN 61000-4-3 10 (80 ... 1 000 MHz) 3 (1.4 ... 2.0 GHz) 1 (2.0 ... 2.7 GHz)
Interference immunity to high-energy pulses (surge)		EN 61000-4-5
• Power supply lines - Symmetrical - Asymmetrical	 kV kV	 1 2
• PROFIBUS cable - Asymmetrical	 kV	 1

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ZA724I central interface module

Overview



ZA724I central interface module

The ZA724I central interface module is the intelligent processor module of the SIPLUS HCS724I heating control system.

Benefits

- Possibility of connecting up to sixteen LA724I/LA724I HP/LA724I SSR power output modules per ZA724I central interface module
- Communication through PROFIBUS DP interface

Technical specifications

Rated voltage		
• Rated value	V AC	230
• Permissible range	V AC	187 ... 264
Rated frequency	Hz	50/60
• Permissible range	Hz	47 ... 63
Non-periodic overvoltage (according to EN 60204, Part 1)		
• Limit value		2 x U_{rated}
• Duration	ms	1.5 (single pulse)
• Rise/fall time		500 ns ... 500 µs
Brief voltage interruption (initial state: lower limit of rated voltage = 187 V)		
• Interruption time, max.	ms	20
• Restoration time, min.	s	1
• Events per hour, max.		10
Power consumption		
• Typical	W	35
• Max.	W	46
Dimensions (W x H x D)	mm	50 x 480 x 210

Selection and ordering data

	Interface version	Type of power output connectable	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
ZA724I central interface module								
	PROFIBUS DP	• LA742I • LA724I HP • LA724I SSR	C	**6BK1 700-2BA30-0AA0**		1	1 unit	478

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Power output modules

Overview



LA724I, LA724I HP and LA724I SSR power output modules

The power output modules are an important component of the heating control system.

Three different power output modules can be used depending on the application:

- LA724I – the universal version:
  24-channel power output module for up to 1 150 W per channel
- LA724I HP – the high-power version:
  12-channel power output module for up to 400 V/max 10 A per channel
- LA724I SSR – the high-current version:
  24-channel power output module for controlling external SSR solid-state relays (up to 90 A/load)

Benefits

- Robust, industry-standard design (metal enclosure, small footprint)
- Distributed design without enclosure possible
- 4 diagnostics LEDs for displaying channel/module faults
- Internal parallel bus interface
- Connection of the phases via busbars
- No adjustments to the power output module are required

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Overview



LA724I power output module

The LA724I power output module is the **universal** power output module with a maximum rating of 1 150 W per channel and 24 channels.

Technical specifications

Outputs per power output module		24
Galvanic isolation from control unit		Using opto-triacs and optocouplers which are specified according to EN 60747-5-2
Insulation voltage		
• Opto-triac	kV	5
• Optocoupler	kV	5.3
Galvanic isolation of power outputs from each other		No
Load voltage (for wye connection)		
• Rated value	V AC	230
• Permissible range	V AC	187 ... 264 (TN system)
• Frequency	Hz	50/60 (47 ... 63)
Max. total current per phase and module	A	32
Max. current per busbar	A	120
Output voltage		Full or half-waves switched during zero crossing
Output current		
• Maximum value	A	5
• Residual current, max.	mA	7
Power loss		Typ. P_V = 0.7 W/A x I + 0.18 W/A^2 x I^2 (I = control current in the channel)
Switching capacity, max. (simultaneity 100 %)		1 150 W per channel at 230 V Note: The summation current per phase must not exceed 32 A. Min. 75 W per channel
Parallel connection of heat emitters to one channel		
• Number, typ.		5
• Minimum power per heat emitter	W	200
Total switching capacity per LA724I (T_U = 40 °C)		
• Without forced ventilation	kW	14.4
• With forced ventilation	kW	22
Load type		Resistive load with a maximum of 15 times the cold current in the first half wave (In the case of flash emitters, this can lead to a reduction of the permissible switching capacity. These emitters can be measured by Siemens.)
Overload		5 times the rated current for 20 ms
Protective measures		
• Thermal monitoring		Yes (by NTC thermistor)
- Response threshold	°C °C	92 ± 3: Warning to higher-level control system through PROFIBUS DP 100 ± 3: Deactivation of the power output modules
• Short-circuit protection		One quick-response 5 A/ 250 V fuse per output
• Overvoltage protection		By Transil diodes
Connecting cable		R_{max} = 14 W (this ensures short-circuit protection)
Dimensions (W x H x D)	mm	50 x 480 x 210

Selection and ordering data

Number of outputs	Power carrying capacity per output Max. W	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
LA724I power output module							
24	1 150	C	**6BK1 700-2BA00-0AA0**		1	1 unit	478

Accessories

Version	Type
Screw-fit mating connector (3 units required for each power output module)	40018384
5 A fuse, quick-response	200021116

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* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Power output modules
LA724I HP power output modules

Overview



LA724I HP power output module

The LA724I HP power output module is a 12-channel power output module with a maximum rating of

- 2 300 W at 230 V per channel and
- 4 000 W at 400 V per channel

Technical specifications

Outputs per power output module		12
Galvanic isolation from control unit		Using opto-triacs and optocouplers which are specified according to EN 60747-5-2
Insulation voltage		
• Opto-triac	kV	5
• Optocoupler	kV	5.3
Galvanic isolation of power outputs from each other		No
Load voltage (for wye and delta connection)		
• Rated value	V AC	230/400
• Permissible range	V AC	187 ... 264/340 ... 460 (TN system)
• Frequency	Hz	50/60 (47 ... 63)
Max. total current per phase and module	A	40
Max. current per busbar	A	120
Output voltage		Full or half-waves switched during zero crossing
Output current		
• Maximum value	A	10 (protection is provided by a fuse of type 16 A slow/500 V; the connecting cable must be calculated accordingly)
• Residual current, max.	mA	7
Power loss		Typ. P_V = 0.7 W/A x I + 0.16 W/A^2 x I^2 (I = control current in the channel)
Switching capacity (simultaneity 100 %)		2 300 W per channel at 230 V 4 000 W per channel at 400 V Note: The summation current per phase must not exceed 40 A. min. 75 W per channel
Parallel connection of heat emitters to one channel		
Number, typ.		5
• Minimum power per heat emitter	W	200
Total switching capacity per LA724I HP power output module (T_U = 40 °C)		
• Without forced ventilation	kW	13/22.6 (wye/delta)
• With forced ventilation	kW	21/36.5 (wye/delta)
Load type		Resistive load with a maximum of 15 times the cold current in the first half wave (In the case of flash emitters, this can lead to a reduction of the permissible switching capacity. These emitters can be measured by Siemens.)
Overload		5 times the rated current for 20 ms
Protective measures		
• Thermal monitoring		Yes (by NTC thermistor)
- Response threshold	°C	92 ± 3: Warning to higher-level control system through PROFIBUS DP
	°C	100 ± 3: Deactivation of the power output modules
• Short-circuit protection		One fuse 16 A/ 250 V per output
• Overvoltage protection		By Transil diodes
Connecting cable		R_{max} = 14 W (this ensures short-circuit protection)
Dimensions (W x H x D)	mm	50 x 480 x 210

Selection and ordering data

Number of outputs	Power carrying capacity per output Max. W	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
LA724I HP power output module							
12	4 000	C	**6BK1 700-4BA70-0AA0**		1	1 unit	478

Accessories

Version	Type
Screw-fit mating connector (3 units required for each power output module)	40018384
Fuse 16 A slow/500 V	A5E01204540

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



LA724I SSR power output module

The LA724I SSR power output module is the **high-current** power output module for controlling SSR external solid-state relays (up to 90 A/load)

Technical specifications

Outputs per power output module		24
Galvanic isolation from control unit		Using optocouplers which are specified according to EN 60747-5-2
Insulation voltage of the optocouplers	kV	5.3
Galvanic isolation of diagnostic inputs from each other		No
Diagnostics voltage (for wye and delta connection)		
• Rated value	V AC	230/400
• Permissible range	V AC	187 ... 264/340 ... 460
• Frequency	Hz	50/60 (47 ... 63)
Total current per phase and module		See SM724I current measuring modules
Current per busbar, max.	A	120
24 V control supply voltage for controlling the SSR solid state relays		
• Rated value	V	24
• Permissible range	V	20.4 ... 28.8
• Fuse protection		1.5 A/250 V quick (external)
Control voltage	V	24
• At rated control supply voltage	V V	Typ. 23.3 min. 22
Max. control current	mA	50 per control output
Cable length, max.		
• Control cable to SSR solid state relay	m	30
• Connecting cable to SM724I current measuring module	m	30
• 24 V control supply voltage	m	10 Note: Cables not to be laid outside buildings
Dimensions (W x H x D)	mm	50 x 480 x 210

Selection and ordering data

Number of outputs	Output voltage Rated value	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PG	PS*
	V						
LA724I SSR power output module							
24	23.3	X	**6BK1 700-2BA10-0AA0**		1	1 unit	478

Accessories

Version	Type
Mating connectors	
• For the 24 V power supply	A5E00210675
• For connection of the solid state relay (SSR) (3 units required per power output module)	A5E00043661
• For connection of the SM724I current measuring module	A5E00210670
• For voltage diagnostics (3 units required for each power output module)	41818384

Recommendation for solid state relay (SSR) to be used

SIRIUS SC solid-state relays/contactors
e.g. 3RF23 50-1AA02:
solid-state contactor 50 A,
40 °C,
control voltage 24 V,
screw terminals

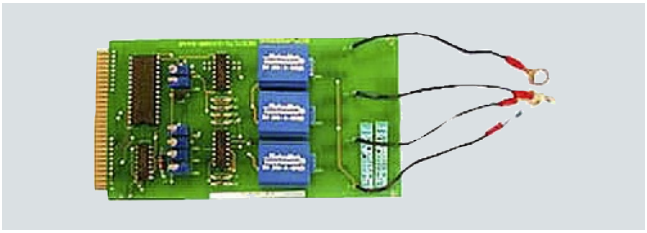
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Illustrations are approximate

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NE724I line-voltage sensing modules

Overview



NE724I line-voltage sensing module

The NE724I line-voltage sensing module is an optional module for line-voltage sensing and correction.

The NE724I is inserted from the front into the enclosure of the ZA724I central interface module. The slot is located in the busbar area. If the NE724I is not used, the opening is sealed with the busbar cover. When the line-voltage sensing function is used, the cover provides touch protection.

Technical specifications

Control supply voltage		
• Rated value	V AC	230
• Permissible range	V AC	187 ... 264
• Frequency	Hz	50/60 (47 ... 63)

Selection and ordering data

Control supply voltage at AC Rated value	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
V						
NE724I line-voltage sensing modules[1]						
230	C	**6ES7 171-1XX00-6AA0**		1	1 unit	732

[1] Is inserted in the ZA724I central interface module.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



LM724 fan module

The LM724 fan module is available for reliable cooling of the LA724I and LA724I HP heat output modules. The fan module is a standard fan in an IP00 enclosure.

Technical specifications

Mounting		1 LM724 fan module for every • two LA724I or LA724I HP power output modules or • one ZA724I central interface module and one LA724I or LA724I HP power output module
Control supply voltage		
• Rated value	V AC	230
• Permissible range	V AC	187 ... 264
• Frequency	Hz	50/60 (47 ... 63)
Power consumption	W	6
Air volumetric flow	m^3/h	45
Dimensions (W x H x D)	mm	100 x 50 x 162

Selection and ordering data

	Control supply voltage at AC Rated value	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	V						
LM724 fan module							
	230	D	**6ES7 171-3AA00-0AA0**		1	1 unit	732

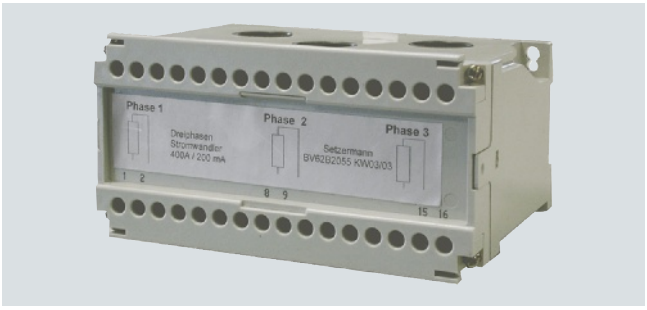
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Illustrations are approximate

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SM724I current measuring modules

Overview



SM724I current measuring module

The SM724I current measuring module is an optional module for diagnostics-based current measurement when connected to the LA724I SSR power output module.

The module is required when heat emitters are connected in parallel and failure of a single heat emitter is to be detected using a current measurement.

It is mounted in the control cabinet on a sturdy mounting surface (recommended) or on a standard mounting rail.

Technical specifications

Rated current		
• primary	A	3 x 400
• secondary	mA	3 x 200
Accuracy, approx.	%	1
Frequency range	Hz	50 ... 400
Cable entry openings	mm	∅ 22
Dimensions (W x H x D)	mm	150 x 77.5 x 115

Selection and ordering data

Rated current at AC Rated value	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A						
SM724I current measuring module						
3 x 400	C	**6BK1 700-2BA40-0AA0**		1	1 unit	478

Accessories

Version	Type
Mating connectors for connection of the SM724I current measuring module	A5E00210670

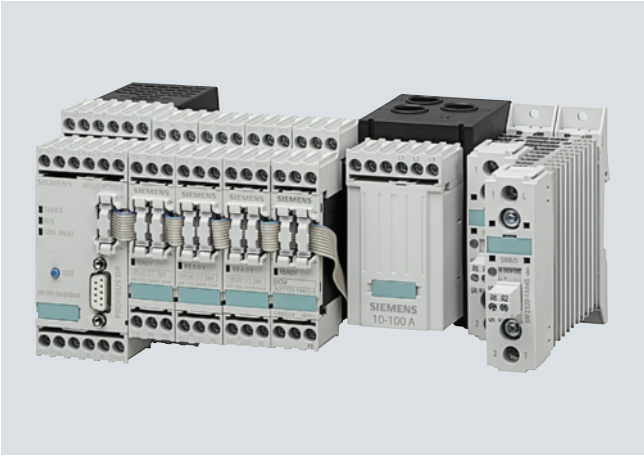
Note on the cable to be used between the LA724I SSR power output module and the SM724I current measuring module

It is recommended that a 3 x 2-core cable is used with a cross-section of 0.75 mm^2 whose cores are twisted together in pairs. It is not necessary to use a shielded cable.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



SIPLUS HCS300I heating control systems

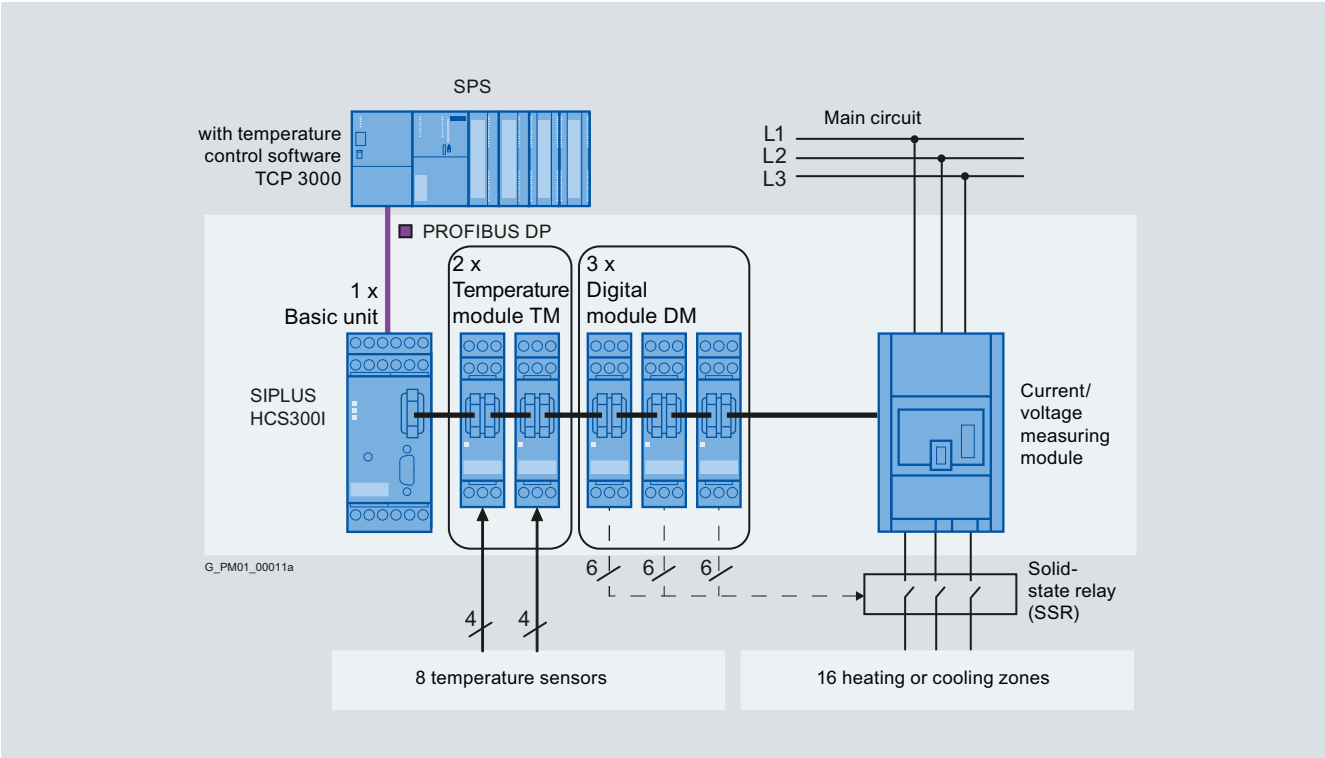
SIPLUS HCS300I is an industrial heating control system which uses SSR solid state relays or contactors to control resistive loads. SIPLUS HCS300I was developed on the basis of the SIMOCODE system.

SIPLUS HCS300I can be adapted to your special application by using various modules:

- The basic unit handles the central functions and communicates with the higher-level automation system.
- Digital modules (DM) expand the SIPLUS HCS300I with additional digital outputs via which solid-state relays or contactors are switched.
- Temperature modules (TM) process analog temperature values supplied by the temperature sensors of your plant.
- The IM current measuring module measures the load currents, the UM current/voltage measuring module measures the load currents and the voltages of the heating or cooling devices, and delivers the values to the basic unit.

The SIPLUS HCS300I is designed for snap-on mounting onto TH 35 standard mounting rails according to IEC 60715 or for screw mounting using additional push-in lugs.

If your application requires more than 16 temperature measuring channels or 24 digital outputs, a second SIPLUS HCS300I basic unit can be connected to the higher-level automation system. Another 16 temperature measuring channels or 24 digital outputs are then available.



Application example SIPLUS HCS300I

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General data

Benefits

The SIPLUS HCS300I industrial heating control system is modular, flexible and TIA-compatible

Modular and flexible because with its modular design the SIPLUS HCS300I can be flexibly used in minimum space, with different modules available for controlling different extruder performance classes:

- Current measurement from 2.4 A to 200 A
- Voltage measurement from 110 V to 690 V
- SIRIUS solid state relays from 10 A to 90 A

TIA-compatible:

- Easy configuration and commissioning using STEP7 user-friendly configuration software
- Easy control of SIRIUS solid state relays using preassembled cables
- Communication with higher-level automation system through PROFIBUS DP
- TCP 3000 user-friendly control software available

Application

SIPLUS HCS300I is an industrial heating control system, e.g. for extruders and injection molding machines.

Technical specifications

General specifications		
• Degree of protection acc. to IEC 60529		IP20
• Shock resistance (sine pulse)	*g*/ms	15/11
• Mounting position		Any
• Frequencies	Hz	50/60 ± 5 %
Permissible ambient temperature range		
• During operation	°C	-25 ... +60
• During storage and transport	°C	-40 ... +80
EMC interference immunity acc. to IEC 61131-2		
• Conductor-related interference		
- Burst acc. to IEC 61000-4-4	kV	2 (power ports), 1 (signal ports)
- High frequency acc. to IEC 61000-4-6	V	10
- Surge acc. to IEC 61000-4-5	kV	2 (line to earth), 1 (line to line)
• Electrostatic discharge, ESD acc. to IEC 61000-4-2	kV	8 (air discharge), 6 (contact discharge)
• Field-related interference acc. to IEC 61000-4-3	V/m	10
Immunity to EMC acc. to IEC 61131		
• Class		SIPLUS HCS300I system components are Class A products. Near radios they can cause interference to signals. Take suitable protective measures if necessary.
• Conducted and radiated interference emission		EN 55011/CISPR11 (corresponds to degree of severity A)

More information

For more information see Industry Mall or on the Internet at www.siemens.com/siplus-hcs.

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Overview



Basic units

The basic unit handles the central functions of the SIPLUS HCS300I heating control system and communicates with the higher-level automation system.

Benefits

- Three digital relay outputs for controlling resistive loads
- Communication with the higher-level automation system through PROFIBUS DP
- Local control of the system
- Four digital inputs for detecting external signals

Technical specifications

Enclosures		
Mounting		Snap-on mounting onto TH 35 standard mounting rail according to IEC 60715 or screw mounting with additional push-in lugs
Display		
• LED "Device"		- Red: "Function test not OK; device is disabled" - Green: "Ready" - Yellow: "Addressing plug detected" - Off: "No control supply voltage"
• LED "BUS"		- Continuous light: "Communication with PLC/PCS" - Blinklight: "Baud rate detected"
• LED "GEN. FAULT"		- Continuous light/flashing: "Feeder fault"
"TEST" pushbutton		• Adopting a PROFIBUS DP address
System interfaces		• Connections on the device front for: - Expansion module (DM digital module and TM temperature module, IM current measuring module or UM current/voltage measuring module, DCM decoupling module) - Addressing plugs
PROFIBUS DP interface		• Interface types: RS485 • Connection method: - 9-pole Sub D socket (12 MBit) - Terminals (1.5 MBit) - Same conductor cross-sections as control circuit • Connection of the PROFIBUS DP cable through terminal connection or through a 9-pin sub D socket
Power supply		
Rated control supply voltage U_s (according to IEC 61131-2)	V DC	24
Operating range		0.85 … 1.2 x U_s
Power consumption (incl. two expansion modules connected to basic unit)		10 VA/7 W
Rated insulation voltage U_i	V	300 at pollution degree 3
Rated impulse with-stand voltage U_{imp}	kV	4
Mains buffering time	ms	200
Relay outputs		
Number		Three monostable relay outputs
Auxiliary contacts of the three relay outputs		Isolated NO contacts with parameterizable NC behavior: • Two relay outputs connected to common potential • One relay output connected to separate potential, freely assignable to control functions
Specified short-circuit protection for auxiliary contacts (relay outputs)		• Fuse links, gG operational class 6 A, quick-response 10 A (IEC 60947-5-1) • Miniature circuit breaker - 1.6 A, C characteristic (IEC 60947-5-1) - 6 A, C characteristic (I_k < 500 A)
Rated uninterrupted current	A	5, per potential
Rated switching capacity		
DC-13		• 2 A/24 V DC • 0.55 A/60 V DC • 0.25 A/125 V DC
Binary inputs		
Number		Four inputs with the following properties: • With internal power supply from the device electronics (24 V DC) • Connected to common potential for recording process signals, freely assignable to control functions
Connections		
Tightening torques	Nm	Torque: 0.8 ... 1.2 (7 ... 10.3 lb.in)
Conductor cross-sections		
• Solid:	mm^2 AWG	2 x (0.5 ... 2.5), 1 x (0.5 ... 4) 2 x 20 ... 14, 1 x 20 ... 12
• Finely stranded with end sleeve	mm^2 AWG	2 x (0.5 ... 1.5), 1 x (0.5 ... 2.5) 2 x 20 ... 16, 1 x 20 ... 14

Selection and ordering data

Control supply voltage at DC, rated value	Controls can be connected, max.	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
V							
Basic units							
24	• 4 DM digital modules and 4 TM temperature modules • 1 IM current measuring module or 1 UM current/voltage measuring module • 1 DCM decoupling module	C	**6BK1 700-3BA20-0AA0**		1	1 unit	478

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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DM digital modules

Overview



DM digital module

Digital modules (DM) expand the SIPLUS HCS300I heating control system with additional digital outputs via which solid-state relays or contactors are switched.

Benefits

- Six digital 24 V DC outputs in the form of "high-side" switches
- Up to four DM digital modules can be connected to one basic unit
- Up to 24 digital output signals (with four digital modules) can be switched to loads of up to 500 mA
- Control of the digital outputs by means of a higher-level automation system that communicates with the SIPLUS HCS300I basic unit over PROFIBUS
- Easy control of solid state relays (SSR) possible using preassembled cables

Technical specifications

Enclosures		
Mounting		Snap-on mounting onto TH 35 standard mounting rail according to IEC 60715 or screw mounting with additional push-in lugs
Display		
Status LED "Ready"		• Continuous light: "Ready" • Blinklight: "No connection to the basic unit"
Number of digital outputs		6
System interfaces		
Number		2
Connection options		
The DM digital module has interfaces for the following system modules:		• Basic units • Expansion modules (TM temperature module, IM current measuring module, UM current/voltage measuring module, DCM decoupling module)
Typical power consumption from system interface	mA	10
Output circuit		
Load voltage L+ (nominal value)	V DC	24
Typical power consumption from load voltage	mA	10
Short-circuit protection		Yes
Minimum output voltage for signal "1"		L+ (-1 V)
Maximum output current for signal "1"	mA	500
Maximum switching frequency at ohmic load		
• For DM digital module	Hz	Typ. 50
• For maximum configuration	Hz	min. 20
Summation current of the outputs	A	3
Electrical isolation of the outputs		Not available
Electrical separation from system interface		Not available
Connections		
Tightening torques	Nm	Torque: 0.8 … 1.2 (7 … 10.3 lb.in)
Conductor cross-sections		
• Solid:	mm^2 mm^2 AWG AWG	2 x (0.5 ... 2.5) 1 x (0.5 ... 4) 2 x 20 … 14 1 x 20 … 12
• Finely stranded with end sleeve	mm^2 mm^2 AWG AWG	2 x (0.5 ... 1.5) 1 x (0.5 ... 2.5) 2 x 20 … 16 1 x 20 … 14

Selection and ordering data

Version Electric connection of the inputs and outputs	Number of digital outputs	Output current at digital output with signal <1> max. A	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
DM digital modules								
Screw terminals	6	0.5	C	**6BK1 700-4BA50-0AA0**		1	1 unit	478
Screw terminals or preassembled cable	6	0.5	C	**6BK1 700-2BA80-0AA0**		1	1 unit	478

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Overview



TM temperature module

Temperature modules (TM) process analog temperature values supplied by a plant's temperature sensors.

Benefits

- Up to four analog sensor measuring circuits in 2-wire technology or two analog sensor measuring circuits in 4-wire technology
- Up to four temperature modules per basic unit which can detect up to 16 analog temperature values
- The type of compensation is adjustable for measurements with thermoelements:
  - No compensation
  - Internal compensation
  - External compensation
  - Compensation through the higher-level automation system
- Resolution of temperature values to one decimal point
- Automatic calibration during ramp-up for high measuring accuracy
- Various sensor types are supported for use in solid, liquid or gaseous media: Pt100; Pt1000; TC type J, K, L

Technical specifications

Enclosures	
Mounting	Snap-on mounting onto TH 35 standard mounting rail according to IEC 60715 or screw mounting with additional push-in lugs
Display	
• Status LED "Ready"	- Continuous light: "Ready" - Blinklight: "No connection to the basic unit"
Connectors for temperature sensors	Connections for four temperature sensors with a shield connection

Interfaces		
Number		2
Connection options		
The TM temperature module has interfaces for the following system modules:		• Basic units • Expansion modules (DM digital module, IM current measuring module, UM current/voltage measuring module, DCM decoupling module)
Typical power consumption from system interface	mA	20
Sensor circuit		
Connection type		2-wire or 4-wire connection
Number of analog inputs		
• For 2-wire system		4
• For 4-wire system		2
Maximum electric strength	V	15
Conversion time for 4 channels	ms	< 600
Measurement principle		Integrating
Noise suppression	Hz	50/60
Typical sensor circuits		
• Pt100/Pt1000	µA	210
Open-circuit detection		Yes
Measuring range		
• Pt100/Pt1000	°C	0 … +400
• TC type J, K, L	°C	0 … +400
Measuring accuracy at 20 °C ambient temperature		
• Pt100	°C	Typ. ±1, max. ±1.3
• Pt1000	°C	max. ±1
• TC type J, K, L	°C	max. ±1
Deviation at ambient temperature 20 °C in % of measuring range		0.05 % per °C
Offset due to temperature drift (typical)		< 0.1 °C/°C change in ambient temperature
Measured value deviation due to temperature drift (typical)		< 11.5 ppm/°C change in ambient temperature
Electrical separation between the channels	V	Functional separation, voltage difference max. ±1
Electrical separation from system interface	V DC	Electrical separation, separation 500
Connections		
Tightening torques	Nm	Torque: 0.8 … 1.2 (7 … 10.3 lb.in)
Conductor cross-sections		
• Solid	mm^2 mm^2 AWG AWG	2 x (0.5 … 2.5) 1 x (0.5 … 4) 2 x 20 … 14 1 x 20 … 12
• Finely stranded with end sleeve	mm^2 mm^2 AWG AWG	2 x (0.5 ... 1.5) 1 x (0.5 ... 2.5) 2 x 20 … 16 1 x 20 … 14

Selection and ordering data

Number of analog inputs For 2-wire system	Number of analog inputs For 4-wire system	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
TM temperature module							
4	2	C	**6BK1 700-4BA60-0AA0**		1	1 unit	478

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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IM current measuring modules

Overview



IM current measuring module

The IM current measuring module measures the load currents of the heating or cooling devices, and delivers the values to the basic unit. The module must be selected according to the expected maximum current of all connected loads.

There are three different versions:

- Current measuring modules 2.4 A to 25 A
- Current measuring modules 10 A to 100 A
- Current measuring modules 20 A to 200 A

Benefits

- Current measurement on a feeder
- Current ranges between 2.4 A and 200 A

Technical specifications

Enclosures		
Mounting		
• 6BK1700-3BA30-0AA0, 6BK1700-3BA40-0AA0		Snap-on mounting onto TH 35 standard mounting rail according to IEC 60715 or screw mounting with additional push-in lugs
• 6BK1700-3BA50-0AA0		Snap-on mounting onto TH 35 standard mounting rail according to IEC 60715, screw mounting on mounting plate or direct fixing on contactor
System interfaces		
The IM current measuring module has interfaces for the following system modules:		• Basic units • Expansion modules (DM digital module, TM temperature module, UM current/voltage measuring module, DCM decoupling module)
Main circuit		
Current measuring range/ current setting I_e		
• 6BK1700-3BA30-0AA0	A	2.4 ... 25
• 6BK1700-3BA40-0AA0	A	10 ... 100
• 6BK1700-3BA50-0AA0	A	20 ... 200
Rated insulation voltage U_i at pollution degree 3		
• 6BK1700-3BA30-0AA0, 6BK1700-3BA40-0AA0	V	690
• 6BK1700-3BA50-0AA0	V	1 000
Rated frequency	Hz	50/60
Type of current		• Three-phase (grounded without DCM decoupling module, otherwise with DCM decoupling module) • Single-phase AC (with DCM decoupling module)
Short-circuit protection		Additional short-circuit protection is required in the main circuit
Current measuring accuracy		Within the measuring range ±3 %
Feed-through opening		
Diameter of opening		
• 6BK1700-3BA30-0AA0	mm	7.5
• 6BK1700-3BA40-0AA0	mm	14.0
• 6BK1700-3BA50-0AA0	mm	25.0

Selection and ordering data

Current measuring range Start value	Full-scale value	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A	A						
IM current measuring module							
2.4	25	C	**6BK1 700-3BA30-0AA0**		1	1 unit	478
10	100	C	**6BK1 700-3BA40-0AA0**		1	1 unit	478
20	200	C	**6BK1 700-3BA50-0AA0**		1	1 unit	478

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Illustrations are approximate

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UM current/voltage measuring modules

Overview



UM current/voltage measuring module

In addition to measuring the load currents, the UM current/voltage measuring module can also be used to measure phase voltages in a single or three-phase system.

There are three different versions:

- Current/voltage measuring modules 2.4 A to 25 A
- Current/voltage measuring modules 10 A to 100 A
- Current/voltage measuring modules 20 A to 200 A

Benefits

- Current measurement on a feeder
- Current ranges between 2.4 A and 200 A
- Measurement of phase voltages up to 400 V (e.g. UL1) or interlinked voltages up to 690 V (e.g. UL1UL2)
- Measurement in three-phase systems or single-phase AC systems

Technical specifications

Enclosures		
Mounting		
• 6BK1700-3BA60-0AA0, 6BK1700-3BA70-0AA0		Snap-on mounting onto TH 35 standard mounting rail according to IEC 60715 or screw mounting with additional push-in lugs
• 6BK1700-3BA80-0AA0		Snap-on mounting onto TH 35 standard mounting rail according to IEC 60715, screw mounting on mounting plate or direct fixing on contactor
System interfaces		
The UM current/voltage measuring module has interfaces for the following system modules:		• Basic units • Expansion modules (DM digital module, TM temperature module, IM current measuring module, DCM decoupling module)
Main circuit		
Current measuring range/ current setting I_e		
• 6BK1700-3BA60-0AA0	A	2.4 ... 25
• 6BK1700-3BA70-0AA0	A	10 ... 100
• 6BK1700-3BA80-0AA0	A	20 ... 200
Rated insulation voltage U_i at pollution degree 3		
• 6BK1700-3BA60-0AA0, 6BK1700-3BA70-0AA0	V	690
• 6BK1700-3BA80-0AA0	V	1 000
Rated operational voltage U_e	V	690
Rated impulse withstand voltage U_{imp}		
• 6BK1700-3BA60-0AA0, 6BK1700-3BA70-0AA0	kV	6
• 6BK1700-3BA80-0AA0	kV	8
Rated frequency	Hz	50/60
Type of current		• Three-phase (grounded without DCM decoupling module, otherwise with DCM decoupling module) • Single-phase AC (with DCM decoupling module)
Short-circuit protection		Additional short-circuit protection is required in the main circuit
Current measuring accuracy		Within the measuring range ±3 %
Typical voltage measuring range		
• Interlinked voltage/ line-to-line voltage	V	110 ... 690 (only the phase voltages are available in the system as measured values)
• Phase voltage	V	65 ... 400
Accuracy of the voltage measurement in the range 230 … 400 V	%	±3 typical
Voltage measurement in ungrounded systems or in systems with integrated insulation measurement or insulation monitoring		In these networks the IM current measuring module or UM current/voltage measuring module can be used only with a DCM decoupling module.
Supply lines for voltage measurement		Additional protection may need to be provided in the supply lines for voltage measurement.
Feed-through opening		
Diameter of opening		
• 6BK1700-3BA60-0AA0	mm	7.5
• 6BK1700-3BA70-0AA0	mm	14.0
• 6BK1700-3BA80-0AA0	mm	25.0

Selection and ordering data

Current measuring range		Operating frequency Rated value		Operational voltage At 50 Hz At AC Rated value		Operational voltage At 60 Hz At AC Rated value		DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Start value	Full-scale value	Minimum	Max.	Minimum	Max.	Minimum	Max.						
A	A	Hz	Hz	V	V	V	V						
UM current/voltage measuring module													
2.4	25	50	60	110	690	110	690	C	**6BK1 700-3BA60-0AA0**		1	1 unit	478
10	100	50	60	110	690	110	690	C	**6BK1 700-3BA70-0AA0**		1	1 unit	478
20	200	50	60	110	690	110	690	C	**6BK1 700-3BA80-0AA0**		1	1 unit	478

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

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DCM decoupling modules

Overview



DCM decoupling module

A DCM decoupling module must be used:

- When using a UM current/voltage measuring module when the network is not grounded.
- When using an IM current measuring module or a UM current/voltage measuring module when the maximum power consumption of the system bus has been reached.

If a mixed configuration of TM temperature module, DM digital module and IM current measuring module or UM current/voltage measuring module is planned, you must first check whether a DCM decoupling module is required.

If

(quantity (TM) * 2 + quantity (DM) * 1 + quantity (IM or UM) * 4) > 14,

then a DCM decoupling module will be needed.

For example calculation see "System Manual for SIPLUS HCS300I".

Note:

For this equation, each module type is weighted with a specific current factor:

Module	Current factor
TM temperature module	2
DM digital module	1
IM current measuring modules, UM current/voltage measuring modules	4

Benefits

- Electrical separation of the UM current/voltage measuring module from the preceding expansion modules or a basic unit
- Power supply for an IM current measuring module or a UM current/voltage measuring module when the maximum power consumption of the system bus has been reached.

Technical specifications

Enclosures		
Mounting		Snap-on mounting onto TH 35 standard mounting rail according to IEC 60715 or screw mounting with additional push-in lugs
Display		
• Status LED "Ready"		Continuous light: "Ready"
System interfaces		
• Interface on left		For expansion modules (basic unit, DM digital module or TM temperature module)
• Interface on right		For IM current measuring modules or UM current/voltage measuring modules
Connections		
Tightening torques	Nm	0.8 ... 1.2
Conductor cross-sections		
• Solid	mm^2 mm^2	1 x (0.5 ... 4.0) 2 x (0.5 ... 2.5)
• Finely stranded with end sleeve	mm^2 mm^2	1 x (0.5 ... 2.5) 2 x (0.5 ... 1.5)

Selection and ordering data

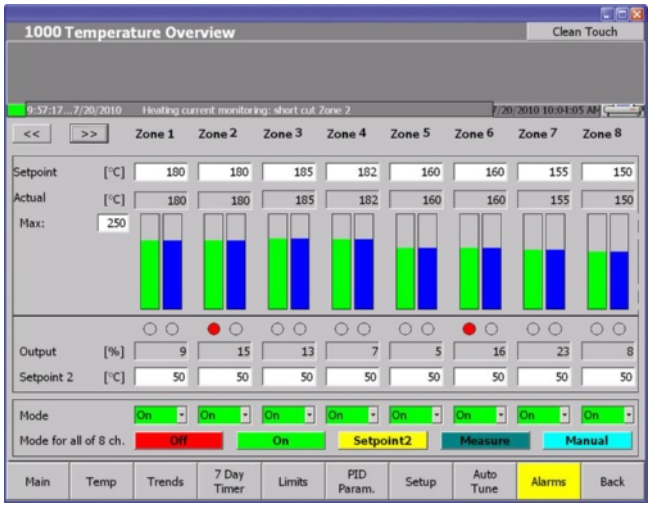
	Interface version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
DCM decoupling module							
	System interface	C	**6BK1 700-4BA40-0AA0**		1	1 unit	478

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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TCP 3000 temperature control software (optional)

Overview



TCP 3000 temperature control software

In order to control SIPLUS HCS300I from the higher automation level, a suitable automation system such as a programmable controller (PLC) is required. Together with the TCP 3000 temperature control software the result is a powerful automation solution for controlling heating or cooling devices.

The following licenses can be purchased optionally for the temperature controlling software TCP 3000:

- Initial license TCP 3000
  Type A4027462-A0443
- Runtime license TCP 3000
  Type A4027462-A0444

More information

For more information, please contact your Siemens sales office.

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General data

Overview

The SIPLUS Electrical Charging Components (ECC) range covers products for the charging of batteries for various applications, e.g. charging controllers for the installation of an electric vehicle charging infrastructure.



Charging controllers and function units for electric vehicle charging solutions

The success of electric vehicles (EVs) depends on the availability of a reliable charging infrastructure!

SIPLUS ECC offers specific components for EV charging solutions which supplement the tried-and-tested Siemens industrial automation and control portfolio. In addition, SIPLUS ECC comprises prefabricated function units for the installation of reliable and standards-conform electric vehicle charging stations.

The SIPLUS ECC portfolio:

- Charging controllers
  (according to IEC 61851 charging mode type 3)
- Preassembled, tested and ready-to-fit function units

More information

For more information see
www.siemens.com/siplus-ecc.

SIPLUS ECC1000 and ECC2000 charging controllers

Overview



SIPLUS ECC1000 and ECC2000 charging controllers

The charging controller is the central component in electric vehicle charging stations. SIPLUS ECC charging controllers comply with the charging standard IEC 61851 Mode 3.

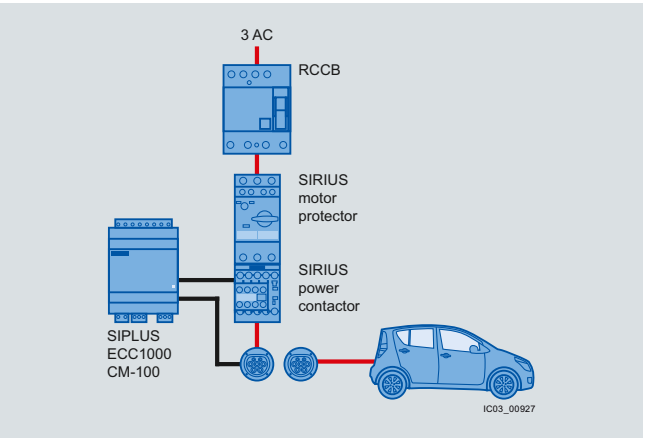
They perform the following functions:

- Transferring the maximum charging current from the charging station to the electric vehicle
- Detecting the charging cable and its reliable current carrying capacity
- Safety functions
- Evaluating the status signals from the electric vehicle
- Controlling the load tap-off
- Signaling the charging states by means of LEDs

SIPLUS ECC charging controllers are available in various versions:

CM-100

Compact, low-cost charging controller for home charging applications. The versions available cover all the charging currents defined in IEC/EN 61851.



Charging system with SIPLUS ECC1000

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CM-230 standalone version

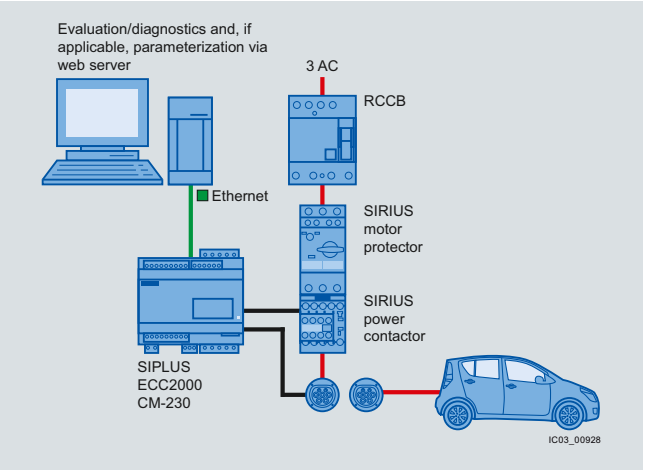
This charging controller with Ethernet connection is used for home and public charging applications.

The controller's parameters can be changed and current information about the state of the charging operation viewed through the web interface.

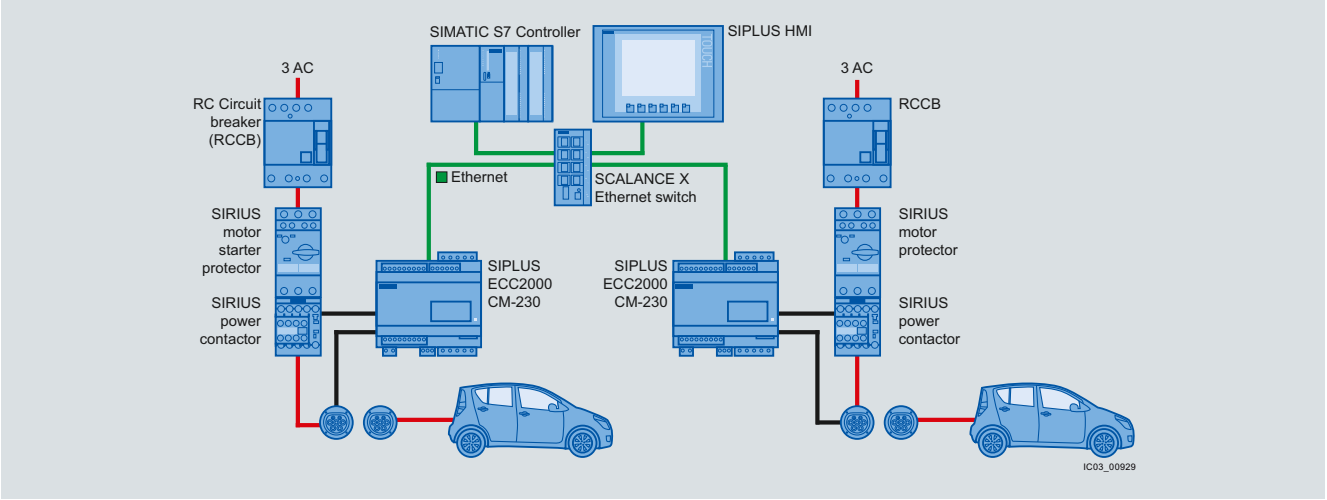
CM-230 managed version

This charging controller with Ethernet connection is used for complex public charging applications. The controller is typically used as a separate I/O module in combination with other charging controllers which are integrated through Ethernet in a higher-level control system. The managed version offers greater flexibility for the system integrator/operating company, e.g. individual controlling of free I/O modules.

A function block (FB) is available for linking to SIMATIC controllers.



Charging system with SIPLUS ECC2000 (stand-alone version)



Multiple charging system with SIPLUS ECC2000 (managed version)

Technical specifications

Version		SIPLUS ECC1000 (CM-100)		SIPLUS ECC2000 (CM-230)	
		DC version	AC version	Managed version	Standalone version
Type		5TT3 200-2KK30	5TT3200-1KK20, 5TT3200-2KK20, 5TT3200-3KK20, 5TT3200-4KK20, 5TT3200-6KK20	6FE1021-3CM10-1AA0	6FE1021-3CM10-2AA0
Applications		Simple AC charging systems	Simple AC charging systems	Complex AC charging systems	Complex AC charging systems
Supported charging standard		IEC/EN 61851 Mode 3	IEC/EN 61851 Mode 3	IEC/EN 61851 Mode 3	IEC/EN 61851 Mode 3
Communications		No	No	Ethernet	Ethernet
Load management support		No	No	Yes	Yes
Integrated sensors		No	No	Yes; temperature and humidity	Yes; temperature and humidity
Temperature range in operation	°C	-25 … 60	-25 … 60	-25 … 55	-25 … 55
Installation altitude maximum	m	2 000	2 000	2 000	2 000
Degree of protection		IP20	IP20	IP20	IP20
Pollution degree		3 according to IEC/EN 61010-1	3 according to IEC/EN 61010-1	3 according to IEC/EN 61010-1	3 according to IEC/EN 61010-1
Type of mounting		TH 35 standard mounting rail acc. to IEC 60715	TH 35 standard mounting rail acc. to IEC 60715	TH 35 standard mounting rail acc. to IEC 60715	TH 35 standard mounting rail acc. to IEC 60715
Plug-in terminals		Yes	Yes	Yes	Yes
Electrical safety		IEC/EN 61010-1	IEC/EN 61010-1	IEC/EN 61010-1	IEC/EN 61010-1
Dimensions (H x W x D)	mm	72 x 91 x 71	72 x 91 x 71	91 x 105 x 71	91 x 105 x 71

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SIPLUS ECC1000 and ECC2000 charging controllers

Selection and ordering data

Version	Control supply voltage	Charging current	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	V	A						
SIPLUS ECC1000 (CM-100) charging controllers								
AC	110 ... 230 AC	13	A	**5TT3200-1KK20**		1	1 unit	050
		16	A	**5TT3200-2KK20**		1	1 unit	050
		20	A	**5TT3200-3KK20**		1	1 unit	050
		32	A	**5TT3200-4KK20**		1	1 unit	050
		13 / 32	A	**5TT3200-6KK20**		1	1 unit	050
DC	24 DC	16	A	**5TT3200-2KK30**		1	1 unit	050
SIPLUS ECC2000 (CM-230) charging controllers acc. to IEC 61851 with Ethernet connection								
Managed	24 DC	6 … 80 (adjustable through web interface)	X	**6FE1021-3CM10-1AA0**		1	1 unit	477
Standalone	24 DC		X	**6FE1021-3CM10-2AA0**		1	1 unit	477

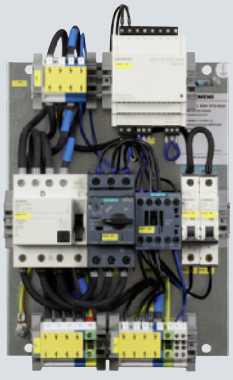
More information

For operating instructions and other technical specifications see http://support.automation.siemens.com/WW/view/en/46477093/133200.

SIPLUS ECC8000 prefabricated function units

Overview

Function units are pre-wired, tested and ready-to-fit subsystems for electric vehicle charging stations. The function units comprise not only the charging controller but also the complete power tap-off with RCCB, circuit breaker and load contactor. Other components are also included in the function units according to the intended application, e.g. electric heaters to extend the permissible temperature range, controllers for the charging plug interlock, and calibrated power meters. Switch disconnectors and terminal strip connections enable easy commissioning and reduce the amount of work during servicing calls.



SIPLUS ECC8000 SYS-101A function unit



SIPLUS ECC8000 SYS-102A function unit



SIPLUS ECC8000 SYS-202A function unit

* You can order this quantity or a multiple thereof.
Illustrations are approximate

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Benefits

The prefabricated and certified function units enable the quick installation of standards-conform charging stations for system integrators.

Customer-specific adaptations are possible (on request).

Technical specifications

Version		SIPLUS ECC8000		
		SYS-101A	**SYS-102A**	**SYS-202A**
Type		6FE1086-0SY00-0AA0	6FE1086-0SY00-1AA0	6FE1086-3SY00-0AA0
Applications		Home charging suitable for installation in ALPHA box 8GM1040-3KK30	Home charging and simple charging post	Charging posts for public applications
Supported charging standard		IEC/EN 61851, Mode 3	IEC/EN 61851, Mode 3	IEC/EN 61851, Mode 3
Suitability of use for network form		TNS	TNS	TNS
Communications		No	No	Ethernet
Load management support		No	No	Yes
Number of charging tap-offs		1	1	2
Charging current	A	16	13 / 32 (automatic switchover)	32 each
RCCB type		1 x type A; short-time delay	1 x type A; short-time delay	2 x type A; short-time delay
Charging plug interlock control		No	Yes	Yes
Energy counters		No	Yes; 1 x PAC1500 (calibratable with display)	Yes; 2 x PAC1500 (calibratable with display)
Integrated heating		No	No	Yes
Overvoltage category		2	2	2
Ambient temperature during operation	°C	-20 … 45	-5 ... 45	-5 … 45
Maximum installation altitude	m	1 000	1 000	1 000
Degree of protection		IP00	IP00	IP00
Dimensions (H x W x D)	mm	370 x 230 x 150	900 x 240 x 200	900 x 240 x 270

Selection and ordering data

	Control supply voltage	Charging current	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	V	A						
SIPLUS ECC8000								
SYS-101A	AC 400 ± 10 %	16	X	**6FE1086-0SY00-0AA0**		1	1 unit	477
SYS-102A		13 / 32 (automatic switchover)	X	**6FE1086-0SY00-1AA0**		1	1 unit	477
SYS-202A		2 x 32	X	**6FE1086-3SY00-0AA0**		1	1 unit	477

More information

For operating instructions and other technical specifications see http://support.automation.siemens.com/WW/view/en/46477093/130000.

* You can order this quantity or a multiple thereof.
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Notes

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16 Appendix



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Glossary

"a" release

Short designation for a current-sensitive delayed overload release.

"n" release

Short designation for an instantaneous electromagnetic electronic release.

8US busbar adapters

8US busbar adapters enable the mechanical mounting and electrical contacting of motor starter protectors, load feeders or compact starters on a single busbar system.

Adapters for screw fixing

Adapters for screw fixing can be used for mounting a compact starter onto a flat surface.

Approvals

Approval of controls and switchgears on the basis of sometimes mandatory national standards which exist in addition to sets of rules such as "IEC", "CENELEC" and "CEE". For example, UL certification or CSA certification are required for the North American market (USA, Canada). Additional marking is also mandatory in such cases, i.e. the certification symbol must be applied as an inscription to the device.

Arc quenching space

During a control's switching operations, in particular during disconnection of highly inductive load currents or short-circuit currents, the ionized gases produced by the arc are forced out through the arc chute openings. To ensure that the concentration of these ionized gases does not reach a hazardous level, a certain clearance is required above or in front of the device. This arc quenching space is quoted by the manufacturer (normally on the dimensional drawings) and depends on the presence of exposed live conductors (e.g. busbars), conducting structures and insulation partitions at the control. Arc chute attachments can be mounted onto large motor starter protectors in order to reduce the clearance and therefore the space required in the control cabinet. No arc quenching space is required for vacuum circuit breakers and vacuum contactors because the arc does not leave the vacuum chute and no ionized gases are released.

AS-Interface

AS-Interface is an open, international standard according to EN 50295 and IEC 62026-2 for process and field communication. Leading manufacturers of actuators and sensors all over the world support the AS-Interface. Interested companies are provided with the electrical and mechanical specifications by the AS-Interface Association.

Auxiliary switch blocks for compact feeders

Optional auxiliary switch blocks in versions with 2 NO, 2 NC or 1 NO plus 1 NC.

AWG (American Wire Gauge)

A standard wire size used in the USA, which is based on the cross-sectional area of the conductor or wire. With each AWG number the cross-sectional area is incremented by 26 %. The thicker the wire, the smaller the AWG number.

Basic module

Function modules are comprised of at least one basic module, supplemented by coupling modules as required. The basic module includes the control logic and, in the case of wye-delta modules, the time setting for ramp-up in star mode, and a 10-pin plug connector for accommodating the plug of the coupling modules.

Bypass operation

When a motor ramp-up is completed, the thyristors on SIRIUS soft starters are fully operated and the complete mains voltage is applied therefore to the motor terminals. As no controlling of the motor voltage is necessary during operation, the thyristors are bridged by internal bypass contacts designed for AC1 current. The waste heat arising during uninterrupted duty due to thyristor power loss is thus reduced. This reduces heating of the switchgear environment.

CLASS (time)

see --> Trip class (CLASS).

Closed power

This refers to the power consumption of a contactor's solenoid coil which results from the continuously absorbed current and is required to hold the magnetic system in the closed state.

Connection methods

SIRIUS offers the right connection method for every environment: Screw terminals, spring-type terminals or ring terminal lugs.

Contactor

A switching device with only one off position, usually without mechanical lock, which is not operated manually and which, under normal conditions, can switch on, transmit and switch off the circuit, including normal overload currents. Contactors are preferably used for high switching frequencies. A distinction is made between contactors for switching motors (motor load switches) and contactor relays for control.

Control kit

An aid for manually closing the main contacts by actuating a handle.

Coupling module

Function modules are comprised of at least one basic module, supplemented by coupling modules as required. The coupling module includes one NO contact and a 10-pole connecting cable with plugs to the coupling module and the basic module; it is used for the mutual interlocking of wye and delta operation. The communication-capable version transmits the signals of the other contactors and realizes the electrical interlocking (reversing/wye-delta starting); there is no integrated connecting cable.

Current limiting with soft starters

SIRIUS 3RW40 soft starters continuously measure the phase current (motor current) by means of integrated current transformers. During the start-up operation, the flowing motor current can be actively limited by the soft starter. The current limiting function is superimposed on the voltage ramp function. This means that as soon as a parameterized current limit value is reached, the voltage ramp is aborted and the motor is started with the current limiting function until the ramp-up is completed.

On SIRIUS 3RW40 soft starters the current limiting is always active. If the current limiting potentiometer is set to the far right (maximum), the starting current is limited to the factor 5 of the set rated motor current.

The current limit value is set as a factor of the rated motor current to the required current during start-up. Due to the current unbalance in the start-up operation, the set current corresponds to the arithmetic mean over the 3 phases.

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Current monitoring relay

Current monitoring relays are used for underload monitoring and overload monitoring of motors or other loads. The level of current permits extensive conclusions to be drawn about the powered process or plant, e.g. a torn belt, no-load operation of a pump, tool wear, hoist overload or blockage. With multi-phase monitoring it is possible in addition to perform phase sequence, phase failure or residual current monitoring. If the measured current values lies outside the defined range there will follow an instant or time-delayed alarm or disconnection.

Current setting range (of an electronic release)

Range between the smallest and the biggest value of the current to which the release can be set.

Door-coupling rotary operating mechanisms

Door-coupling rotary operating mechanisms enable the operation of motor starter protectors and compact starters with closed control cabinet doors.

Electrical interlock

The electrical interdependence of controls through circuit-related measures. Customary for contactor controls: For example, a contactor is only allowed to be switched on when another contactor was switched off first. Auxiliary contacts or auxiliary switches are used to implement an electrical interlock.

Endurance

The period in which the control works problem-free under normal operating conditions. It is expressed in numbers of operating cycles (operating cycles), electrical endurance (contact erosion of the contacts) and mechanical endurance (operating cycles without load).

Explosion protection

Essential for the use of electrical equipment in potentially explosive atmospheres according to EN 50014 (VDE 0170 / 0171). Explosion protection requires equipment which is liable to produce ignition-capable electric arcs (plasma) during operation to be enclosed in a flameproof casing. The explosive mix can enter the enclosure, but an ignition-capable flame produced during an explosion inside the casing is prevented from escaping to the outside.

Fast short-circuit trip unit

A motor starter protector's release which provides short-circuit protection for the downstream load or cable. In the event of a short circuit, the fast short-circuit trip unit must disconnect all poles of the motor starter protector instantaneously or with a short-time delay.

Function module

Function modules are differentiated according to their use:

- For direct-on-line starting
- For reversing starting
- For wye-delta starting

Function modules are also available in communication-capable versions with AS-i or IO-Link in order to create a link to a higher-level control system.

Function module for direct-on-line starting

These function modules are used for the time-delayed switching of contactors.

Function module for reversing starting

Function modules for reversing starting are used for operating reversing starters. The version without a fieldbus interface is comprised of bridge modules, the version for AS-Interface or IO-Link has one basic module and one coupling module. In all three cases the electrical interlocks of the two directional contactors are already included.

Function module for wye-delta starting

Function modules for wye-delta starting are used for changing over from star mode to delta mode. They are comprised of one basic module and two coupling modules. The electrical interlocks are already included in the modules.

Heavy starting

Heavy starting exists if a motor requires more than 10 to 15 s from being switched on to reaching its rated speed on account of its special load conditions. When heavy starting exists, the load torque of the machine to be driven is greater during start-up than in rated operation. It takes longer to reach the rated speed because large centrifugal masses need to be accelerated (e.g. on rolling mills, centrifuges, etc.). The protection of heavy-starting motors requires special overload relays (heavy-starting relays, solid-state overload relays) or thermistor motor protection devices.

Heavy starting with soft starters

According to the specific boundary conditions, the SIRIUS soft starter has to be selected for heavy starting characteristics (CLASS 20 start-up) at least one power level higher than the rating of the motor used. Sample set values and device sizes are listed in tables in the product manual list.

Infeed systems for 3RA6

The infeed system for 3RA6 enables several compact starters to be fed in through one modular infeed system with permanent wiring.

Intrinsic device protection for soft starters

SIRIUS 3RW40 soft starters have integrated intrinsic device protection which prevents thermal overloading of the thyristors. This is realized on the one hand by current measurement using transformers in the three phases and additionally by temperature measurement using thermal sensors on the thyristor heat sink. If the internal permanently set switch-off value is exceeded, the soft starter will switch off automatically.

Inverse-time delayed overload trip unit ("a" release)

A thermal overload release which works with a time delay that decreases as the current increases.

IO-Link

IO-Link is a new communication standard for sensors and actuators - defined by the PROFIBUS User Organization (PNO). IO-Link technology is based on the point-to-point connection of sensors and actuators to the control system. As such it is not a bus system but an upgrade of the classic point-to-point connection. Extensive parameter and diagnostics data are transmitted in addition to the cyclic operating data for the connected sensor and actuators. The connection method is based on a three-pole standard cable or 3 individual wires.

Leakage current

When the current flow is controlled by means of semiconductors, there can be no electrical separation in the device. A small residual current, i.e. leakage current, still flows therefore in the disconnected state when a load is connected.

Low-voltage switchgear and controlgear assembly

A switchgear and controlgear assembly is a combination of one or more low-voltage controls with related units for controlling, measuring and indicating, plus the related protective and control devices. It must be fully assembled under the manufacturer's responsibility, with all internal electrical and mechanical connections and structural parts.

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Glossary

Main control switch

Every industrial machine covered by IEC 60204 Part 1 (VDE 0113, Part 1) must be fitted with a main control switch which disconnects the entire electrical equipment from the mains for the duration of cleaning work, maintenance, repairs and lengthy stoppages. Usually a switch which can be operated by hand is stipulated in order to prevent electrical or mechanical hazards. A main control switch can also be an emergency-stop device.

The following requirements must be met:

1. Handle can be reached from the outside
2. Only one "Off" position and one "On" position with allocated stops
3. Identification of the two positions with "0" and "I"
4. "Off" can be locked
5. Mains terminals with cover to prevent touching by accident
6. The switching capacity must comply with AC-23 in the case of motor load switches and AC-22 in the case of load-break switches (utilization category)
7. Positive indication of the switch position

Mirror contact for power contactors

A mirror contact is an NC contact that cannot be closed simultaneously with an NO main contact (according to EN 60947-5-1, Appendix F).

Modular systems

The SIRIUS modular system offers everything that you need for switching, starting, protecting and monitoring motors and industrial systems. It is a modular selection of standard components which are optimally coordinated, can be combined with ease and use the same accessories.

Motor protection

Protection of induction motors against overload and short circuit, i.e. protection of the winding insulation against unacceptable heating.

Motor Starter Protectors

Generally key-operated switching devices that switch on, control and switch off currents in circuits under normal operating conditions. Under prescribed conditions that are not normal through to short circuit, they can also switch on the current, control it for a specified interval and interrupt it.

Mounting methods

SIRIUS offers a maximum of configuration flexibility. The system components can be configured on a feeder-oriented or line-oriented basis.

Off-delay

The time span effected by a timing relay or timer (e.g. on contactors) between the opening command for the contacts of the timing relay or timer and the actual reaching of their original position.

ON period in %

The relative ON period in % is the ratio between load period and cycle duration for loads which are frequently disconnected and switched on.

Operating range

The range in which a contactor's actuating voltage is allowed to deviate from the rated actuating voltage without the reliable operation of the control being impaired (e.g. dropping out of the contactor).

Overload release

An overload trip unit is an electronic release for protecting against overload.

Phase control for soft starters

With phase control of two inverse-parallel switched thyristor pairs, the rms value of the motor voltage on SIRIUS soft starters is increased within a selectable starting time from a selectable starting voltage to the rated motor voltage.

The motor current changes in proportion to the voltage applied to the motor. The starting current is thus reduced by the factor of the voltage applied to the motor.

The torque changes in squared proportion to the voltage applied to the motor. The starting torque is thus reduced in squared proportion to the voltage applied to the motor.

Phase failure sensitivity

A product feature which enables a protective device to respond also during single-phase operation of a three-phase asynchronous motor before the motor suffers thermal damage (DIN VDE 0660 Part 102).

Pick-up power

The pick-up power is the power consumption of a contactor's solenoid coils which is required to set the magnetic system in motion. With alternating current operation this is usually higher than the closed power. With direct current operation on SIRIUS contactors, the pick-up power equals the closed power.

Polarity balancing for soft starters

On two-phase controlled SIRIUS 3RW30 and 3RW40 soft starters the current resulting from superimposition of the two controlled phases flows in the uncontrolled phase. The advantages of two-phase control lie in the more compact size, compared for example to a three-phase solution, and in the lower device costs.

A negative physical effect of the two-phase control during start-up is the occurrence of DC components due to the leading-edge phase and the superimposition of the phase currents, which can lead to severe noise generation on the motor. The SIEMENS patented "Polarity Balancing" control method was developed to prevent the DC components during start-up.

"Polarity Balancing" reliably eliminates these direct current components during the ramp-up phase. It creates a motor ramp-up that is uniform in speed, torque and current rise. At the same time the acoustic quality of the starting operation comes close to the quality of a three-phase controlled starting operation. This is made possible by the on-going dynamic harmonizing or balancing of current half-waves of different polarity during the motor ramp-up.

Positively-driven contact in contactor relays

Positively-driven contact elements are a combination of "n" NO contact and "m" NC contact which are designed such that they cannot be closed simultaneously (EN 60947-5-1, Appendix L).

Preferred circuit for wye-delta starters

In the preferred circuit for a clockwise rotating motor the motor terminals are correctly connected when phase L1 is connected to motor terminals U1 and V2, L2 to V1 and W2, and L3 to W1 and U2. This order should be observed during installation in order to minimize the changeover current peak in a clockwise rotating motor when switching over from wye to delta.

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Protection technology

Basically a distinction is drawn between two current-based protection technologies: Thermal and solid-state protection. Motor starter protectors and thermal overload relays protect with bimetal trip units; solid-state overload relays, 3RW40 soft starters and 3RA6 compact starters protect on a solid-state basis. The solid-state options feature not only a far lower power loss but also a wide setting range of 1:4, which means that they offer a far smaller variance than the thermal releases. The SIRIUS modular system has the right solution for each switching technology.

Ramp time

With SIRIUS soft starters, the length of the set ramp time defines in which time the motor voltage is raised from a selected starting voltage to the mains voltage. This has an influence on the motor's acceleration moment, which drives the load during the ramp-up operation. As the result, a longer ramp time has a smaller acceleration moment throughout the motor ramp-up. The latter is therefore longer and smoother. The length of the ramp time should be selected such that the motor reaches its rated speed within this period. If the time selected is too short, i.e. if the ramp time ends before the motor ramp-up is finished, a very high starting current will arise at this moment and can reach the value of the direct-on-line starting current at this speed.

Ramp-down time

On SIRIUS 3RW40 soft starters the "ramp-down time" potentiometer can be used to define how long the power supply to the motor is to be upheld after the ON command is removed. During this ramp-down time the torque generated in the motor is reduced using a voltage ramp function and the application is brought to a smooth halt.

Rated conditional short-circuit current I_q

Guaranteed short-circuit breaking capacity of controlgear assemblies and load feeders, also referred to as the rated conditional short-circuit current.

Rated data of the control circuit

The most important rated data of the control circuit for selecting a contactor are the rated control supply voltage U_s (the voltage of the coil connection) with related frequency (e.g. 50 Hz) and the power consumption of the coil (pick-up power and closed power).

Rated data of the main circuit

The most important rated data of the main circuit for selecting a contactor are the rated operational current I_e (the current which is defined by the conditions of use) or the rated power (motor rating) and the corresponding rated voltage U_e.

Rated impulse withstand voltage (U_{imp})

The peak value of a surge voltage of specified form and polarity to which, under specified test conditions, electrical equipment can be subjected without failing and to which the clearances refers. The rated impulse withstand voltage of a device must correspond to, or be greater than, the transient overvoltages that occur in the system in which the equipment is installed.

Rated insulation voltage U_i

The voltage value which specifies the insulation resistance of the control or accessory part and to which the insulation tests and creepage and clearances refer. On no account must the highest rated operational voltage exceed the rated insulation voltage.

Rated service short-circuit breaking capacity I_{cs}

Compared to the rated ultimate short-circuit breaking capacity I_{cu}, the test conditions are more exacting and the short-circuit current is usually lower. Determined with test sequence II, switching sequence O-t-CO-t-CO (O = Open , t = Time , CO = Close-Open). After the test, the motor starter protector must be unrestricted in its functions.

Rated short-circuit breaking capacity I_{cn}

The rated short-circuit breaking capacity of a motor starter protector is (according to IEC 60947-2 and EN 60947-2) the value of the short-circuit current that it can switch off at the rated operational voltage, rated frequency and specified power factor (or specified time constant). The value of the prospective current applies (in the case of alternating current: rms value of the AC components) as specified by the manufacturer. With AC motor starter protectors the rated short-circuit breaking capacity must be independent of the size of the DC components (DC component). The rated short-circuit breaking capacity means that the motor starter protector can disconnect any current up to the rated short-circuit breaking capacity at a line-frequency recovery voltage of 110 % of the rated operational voltage.

This applies

- for alternating current with every value of the power factor, but not lower than specified in the respective testing guidelines,
- for direct current, unless otherwise stated by the manufacturer, with every time constant but not greater than defined in the respective testing directive.

The short-circuit breaking capacity does not apply for line-frequency recovery voltage of more than 110 % of the rated operational voltage.

Rated ultimate short-circuit breaking capacity I_{cu}

The maximum short-circuit current I_K (limit value of the rated short-circuit breaking capacity) which the motor starter protector can disconnect under defined conditions. Determined with test sequence III, switching sequence O-t-CO (O = Open, t = Time, CO = Close-Open). After the test, the motor starter protector may be restricted in its functions.

Recovery time

After a protection function in a control (e.g. motor starter protector, soft starter, overload relay or current monitoring relay) has tripped, the motor cannot be restarted until a recovery time has elapsed. The recovery time varies in length according to the cause of the fault. Details can be found in the related product documentation.

Response delay

The response delay is the time from the beginning of a command's entry to the first making of the contact, e.g. at the contactor.

RoHS

EC Directive 2002 / 95 / EC concerning the restriction of certain dangerous substances in electrical and electronic devices regulates the use of hazardous substances in devices and components. The directive and its respective implementation in national law is known for short by the abbreviation RoHS (Restriction of the use of certain Hazardous Substances).

Short-circuit strength

Resistance of a control in the closed state with its parts (e.g. releases) or of a complete switchgear against the electrodynamic (dynamic short-circuit strength) and thermal (thermal short-circuit strength) stress that occurs in the event of a short circuit. The characteristic for the dynamic stress is the peak short-circuit current as the highest instantaneous value of the short-circuit current. The characteristic for the thermal stress of the short-circuit current is the rms value of the short-circuit current for its duration.

SIL (Safety Integrity Level)

A discrete level (one of three possible levels) for defining the requirements to be met by the safety integrity of safety-related control functions. SIL 3 is the highest and SIL 1 the lowest safety integrity level.

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Glossary

Smooth ramp-down

The same principle is used during the ramp-down operation as for soft starting. This way the torque generated in the motor is slowly reduced, thus enabling a smooth ramp-down of the application.

During a smooth ramp-down, the free or natural ramp-down of the load is prolonged. This function is set if there is a need to prevent the load from being stopped abruptly. Applications involving small mass inertia values or high counter-rotating torques are typical examples.

Soft starters

A motor starter which reduces the motor's starting torque (tightening torque) and starting current in order to reduce vibrations on the driven machine and current peaks in the line supply. The starting torque is reduced because the control supply voltage at the beginning is lower than the motor's rated voltage (the starting torque is proportional to the square of the applied voltage). The terminal voltage can be increased as soon as the motor is running. Classic methods for reducing the terminal voltage are for example wye-delta starting, start-up through resistors in the stator and starting with an autotransformer. The use of solid-state motor controllers with switched thyristor circuits for controlling the terminal voltage on squirrel-cage motors is becoming increasingly widespread. See also "Soft starting" and "Smooth ramp-down".

Soft starting

During the start-up operation, the absorbed starting current and the starting torque generated in the motor are regulated by a solid-state soft starter on the basis of the motor voltage control (phase control).

Starting current

Three-phase asynchronous motors have a high direct-on-line starting current. Depending on the motor version it can amount to between three times and fifteen times the rated operational current. Seven to eight times the rated motor current can be taken as a typical value.

Starting voltage

With SIRIUS soft starters, the level of the starting voltage defines the switch-on torque of the motor. A lower starting voltage results in a lower tightening torque and a lower starting current. The starting voltage should be selected such that the motor starts up immediately and smoothly once the start command goes to the soft starter.

Start-up detection on soft starters

SIRIUS 3RW40 soft starters feature internal start-up detection. When a motor ramp-up is detected, the motor voltage is increased immediately to 100 % of the mains voltage. The internal bypass contacts close and the thyristors are bridged.

Switching frequency

Number of operating cycles per unit of time (e.g. 15 operations per hour).

To prevent thermal overloading of the SIRIUS soft starters, it is imperative to comply with the maximum permissible switching frequency. The switching frequency of SIRIUS soft starters size S0 to S3 can be increased by using an optional auxiliary fan.

Switching technology

Basically a distinction is drawn between two switching technologies: On the electromechanical side there are contactors, contactor assemblies and compact starters which can be used to implement solutions for direct-on-line starting, reversing starting and wye-delta starting. Frequent switching or reversing, soft starting and smooth ramp-down are performed on the other hand with solid-state controls: solid-state switching devices and soft starters. The SIRIUS modular system has the right solution for each switching technology.

Temperature compensation

On inverse-time (thermally) delayed overload releases and relays, the tripping time is influenced not only by the current but also by the ambient temperature. The effect of the ambient temperature is compensated by an additional bimetal strip which is not heated by the current. Solid-state compensation is possible for solid-state overload relays.

Terminals for "Self-Protected Combination Motor Controller (Type E)"

The terminals comply with the required clearance and creepage distances according to UL 508 (type E).

Thermistor motor protection

Protection of the motor through temperature sensors fitted in the windings (PTC sensors). These directly monitor the winding temperature.

Three-phase busbars

The three-phase busbar enables several motor starter protectors or compact starters to be fed in through one feeder terminal.

Tightening torque

The tightening torque and the breakdown torque can normally be assumed to amount to between two and four times the rated torque. For the loaded machine this means that the start-up and acceleration forces give rise to a higher mechanical load on the machine and the goods being conveyed than compared to operation at rated values.

Time-delayed auxiliary switch

A component which unites various auxiliary switch combinations and as a general rule can also be retrofitted to a control.

Timing relays

A control with solid-state time delay which opens or closes contacts after a delay according to the set time.

Trip class (CLASS)

The trip class of an inverse-time delayed overload relay (including thermal and solid-state overload relays and releases) indicates the maximum tripping time under a given load from cold. The trip class number (e.g. CLASS 10, 20, 30) stands for the maximum permissible tripping time in seconds when the relay is loaded with symmetrical 3-pole loading from cold with 7.2 times the current setting (IEC 947-4-1; DIN VDE 0660 Part 107). Trip classes 20 and 30 are used for example for motor protection in heavy starting conditions.

Tripping characteristic

The graphical representation of the connection between the tripping time and the influencing variable is shown in the tripping characteristic curve. The time/current diagram shows for example how long the release or the tripping relay takes to respond to a specific current.

Tripping current (of an overload release)

Value of the current at which a trip releases within a specified time.

Two-phase control

Two of three active phases are controlled by means of semiconductors. With SIRIUS 3RW30 and 3RW40 soft starters, for example, two inverse-parallel switched thyristors lie in each of the phases L1 and L3. Phase L2 is passed through the starter as an uncontrolled phase using a copper link and is connected directly to the corresponding output terminal.

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Types of coordination

EN 60947-4-1 (VDE 0660 Part 102) and IEC 60947-4-1 make a distinction between two different types of coordination which are referred to as type of coordination "1" and type of coordination "2". Any short circuits that occur are cleared safely by both types of coordination. The only differences concern the extent of the damage caused to the device by a short circuit.

With type of coordination "1" the fuseless load feeder may be non-operational after a short circuit has been cleared. Damage to the contactor or to the overload release is permissible. For 3RA2 load feeders, the motor starter protector itself always achieves type of coordination "2".

By contrast, with type of coordination "2" there must be no damage to the overload release or to any other component after a short circuit has been cleared. The 3RA2 fuseless load feeder can resume operation without needing to be partially renewed. At most, welding of the contactor contacts is permissible if they can be disconnected easily without any significant deformation.

Utilization categories

According to IEC 60947-4-1, the intended use and stress of power contactors can be identified by specifying the utilization category in conjunction with the rated operational current or motor rating and the rated voltage. An example is utilization category AC-3 for starting and switching off squirrel-cage motors.

Voltage ramp

With SIRIUS 3RW30 and 3RW40 soft starters, soft starting is achieved using a voltage ramp. The motor's terminal voltage is raised during an adjustable starting time from a parameterizable starting voltage to the mains voltage.

Wye-delta contactor assembly

A contactor assembly which during start-up switches the motor into a star circuit (one third the starting current compared to delta starting) and after a while changes over to the delta circuit. Wye-delta contactor assemblies are used where a high starting current has to be prevented in order to reduce the effects on the mechanical components or mains.

Wye-delta starter

See wye-delta contactor assembly

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SITRAIN highlights

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Our trainers are skilled teachers with direct practical experience. Course developers have close contact with product development, and directly pass on their knowledge to the trainers.

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The practical experience of our trainers enables them to teach theory effectively. But since theory can be pretty drab, we attach great importance to practical exercises which can comprise up to half of of the course time. You can therefore immediately implement your new knowledge in practice. We train you on state-of-the-art methodically/didactically designed training equipment. This training approach will give you all the confidence you need.

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With a total of about 300 local attendance courses, we train the complete range of Siemens Industry products as well as interaction of the products in systems.

Tailor-made training

We are only a short distance away. You can find us at more than 50 locations in Germany, and in 62 countries worldwide. You wish to have individual training instead of one of our 300 courses? Our solution: We will provide a program tailored exactly to your personal requirements. Training can be carried out in our Training Centers or at your company.

The right mixture: Blended learning

"Blended learning" means a combination of various training media and sequences. For example, a local attendance course in a Training Center can be optimally supplemented by a teach-yourself program as preparation or follow-up. Additional effect: Reduced traveling costs and periods of absence.



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Logistics

General

With regard to delivery service, communications and environmental protection, our logistics service ensures "quality from the moment of ordering right through to delivery". By designing our infrastructure according to customer requirements and implementing electronic order processing, we have successfully optimized our logistics processes.

We are proud of our personal consulting service, on-time deliveries and 1-day transport within Germany.

To achieve this, we supply the preferred types marked with ► ex warehouse.

We regard the DIN ISO 9001 certification and consistent quality checks as an integral part of our services.

Electronic order processing is fast, cost-efficient and error-free. Please contact us if you want to benefit from these advantages.

Packaging, packing units

The packaging in which our equipment is dispatched provides protection against dust and mechanical damage during transport, thus ensuring that you receive our products in a perfect state.

We select our packaging for maximum environmental compatibility and reusability (e.g. crumpled paper for protection during transport in packages up to 32 kg) and, in particular, with a view to reducing waste.

With our multi-unit packaging and reusable packaging, we offer you specific types of packaging that are both kind to the environment and tailored to your requirements:

Your advantages at a glance:

- Lower order costs.
- Cost savings through uniform-type packaging: low/no disposal costs.
- Reduced time and cost thanks to short unpacking times.
- "Just-in-time" delivery directly to the production line helps reduce stock: cost savings through reduction of storage area. cost savings through reduction of storage area.
- Fast assembly thanks to supply in sets.
- Standard Euro boxes - corresponding to the Euro pallet modular system - suitable for most conveyor systems.
- Active contribution to environmental protection.

Unless stated otherwise in the "Selection and ordering data" of this catalog, our products are supplied individually packed.

For small parts/accessories, we offer you economical packaging units as standard packs containing more than one item, e.g. 5, 10, 50 or 100 units. It is essential that whole number multiples of these quantities be ordered to ensure satisfactory quality of the products and problem-free order processing.

The products are delivered in a neutral carton. The label includes warning notices, the CE mark and product description information in English and German.

In addition to the Order No. (MLFB) and the number of items in the packaging, the Instr. Order No. is also specified for the operating instructions. It can be obtained from your local Siemens representative (you will find a list of your local Siemens representatives at www.siemens.com/automation/partner).

The device Order No. of most devices can also be acquired through the EAN barcode to simplify ordering and storage logistics.

The related master data are available from your local Siemens representative.

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Ordering notes

Multi-unit and reusable packagings

The devices listed in the table on page 16/11 can be ordered in multi-unit or reusable packagings (further versions on request).

If ordering multi-unit or reusable packagings for the first time, please first consult your local Siemens representative with regard to pack type, quantity, delivery time and the precise order designation. Use of the reusable packaging is reserved solely for customers that have signed a packaging return agreement with their Siemens representative in advance.

Multi-unit and reusable packagings are not available as a pack type for all products. Some products are unsuited for this pack type and would only involve an increased risk of damage in transit.

For both pack types, the quantity of devices ordered (per Order No.) must be divisible by the pack quantity. If this is not the case, the electronic order processing system rounds up to the next integer multiple of packagings.

Multi-unit packaging



Products in a quantity sufficient to fill a multi-unit packaging: 1/2 (W96) and 1/4 (W97) ENK

As standard, multi-unit packs contain uniform-type, unpacked single devices (1 device type) in an appropriately sized carton made of recyclable cardboard. The products of the SIRIUS range can be ordered in units of 1/1, 1/2, 1/4 and 1/8 standard Euro boxes (ENK).

Reusable packaging (uniform type)



Standard reusable packagings contain uniform-type, non-packed individual products (1 device type) in a reusable standard Euro box (ENK) made of durable molded plastic with foam inserts for protection during transport.

The standard Euro box (ENK) also serves as transport packaging. The reusable packagings (ENK) plus foam inserts are returned by the customer (free of charge) to the supply base.

Please contact your Siemens representative (you will find Siemens representatives at www.siemens.com/automation/partner) to clarify the delivery details or conditions for delivery in reusable packagings (ENK). Suitable arrangements will then be agreed with you.

Set deliveries (reusable, different devices)

On request, we also deliver order-related packs of larger quantities of devices in a standard Euro box (ENK).

Please contact your Siemens representative to clarify the delivery details or conditions for set supply or delivery in reusable packagings. Suitable arrangements will then be agreed with you.

Packaging dimensions

Packing material	Length	Height	Width
	mm	mm	mm
ENK	598	220	396
W95	576	192	380
W96	380	187	290
W97	290	187	190
W98	290	98	190

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Multi-unit and reusable packaging, quantity in units, supplied in indivisible pack quantities

Devices	Size	Reusable	Multi-unit			
		X95 (1/1 ENK)	**W95** (1/1 ENK)	**W96** (1/2 ENK)	**W97** (1/4 ENK)	**W98** (1/8 ENK)
Contactors						
3RT20 1.–1A..1/2	S00	144	On req.	72	40	--
3RT20 1.–1B..1/2	S00	72	On req.	72	40	--
3RT20 1.–2 A/B…	S00	120	On req.	60	32	--
3RT20 2.–1 A/B ..0	S0	48	On req.	24	12	--
3RT20 2.–2 A/B ..0	S0	40	On req.	18	8	--
3RT10 3.–.A..0/4	S2	30	30	15	--	--
3RT10 3.–.B..0	S2	24	24	15	--	--
3RT10 3.–.B..4	S2	24	24	15	--	--
Snap-on auxiliary switch blocks						
3RH29 11–1F./GA/HA ..	--	351	On req.	240	120	60
Contactor relays						
3RH21 ..–1A ..0	S00	144	On req.	72	40	--
3RH21 ..–2A/B ..0	S00	120	On req.	60	32	--
Motor starter protectors						
3RV20 1 1–…1 /0/5	S00	43	On req.	24	12	--
3RV20 1 1–…2 /0/5	S00	34	On req.	16	8	--
3RV20 2 1–…1 /0/5	S0	43	On req.	24	12	--
3RV20 2 1–…2 /0/5	S0	34	On req.	16	8	--
3RV10 31–... 0/5	S2	24/24	24/--	12/12	5/--	2/--
Thermally delayed overload relays						
3RU21 16–..B0	S00	64	On req.	32	16	--
3RU21 16–..C0	S00	56	On req.	24	12	--
3RU21 26–..B0	S0	56	On req.	32	16	--
3RU21 26–..C0	S0	48	On req.	24	12	--
3RU11 36–..B0	S2	36	36	18	9	5
Solid-state timing relays						
3RP15 05–...20	--	--	137	--	27	16
3RP15 05–...30	--	137	137	--	27	16
3RP15 1/2.–.A.30	--	192	--	96	48	24
3RP15 2.–.B.30	--	137	--	--	--	16
3RP15 4.–.B.31	--	137	--	--	--	--
3RP15 74 –.N.30	--	192	--	--	48	--

Devices	Reusable	Multi-unit		
	X95	**X90**	**W95**	**W96**
3SB pushbuttons and indicator lights				
Complete units and actuators (except EMERGENCY-STOP, mushroom pushbuttons and key-operated switches)	--	50	--	--
Complete units and actuators (EMERGENCY-STOP, mushroom pushbuttons and key-operated switches)	--	20	--	--
Contact blocks	--	150	--	--
Holder	--	100	--	--
Supports, blanking plugs	--	50	--	--
3TK28 safety relays	116	--	116	60

When ordering products in multi-unit packagings, the Order No. of the product concerned must be supplemented with **"–Z"** and, in addition, the order code **X90**, or for products from the SIRIUS range, the order code **W9.**.

Example:
3RT20 24–1AB00–Z W96
+ quantity: 24

For products packed in reusable packaging, the Order No. must be supplemented with **"–Z"** and the order code **X95**.

Example:
3RT20 24–1AB00–Z X95
+ quantity: 48

Ordering special versions

For ordering products that differ from the versions listed in the catalog, the order number specified in the catalog must be supplemented with **"–Z"**; the required features must be specified by means of the alphanumeric order codes or in plain text.

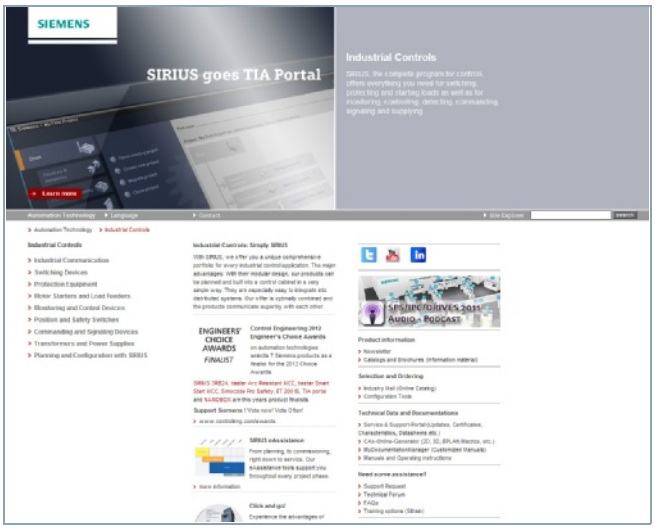
Small orders

When small orders are placed, the costs associated with order processing are greater than the order value. We recommend therefore that you combine several small orders. Where this is not possible, we unfortunately have to charge a processing supplement of € 20.-- to cover our costs for order processing and invoicing for all orders with a net goods value of less than € 250.--.

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Further documentation

Overview



Industrial controls

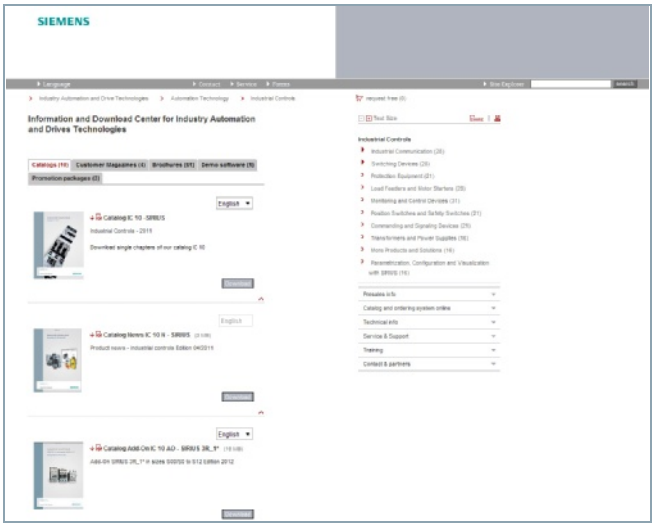
We regard product support as just as important as the products and systems themselves.

Visit our site on the Internet for a comprehensive range of material on SIRIUS Industrial Controls, such as

- Operating instructions and manuals for direct download
- Online registration for seminars and events
- Up-to-date answers to your queries and problems
- Software upgrades and updates for fast download
- Telephone assistance in more than 190 countries
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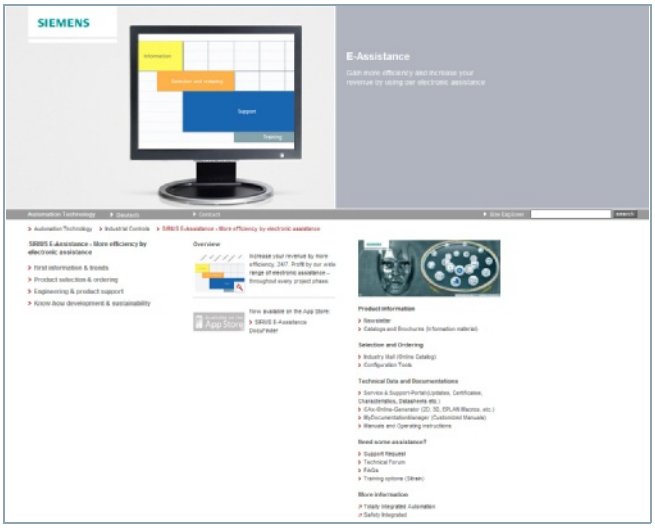


Information and download center

You will find information material such as catalogs, customer magazines, brochures and trial versions of software for Industrial Controls on the Internet at:

www.siemens.com/sirius/infocenter .

You can order the available documents or download them in popular file formats (PDF, ZIP) from this site.



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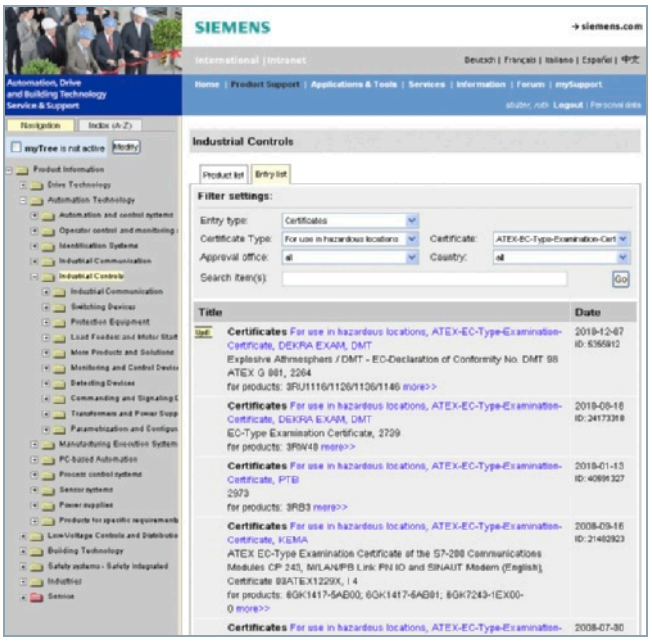
www.siemens.com/sirius/eAssistance .

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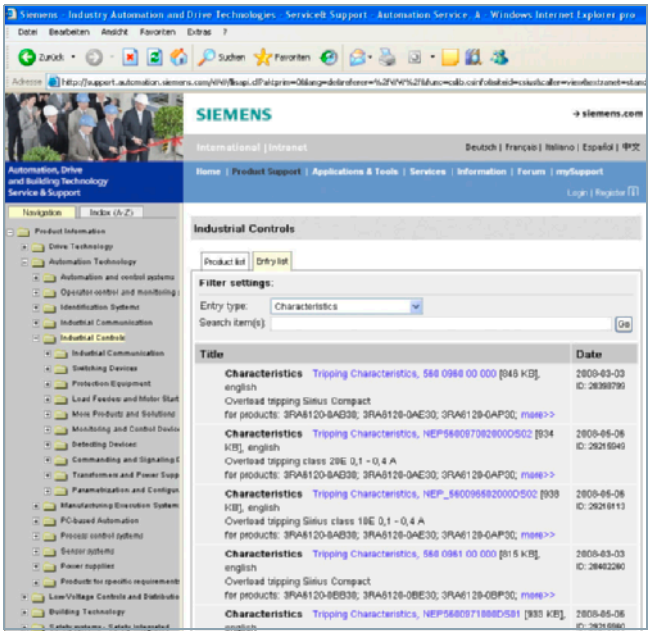
Approvals, test certificates, characteristic curves

An overview of the certificates available for Industrial Control products along with more technical documentation can be consulted daily on the Internet at:

www.siemens.com/sirius/approvals



Product support: Approvals/certificates



Product support: Characteristic curves

Safety characteristics

In the following standards, the so-called B10 values for calculating the safety integrity or safety integrity level (SIL) in functional safety at a high or continuous demand rate are required also for electromechanical switchgear:

- IEC 62061 "Safety of machines - Functional safety of safety-related electrical, electronic and programmable electronic control systems",
- ISO 13849-1 "Safety of machines - Safety-related components of controls - Part 1: General principles".

Failure rates of electromechanical components are required for calculating the safety integrity or safety integrity level (SIL) in functional safety:
- in the manufacturing industry at a high demand rate
- in the process industry at a low demand rate

Further requirements are laid down in IEC 61511-1 "Functional safety - Safety instrumented systems for the process industry sector - Part 1: Framework, definitions, system, hardware and software requirements".

The German versions of the above standards are:

- IEC 62061 (VDE 0113-50), October 2005, which since Dec. 31, 2005 has been harmonized as EN 62061 under the Machinery Directive,
- EN ISO 13849-1:2008,
- IEC 61511-1 (VDE 810-1).

The TÜV-tested Safety Evaluation Tool assists in calculating the safety function as verification for the machine documentation. It is available on the Internet at www.siemens.com/safety-evaluation-tool.

At www.siemens.com/safety-integrated you will also find examples of functions with calculations according to the current standards.

Definitions

$\lambda\,(t)\,dt$ is the probability that a unit which has not failed by a certain time t will fail in the following interval $(t;\ t+dt)$.
Failure rates have the dimension 1/time unit, e.g. 1/h.
Failure rates for components are often specified in FIT (failures in time unit): 1 FIT equals 10^{-9}/h.
From the failure rate it is possible to derive a (mathematical) distribution function of the failure probability:

$F(t) = 1 - \exp(-\lambda t)$, with λ as constant failure rate

- The mean value of this exponential distribution is also referred to as:
  - Mean Time To Failure (MTTF) in the case of irreparable components; 63.2 % of components fail by the MTTF.
  - Mean Operating Time Between Failures (MTBF) in the case of reparable components.
- MTTF = $1/\lambda$
  (MTTF is a statistical mean value but no guarantee for endurance)

Electromechanical components are often irreparable components. In general, the failure rate of monitored units changes with age.

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Standards and approvals

The B10 value for devices subject to wear is expressed in number of operating cycles:

- it is the number of operating cycles after which 10 % of the test specimens fail in the course of an endurance test (or: the number of operating cycles after which 10 % of the devices have failed).

For low demand rates (mainly in the process industry), the failure rate and not the B10 value is used to determine the failure probability.

Standard B10 values at a high demand rate

With the help of the B10 value and a simplified formula (see section 6.7.8.2.1 of IEC 62061), the user can then calculate the total failure rate of an electromechanical component:

$\lambda = 0.1 \times C/B10$

with C = operating cycles per hour. C is specified by the user.

The failure rate is made up of safe (λ_S) and dangerous (λ_D) failures:

$\lambda = \lambda_S + \lambda_D$

or

λ_D = [share of dangerous failures in %] x λ

λ_S = [share of safe failures in %] x λ

The failure rate of the dangerous failures λ_D of the components used is needed for further calculations.

Listed in the following table are the standard B10 values and the share of dangerous failures for SIRIUS product groups at a high demand rate.

Standard B10 values (at a high demand rate)

SIRIUS product group (electromechanical components)	Standard B10 value (operating cycles)	Share of dangerous failures
EMERGENCY-STOP control devices (with positive-opening contacts)		
- pulled to unlatch	30 000	20 %
- rotated to unlatch (also with lock)	100 000	20 %
Cable-operated switches for EMERGENCY-STOP function (with positive-opening contacts)	1 000 000	20 %
Standard position switches (with positive-opening contacts)	10 000 000	20 %
Position switches with separate actuator (with positive-opening contacts)	1 000 000	20 %
Position switches with tumbler (with positive-opening contacts)	1 000 000	20 %
Hinge switches (with positive-opening contacts)	1 000 000	20 %
Pushbuttons (non-latching), with positive-opening contacts)	10 000 000	20 %
Contactors / motor starters (with positively driven contacts in the case of 3RH/3TH and mirror contacts in the case of 3RT/3TF)	1 000 000	73 %

The $B10_d$ value used in EN ISO 13849-1:2008 is determined as follows:

$$B10_d = \frac{B10}{\text{Share of dangerous failures}}$$

Calculation example

A protective door is monitored by a position switch with a separate actuator.

The protective door is opened 4 times an hour.

The overall failure rate of the position switch is:

$\lambda = 0.1 \cdot C/B10$ [failures/h]
$\lambda = 0.1 \cdot 4/1\,000\,000 = 4 \cdot 10^{-7}$ [failures/h]

The dangerous failure rate is calculated with:

λ_D = 20 % of $\lambda = 0.2 \cdot 4 \cdot 10^{-7}$ [failures/h]
$\lambda_D = 8 \cdot 10^{-8}$ [failures/h]

Standard failure rates (at a low demand rate)

On the basis of the failure rates it is possible to calculate the average probability of failure on demand (PFD_{avg}) of a PLT protective device.

A so-called low demand rate is assumed, meaning the rate of demand on the safety-related system amounts to no more than once a year and is not greater than double the frequency of the repeat test.

A repeat test once a year is recommended for electromechanical components in order to reveal passive faults.

For special applications it is possible, in agreement with the inspecting institution (e.g. a technical inspectorate, government agency or the like) to extend the test intervals by using suitable solutions (e.g. a multi-channel version etc.).

Under the above conditions and in compliance with the requirements laid down in IEC 61511 it is possible to achieve SIL 2 with a single-channel design and SIL 3 with a two-channel design.

Listed in the following table are the standard failure rates and the share of dangerous failures for SIRIUS product groups at a low demand rate.

Standard failure rates at a low demand rate

SIRIUS product group (electromechanical components)	Standard failure rates (in FIT)[1]	Share of dangerous failures[2]
EMERGENCY-STOP control devices (with positive-opening contacts)	100	20 %
Cable-operated switches for EMERGENCY-STOP function (with positive-opening contacts)	100	20 %
Standard position switches (with positive-opening contacts)	100	20 %
Position switches with separate actuator (with positive-opening contacts)	100	20 %
Position switches with tumbler (with positive-opening contacts)	100	20 %
Hinge switches (with positive-opening contacts)	100	20 %
Pushbuttons (non-latching) (with positive-opening contacts)	100	20 %
Contactors / motor starters (with positively driven contacts in the case of 3RH/3TH and mirror contacts in the case of 3RT/3TF)	100	< 40 %

[1] The failure rates specified in the table were limited to 100 FIT.

[2] Valid only under the previously mentioned conditions.

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Standards

IEC	EN	DIN VDE	Title
60947-1	60947-1	--	Low-voltage switchgear and controlgear - General rules
60947-2	60947-2	--	• Circuit-breakers
60947-3	60947-3	--	• Switches, disconnectors, switch-disconnectors and fuse-combination units
60947-4-1	60947-4-1	--	• Contactors and motor-starters - Electromechanical contactors and motor-starters
60947-4-2	60947-4-2	--	• Contactors and motor-starters - AC semiconductor motor controllers and starters
60947-4-3	60947-4-3	--	• Contactors and motor-starters - AC semiconductor controllers and contactors for non-motor loads
60947-5-1	60947-5-1	--	• Control circuit devices and switching elements - Electromechanical control circuit devices
60947-5-2	60947-5-2	--	• Control circuit devices and switching elements - Proximity switches
60947-5-3	60947-5-3	--	• Control circuit devices and switching elements - Requirements for proximity devices with defined behaviour under fault conditions
60947-5-5	60947-5-5	--	• Control circuit devices and switching elements - Electrical emergency stop device with mechanical latching function
60947-5-6	60947-5-6	--	• Control circuit devices and switching elements - DC interface for proximity sensors and switching amplifiers (NAMUR)
60947-5-7	60947-5-7	--	• Control circuit devices and switching elements - Requirements for proximity devices with analogue output
60947-5-8	60947-5-8	--	• Control circuit devices and switching elements - Three-position enabling switches
60947-5-9	60947-5-9	--	• Control circuit devices and switching elements - Flow rate switches
60947-6-1	60947-6-1	--	• Multiple function equipment - Transfer switching equipment
60947-6-2	60947-6-2	--	• Multiple function equipment - Control and protective switching devices (or equipment) (CPS)
60947-7-1	60947-7-1	--	• Ancillary equipment - Terminal blocks for copper conductors
60947-7-2	60947-7-2	--	• Ancillary equipment - Protective conductor terminal blocks for copper conductors
60947-7-3	60947-7-3	--	• Ancillary equipment - Safety requirements for fuse terminal blocks
60947-8	60947-8	--	• Control units for built-in thermal protection (PTC) for rotating electrical machines
62026-2	50295	--	• Controller-device interfaces (CDIs) - Actuator sensor interface (AS-i)
60269-1	60269-1	--	Low-voltage fuses - General requirements
60269-4	60269-4	--	• Supplementary requirements for fuse-links for the protection of semiconductor devices
60050-441	--	--	International Electrotechnical Vocabulary. Switchgear, controlgear and fuses
60439-1	60439-1	--	Low-voltage switchgear and controlgear assemblies - Type-tested and partially type-tested assemblies
--	50274	--	Protection against electric shock - Protection against unintentional direct contact with hazardous live parts
61140	61140	--	Protection against electric shock - Common aspects for installation and equipment
60664-1	60664-1	--	Insulation coordination for equipment within low-voltage systems - Principles, requirements and tests
60204-1	60204-1	--	Safety of machinery - Electrical equipment of machines - General requirements
--	50178	--	Electronic equipment for use in power installations
60079-14	60079-14	--	Explosive atmospheres - Electrical installations design, selection and erection
60079-2	60079-2	--	Explosive atmospheres - Equipment protection by pressurized enclosures "p"
61810-1	61810-1	--	Electromechanical elementary relays - General requirements
61812-1	61812-1	--	Time relays for industrial and residential use - Requirements and tests
60999-1	60999-1	--	Connecting devices - Electrical copper conductors - Safety requirements for screw-type and screwless-type clamping units - General requirements and particular requirements for clamping units for conductors from 0,2 mm^2 up to 35 mm^2
61558-1	61558-1	0570-1[1)]	Safety of power transformers, power supplies, reactors and similar products
			• Part 1: General requirements and tests
61558-2-1	61558-2-1	0570-2-1[1)]	• Part 2-1: Particular requirements and tests for separating transformers and power supplies incorporating separating transformers for general applications
61558-2-2	61558-2-2	0570-2-2[1)]	• Part 2-2: Particular requirements and tests for control transformers and power supplies incorporating control transformers
61558-2-4	61558-2-4	0570-2-4[1)]	• Part 2-4: Particular requirements and tests for isolating transformers and power supply units incorporating isolating transformers
61558-2-6	61558-2-6	0570-2-6[1)]	• Part 2-6: Particular requirements and tests for safety isolating transformers and power supply units incorporating safety isolating transformers
61558-2-9	61558-2-9	0570-2-9[1)]	• Part 2-9: Particular requirements and tests for transformers and power supply units for class III handlamps for tungsten filament lamps
61558-2-12	61558-2-12	0570-2-12[1)]	• Part 2-12: Particular requirements and tests for constant voltage transformers and power supply units for constant voltage
61558-2-13	61558-2-13	0570-2-13[1)]	• Part 2-13: Particular requirements and tests for auto transformers and power supply units incorporating auto transformers
61558-2-15	61558-2-15	0570-2-15[1)]	• Part 2-15: Particular requirements and tests for isolating transformers for the supply of medical locations
61558-2-20	61558-2-20	0570-2-20[1)]	• Part 2-20: Particular requirements and tests for small reactors
62041	62041	0570-10[1)]	Safety of transformers, reactors, power supply units and combinations thereof - EMC requirements
60076-11	60076-11	--	Power transformers - Part 11: Dry-type transformers
--	--	0552	Specification for variable-ratio transformers having current collectors which are moved transversely to the direction of the windings
61000-4-1	61000-4-1	--	Electromagnetic compatibility (EMC) - Testing and measurement techniques - Overview of IEC 61000-4 series
61000-6-2	61000-6-2	0839-6-2	Electromagnetic compatibility (EMC) - Generic standards - Immunity for industrial environments
61000-6-3	61000-6-3	0839-6-3	Electromagnetic compatibility (EMC) - Generic standards - Emission standard for residential, commercial and light-industrial environments
61000-6-4	61000-6-4	0839-6-4	Electromagnetic compatibility (EMC) - Generic standards - Emission standard for industrial environments
60044-1	60044-1	--	Instrument transformers - Part 1: Current transformers

[1)] VDE classification.

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Standards and approvals

UL	CSA C22.2	ASME	JIS	Title
506	--	--	--	Specialty transformers
508	--	--	--	Industrial control equipment
60947-1	--	--	--	Low-voltage switchgear and controlgear - Part 1: General rules
60947-4-1A	--	--	--	Low-voltage switchgear and controlgear - Part 4-1: Contactors and motor starters - Electromechanical contactors and motor starters
489	--	--	--	Molded case circuit breakers, molded case switches, and circuit breaker enclosures
1012	--	--	--	Power units other than CLASS 2
1561	--	--	--	Dry-type general purpose and power transformers
5085	--	--	--	Low-voltage transformers
60601-1	--	--	--	Medical electrical equipment, Part 1: General requirements for safety (IEC 60601, EN 60601, VDE 0750-1)
1604	--	--	--	Electrical equipment for use in CLASS I and II, Division 2 and CLASS III hazardous (Classified) locations
1059	--	--	--	Terminal blocks
486A-486B	--	--	--	Wire connectors
486E	--	--	--	Equipment wiring terminals for use with aluminum and/or copper conductors
50	--	--	--	Enclosures for electrical equipment, non-environmental considerations
50E	--	--	--	Enclosures for electrical equipment, environmental considerations
--	No. 66	--	--	Specialty transformers
--	No. 14	--	--	Industrial control equipment
	No. 60947-1	--	--	Low-voltage switchgear and controlgear - Part 1: General rules
	No. 60947-4-1A	--	--	Low-voltage switchgear and controlgear - Part 4-1: Contactor and motor starters - Electromechanical contactors and motor starters
--	No. 5	--	--	Molded case circuit breakers, molded case switches, and circuit breaker enclosures
--	No. 107-1	--	--	General use power supplies
--	--	A17.5 / B 44.1	--	Elevator and escalator electrical equipment
--	--	--	C 8201-4-1	Low-voltage switchgear and controlgear; Contactors and motor-starters

Approval requirements valid in different countries

Siemens low-voltage switchgear and controlgear are designed, manufactured and tested according to the relevant German standards (DIN and VDE), IEC publications and European standards (EN) as well as CSA and UL standards. The standards assigned to the single devices are stated in the relevant parts of this catalog.

As far as is economically viable, the requirements of the various standards valid in other countries are also taken into account in the design of the equipment.

In some countries (see table below), an approval is required for certain low-voltage switchgear and controlgear components. Depending on the market requirements, these components have been submitted for approval to the authorized testing institutes.

In some cases, CSA for Canada and UL for the USA only approve special switchgear versions. Such special versions are listed separately from the standard versions in the individual parts of this catalog.

For this equipment, partial limitations of the maximum permissible voltages, currents and ratings can be imposed, or special approval and, in some cases, special identification is required.

For use on board ship, the specifications of the marine classification societies must be observed (see table below). In some cases, they require type tests of the components to be approved.

Testing bodies, approval identification and approval requirements

Country	Canada [1]	USA [1]	China
Government-appointed or private, officially recognized testing bodies	CSA UL (USA)	UL	CQC
Mark of conformity	c UL c FM c FM US c UL US	UL FM c FM US c UL US	CCC
Approval requirement	+	+	+
Remarks	UL and CSA are authorized to grant approval certificates in accordance with Canadian and North American regulations. Please note: These approvals are not recognized in many cases and must be covered by additional approvals issued by the national testing agency.		CCC

More information about UL and CSA see page 16/19.

[1] For guide numbers and file numbers for approvals, please visit www.siemens.com/sirius/support and select "Product Support".

Marine classification societies

Country	Germany	United Kingdom	France	Norway	CIS	Italy	Poland	USA
Name	Germanischer Lloyd	Lloyds Register of Shipping	Bureau Veritas	Det Norske Veritas	Russian Maritime Register of Shipping	Registro Italiano Navale	Polski Rejestre Statków	American Bureau of Shipping
Codes	GL	LRS	BV	DNV	RMRS	RINA	PRS	ABS

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CE marking

Manufacturers of products which fall within the subject area to which EC directives apply must identify their products, operating instructions or packaging with a CE marking of conformity.

By attaching the CE marking, the manufacturer confirms that the product conforms to the relevant basic requirements of all directives applicable to the product. The marking is a mandatory requirement for putting products into circulation throughout the EC.

All the products in this catalog are in conformance with the EC directives and bear the CE marking of conformity.

- Low-voltage directive
- EMC directive
- Machinery directive
- Ex protection directive

The CE marking: CE.

ALPHA/LOVAG

Siemens AG sits in the ALPHA committee of "ALPHA im VDE".

The responsibility of manufacturers and the high quality of products are promoted by "ALPHA im VDE" by means of supportive procedural guidelines for testing equipment according to the currently valid standards.

Providing specific conditions are fulfilled, "ALPHA im VDE" can also issue officially recognized product certificates if required. As a member of LOVAG, "ALPHA im VDE" is also working towards obtaining international recognition for declarations of conformity and certificates.

LOVAG (Low-Voltage Agreement Group) is a body comprising international specialists from certification bodies and industry who are working together to create a standardized European certificate.

List of LOVAG members

ALPHA im VDE	Germany
ASEFA	France
ACAE	Italy
SGS BELGIUM NV Division SGS CEBE	Belgium
Intertek Semko AB	Sweden
APPLUSS + CTL	Spain
VEIKI-VNL	Hungary

Accident prevention

Test certificates and approvals from IFA (institute for occupational safety and health of the German social accident insurance), SUVA (Swiss institute for accident prevention), BG ETEM (German trade association for energy, textiles, electrical goods and media products) and VDE are available for some devices in safety control systems. For details, see the respective product descriptions.

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Standards and approvals

Ex protection certificates for SIRIUS controls

Motor protection devices that protect a motor installed in a potentially explosive atmosphere against overloading must comply with certain special requirements. These requirements are laid down in the following standards:

- EN 60079-0
- EN 60079-1
- EN 60079-7
- EN 60079-14
- EN 60079-17
- EN 60947-1
- EN 60947-4-1
- EN 60947-5-1
- EN 60947-8

Certification

July 1, 2003 saw the dawning of a new era in the field of explosion protection. Since this date, only those devices and protection systems that have been certified for operation in potentially explosive atmospheres according to directive 94/9/EC can be brought into circulation within the European Union.

Only those motor protection devices that have been constructed according to the above-mentioned standards and which have a declaration of conformity from the manufacturer based on a prototype test certificate may be brought into circulation within the member states of the EC.

The quality management system of the manufacturer is also subjected to certain requirements and a "QM certificate" must be obtained for the manufacturer from a recognized authority.

Certification of the QM system

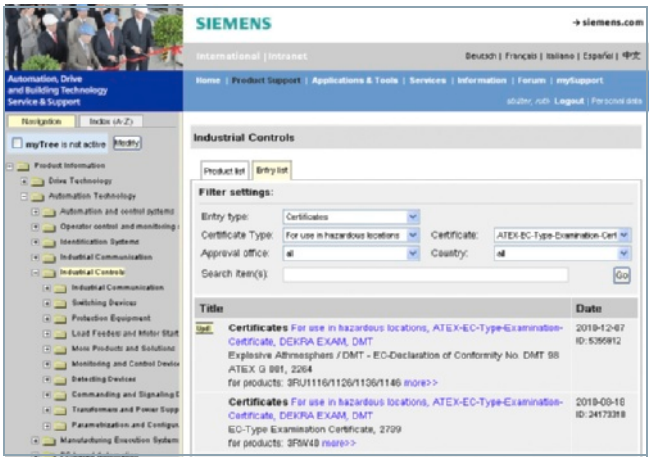
A certificate of approval for quality assurance production has been issued by DEKRA EXAM GmbH[1)] with the number BVS 08 ATEX ZQS/E111 of DEKRA EXAM GmbH[1)] according to Directive 94/9/EC.

This certificate is valid for equipment groups I and II and categories M2 and 2: Safety and control devices for electrical equipment.

Certificates

For the 3RV, 3RU, 3RB, 3UF, 3RN and 3RW motor protection devices, the corresponding declarations of conformity and prototype test certificates for Category 2G, and to some extent 2D, are available and can be supplied on request.

Declarations of conformity and prototype test certificates are available at
www.siemens.com/sirius/support
for viewing and downloading.



Selection box



Description of certificate with view and download option

Identifying markings

All equipment must be marked in according to the ATEX guideline. The ATEX identification code contains the equipment group, the approved environment, the number of the certification authority and other technical data that was determined from the type test. For more information about ATEX see
www.siemens.com/sirius/atex .

1) DEKRA EXAM GmbH
The certification authority of the "DEKRA EXAM GmbH" numbered as authority number 0158 according to Article 9 of Directive 94/9/EC of the European Parliament and Council dated March 23, 1994, certifies that Siemens Amberg and Cham maintains a quality system for production that satisfies Appendix IV of this Directive.

Certificate of the AS-International Association for AS-Interface products

AS-Interface products are tested and certified by the AS-International Association. The products have been tested in an accredited test laboratory according to testing guidelines.

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Special standards for the USA and Canada

In the USA and Canada, for machine tools and processing machines in particular, supply lines are laid using rubber insulated cable enclosed in heavy-duty steel piping similar to that used for gas or water pipe systems.

The tubing system must be completely watertight and electrically conductive (especially sleeving and elbows). Since the tubing system can also be grounded, the cable entries of enclosed units equipped with heavy-gauge or metric threads must be fitted with metal adapters between these threads and the tube thread. The necessary adapters are specified for the switchgear as accessories; they should be ordered separately unless otherwise specified.

Low-voltage switchgear and controlgear for auxiliary circuits (e.g. contactor relays, commanding and signaling devices and auxiliary switches/auxiliary contacts in general) are generally only approved by CSA and UL for **"Heavy Duty"** or **"Standard Duty"** and are identified either with these specifications in addition to the maximum permissible voltage or by using an abbreviation.

The abbreviations are harmonized with IEC 60947-5-1 Appendix 1 Table A.1 and correspond to the stated utilization categories.

For various switching devices detailed in the catalog, a note has been included to the effect that, above a certain voltage, the auxiliary switches/auxiliary contacts can only be used if they have the same polarity. This means that the input terminals can only be connected to the same pole of the actuating voltage, e.g. "600 V AC above 300 V AC same polarity".

Different features of UL approvals (for USA and Canada)

Recognized Component	Listed Product
Devices are identified on the rating plate using the "UL recognition mark": USA: , c us Canada: c, c us	Devices are identified using the "UL listing mark" on the rating plate e.g. USA: LISTED XXX IND. CONT. EQ. Canada: c LISTED XXX IND. CONT. EQ. (XXX stands for: UL Code Classification Number)
Devices are approved as modules for "factory wiring", i.e.: as devices for installation in control systems, which are selected, installed, wired and tested entirely by trained personnel in factories, workshops or elsewhere, **according to the operating conditions**.	Devices are approved for "field wiring", i.e.: • As devices for installation in control systems, which are completely wired by trained personnel in factories, workshops or elsewhere. • As single devices for sale in retail outlets in the USA/Canada.

If devices are or c approved as "listed products", they are also approved as or c "recognized components".

More information about UL and CSA see page 16/16.

Special standards for Russia, Australia and China

GOST approval for Russia

A GOST approval is required for all products that are to be sold in Russia. The GOST mark has been obligatory on the packaging of all devices since mid-1998.

All devices delivered to any part of the Russian Federation must have this customs certification.

C-Tick licensing for Australia

The C-Tick license is required for marketing Siemens components in Australia. Electronic devices must provide proof of EMC clearance in Australia, similar to the CE marking of conformity laid down by the EMC directive applicable in the EC and bear the "C-Tick" mark. These requirements have been in force since October 1st, 1999.

CCC approval

Since August 1, 2003, CCC approval is required for many products that are marketed in China.

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Quality management

Quality management

The quality management system of our Industry Automation division complies with the international standard EN ISO 9001.

The products and systems described in this catalog are sold under application of a quality management system certified by DQS according to ISO 9001. The certificates are recognized in all IQ Net countries.

DQS Registered Certificate No.:

Siemens AG
Industry Sector, Industry Automation Division

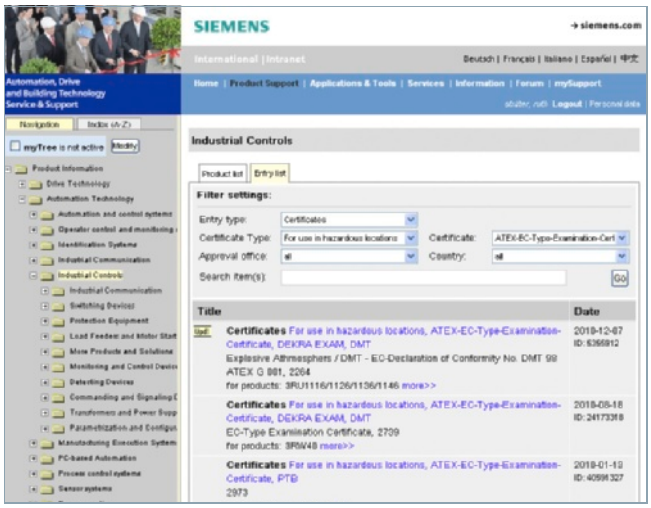
- Control Components and Systems Engineering
  Registered Certificate No.: 001108 QM08

Certificates

Information on the certificates available (CE, UL, CSA, FM, shipping authorizations) for low-voltage control products can be found on the Internet at:

www.siemens.com/sirius/approvals

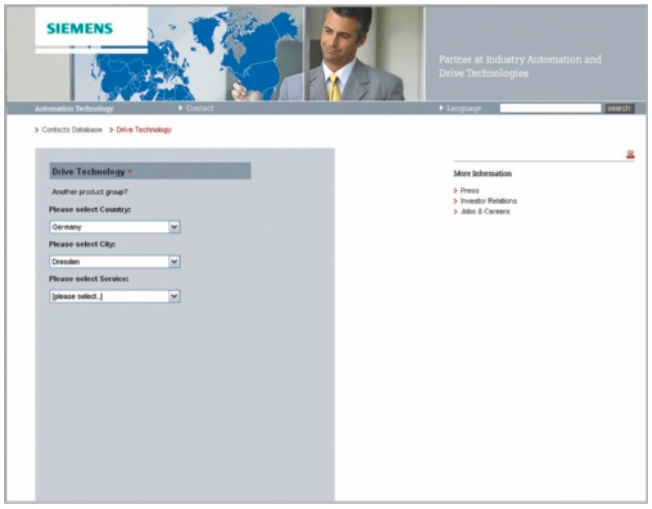
In the Entry List you can use the certificate type (general product approval, explosion protection, test certificates, shipbuilding,...) as a filter criterion.

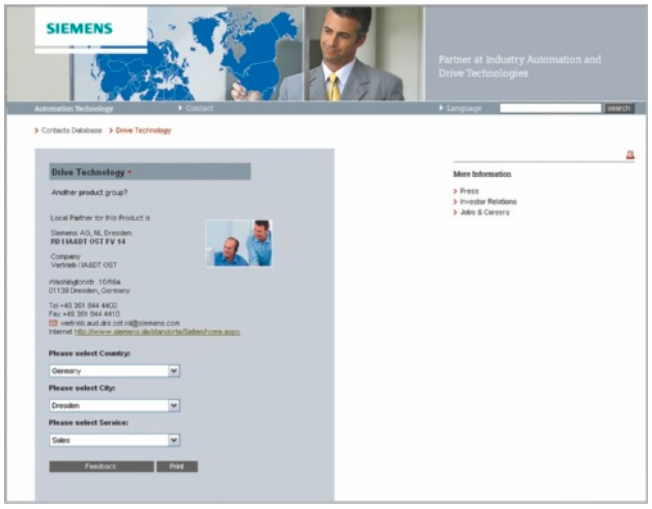


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Partner at Industry Automation and Drive Technologies







At Siemens Industry Automation and Drive Technologies, more than 85 000 people are resolutely pursuing the same goal: long-term improvement of your competitive ability. We are committed to this goal. Thanks to our commitment, we continue to set new standards in automation and drive technology. In all industries – worldwide.

At your service locally, around the globe for consulting, sales, training, service, support, spare parts ... on the entire Industry Automation and Drive Technologies range.

Your personal contact can be found in our Contacts Database at:
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You start by selecting a

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Siemens Solution Partner Automation

Overview

Siemens Solution Partner Automation

Solution Partner

Automation

SIEMENS

Solution Partner: Highest quality - guaranteed

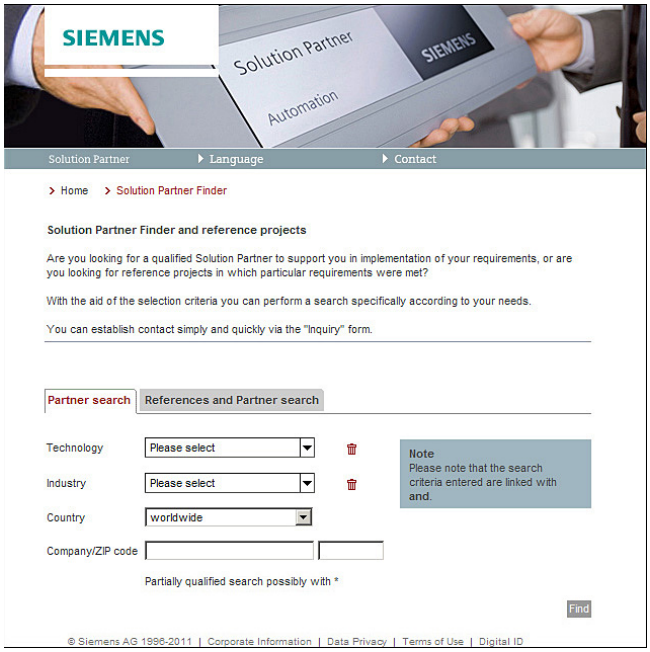
The products and systems from Siemens Industry Automation and Drive Technologies offer the ideal platform for all automation applications.

Under the name of Siemens Solution Partner Automation, selected system integrators around the world act as uniformly qualified solution providers for the Siemens range of products and services in the fields of automation and drives. Day after day, they utilize their qualified product and system know-how as well as their excellent industry expertise to your advantage – for all requirements.

The partner emblem is the guarantee and indicator of proven quality. The basis for this are defined quality features that identify Solution Partners as reliable and competent solution providers:

- Solution quality
  Always a good result with tried and tested solutions expertise.
- Expert quality
  Certified technical competence ensures maximum efficiency.
- Project quality
  With proven project experience straight to the target.
- Portfolio quality
  Comprehensive portfolio for state-of-the-art solutions from a single source.

Solution Partner Finder



The Siemens Solution Partner Program helps you to find the optimum partner for your specific requirements.

Support is provided by the Solution Partner Finder, a comprehensive online platform that showcases the profiles of all our solution partners. You can convince yourself of the competence of the respective Solution Partner by means of the references provided. Various search criteria are available for this purpose.

Once you have located a partner, you are only one small step away from contacting them.

Find the right partner here for your specific task and convince yourself of the solution competence provided:

www.siemens.com/automation/partnerfinder

Additional information on the Siemens Solution Partner Program is available online at:

www.siemens.com/automation/solutionpartner

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Our partner companies – Your partners

- **AXELENT GmbH**
  Sigmaringer Straße 112
  D-70567 Stuttgart
  Tel.: +49 (711) 252 509-0
  Fax.: +49 (711) 252 509-49
  E-mail: sales@axelent.de

- **Franz Binder GmbH & Co.**
  Postfach 1152
  D-74148 Neckarsulm
  Katalog Steckverbinder
  Tel.: +49 (7132) 325-0
  Fax: +49 (7132) 325-190
  E-mail: info@binder-connector.de

- **Hans Georg Brühl GmbH**
  Waldstraße 63 b
  D-57250 Netphen
  Tel.: +49 (2737) 5934-45
  Fax: +49 (2737) 5919-46
  E-mail: info@schutzeinrichtungen.com

- **EPHY-Mess GmbH**
  Johannes-Gutenberg-Str. 2-6
  D-65719 Hofheim-Wallau
  Tel.: +49 (6122) 9228-0
  Fax: +49 (6122) 15248
  E-mail: info@ephy-mess.de

- **FESTO AG & Co**
  Ruiterstr. 82
  D-73734 Esslingen
  Tel.: +49 (711) 347-0
  Fax: +49 (711) 347-2144
  E-mail: info@festo.de

- **GMC-I Messtechnik GmbH,**
  Thomas-Mann-Str. 16-20,
  D-90471 Nuremberg, Germany
  Tel.: +49 (911) 8602-111
  Fax: +49 (911) 8602-777
  E-mail: info@gossenmetrawatt.com

- **Harting Deutschland GmbH & Co. KG**
  Simeonscarrè 1
  D-32427 Minden
  Tel.: +49 (571) 8896-0
  Fax: +49 (571) 8896-282
  E-mail: solution-partner@harting.com

- **KnorrTec**
  Kapellenbergstraße 34
  D-93175 Beratzhausen
  Tel.: +49 (99493) 9519600
  Fax: +49 (99493) 9519679
  E-mail: solution-partner@knorrtec.de

- **KUPEK GmbH**
  Beschaffung und Logistik
  Cortendorfer Straße 94
  D-96450 Coburg
  Tel: +49 (9561) 2346-0
  Fax: +49 (9561) 2346-20
  E-mail: info@kupek.de

- **Lumberg GmbH & Co.**
  Im Gewerbepark 2
  D-58579 Schalksmühle
  Tel.: +49 (2355) 83-01
  Fax: +49 (2355) 83-263
  E-mail: info@lumberg.de

- **mat – Maschinen- und Anlagentechnik**
  Dr. Becker GmbH
  Rudolf-Diesel-Straße 22
  22941 Bargteheide
  Tel.: +49 (4532) 2021-01
  Fax: +49 (4532) 2021-21
  E-mail: info@m-a-t.de
  Internet: www.m-a-t.de

- **mdexx GmbH**
  Richard-Dunkel-Straße 120
  D-28199 Bremen
  Tel.: +49 (421) 5125-0
  Fax: +49 (421) 5125-333
  E-mail: Transformatoren@mdexx.com
  Internet: www.mdexx.com

- **Murrplastik Systemtechnik GmbH**
  Dieselstraße 10
  D-71570 Oppenweiler
  Tel.: +49 (7191) 482-0
  Fax: +49 (7191) 482-280
  E-mail: info@murrplastik.de

- **Murrelektronik GmbH**
  Falkenstraße 3
  D-71570 Oppenweiler
  Tel.: +49 (7191) 47-0
  Fax: +49 (7191) 47-130
  E-mail: info@murrelektronik.com

- **Pepperl+Fuchs Vertrieb Deutschland GmbH**
  Lilienthalstraße 200
  D-68307 Mannheim
  E-mail:fa-info@de.pepperlfuchs.com

- **Siebert Industrieelektronik GmbH**
  P.O. Box 1180
  D-66565 Eppelborn
  Tel.: +49 (6806) 980-0
  Fax: +49 (6806) 980-999
  Internet: www.siebert.de

- **WAGO Kontakttechnik GmbH & Co. KG**
  Hansastraße 27
  D-32423 Minden
  Tel.: +49 (571) 887-0
  Fax: +49 (571) 887-169
  E-mail: info@wago.com

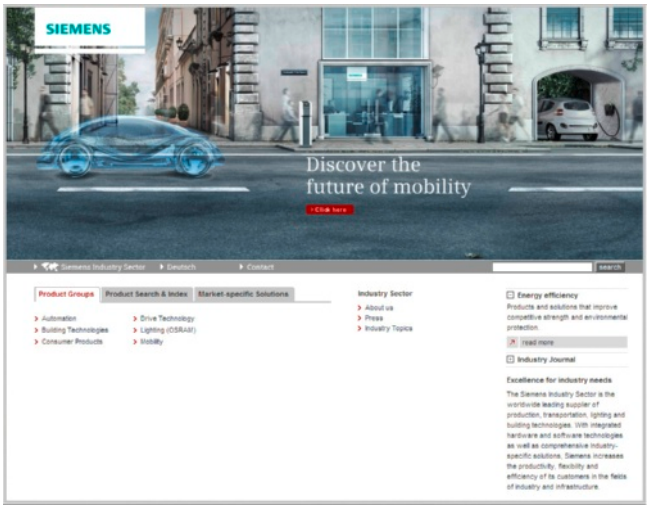
- **Weidmüller GmbH & Co. KG**
  Ohmstraße 9
  D-32758 Detmold
  Tel.: +49 (5231) 1428-0
  Fax: +49 (5231) 1428-116
  E-mail: solution-partner@weidmueller.com

- **WITTWER Industrielle Elektronik**
  Hembacher Str. 4, Postfach 1147
  D-90588 Schwarzenbruck-Lindelburg
  Tel.: +49 (9183) 90105-0
  Fax: +49 (9183) 90105-55
  E-mail: info@wittwer.com

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Online services: Information and ordering in the internet and on DVD

Siemens Industry Automation and Drive Technologies in the WWW



A detailed knowledge of the range of products and services available is essential when planning and configuring automation systems. It goes without saying that this information must always be fully up-to-date.

Siemens Industry Automation and Drive Technologies has therefore built up a comprehensive range of information in the World Wide Web, which offers quick and easy access to all data required.

Under the address

www.siemens.com/industry

you will find everything you need to know about products, systems and services.

Product Selection Using the Interactive Catalog CA 01 of Industry



Detailed information together with convenient interactive functions:
The interactive catalog CA 01 covers more than 80 000 products and thus provides a full summary of the Siemens Industry Automation and Drive Technologies product base.

Here you will find everything that you need to solve tasks in the fields of automation, switchgear, installation and drives.
All information is linked into a user interface which is easy to work with and intuitive.

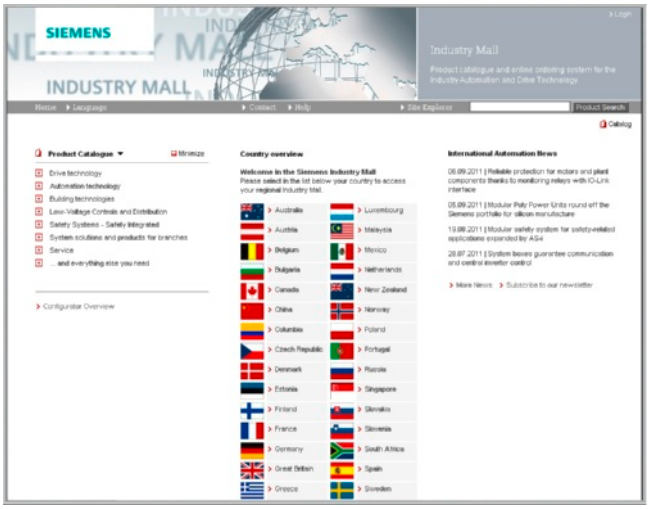
After selecting the product of your choice you can order at the press of a button, by fax or by online link.

Information on the interactive catalog CA 01 can be found in the Internet under

www.siemens.com/automation/ca01

or on DVD.

Easy Shopping with the Industry Mall



The Industry Mall is the virtual department store of Siemens AG in the Internet. Here you have access to a huge range of products presented in electronic catalogs in an informative and attractive way.

Data transfer via EDIFACT allows the whole procedure from selection through ordering to tracking of the order to be carried out online via the Internet.

Numerous functions are available to support you.

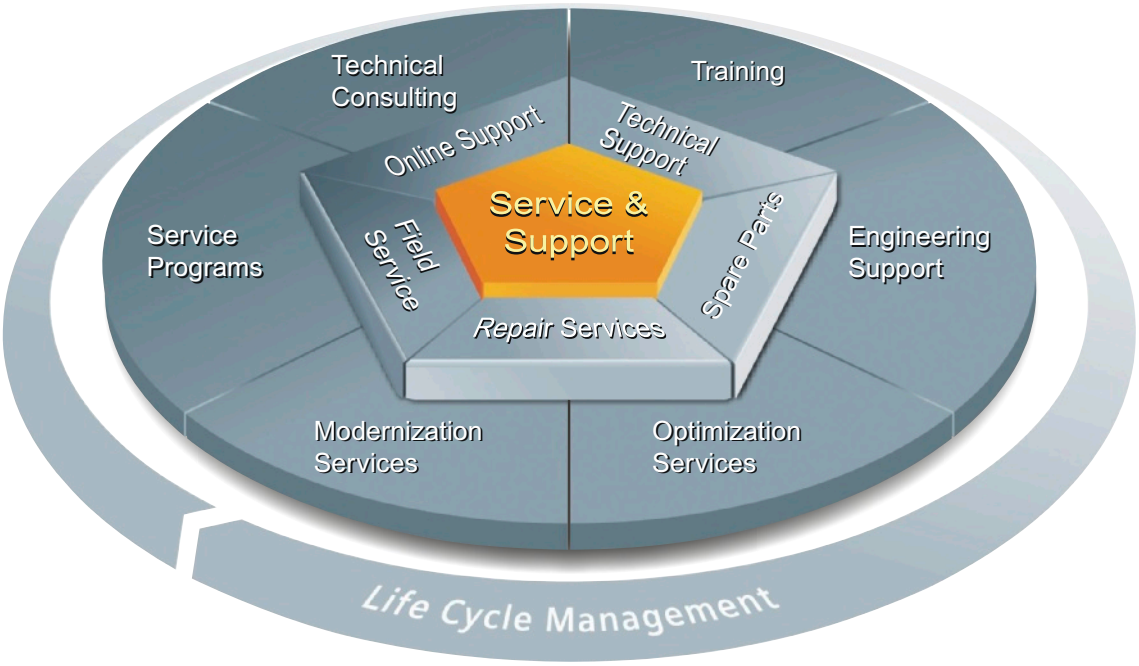
For example, powerful search functions make it easy to find the required products, which can be immediately checked for availability. Customer-specific discounts and preparation of quotes can be carried out online as well as order tracking and tracing.

Please visit the Industry Mall on the Internet under:

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The unmatched complete service for the entire life cycle



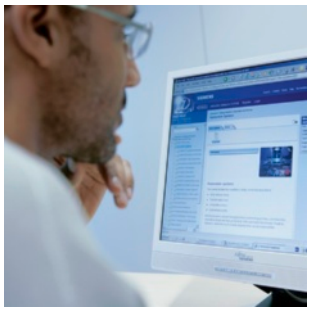
For machine constructors, solution providers and plant operators: The service offering from Siemens Industry, Automation and Drive Technologies includes comprehensive services for a wide range of different users in all sectors of the manufacturing and process industry

To accompany our products and systems, we offer integrated and structured services that provide valuable support in every phase of the life cycle of your machine or plant - from planning and implementation through commissioning as far as maintenance and modernization.

Our Service & Support accompanies you worldwide in all matters concerning automation and drives from Siemens. We provide direct on-site support in more than 100 countries through all phases of the life cycle of your machines and plants.

You have an experienced team of specialists at your side to provide active support and bundled know-how. Regular training courses and intensive contact among our employees - even across continents - ensure reliable service in the most diverse areas.

Online Support



The comprehensive online information platform supports you in all aspects of our Service & Support at any time and from any location in the world.

www.siemens.com/automation/service&support

Technical Consulting



Support in planning and designing your project: From detailed actual-state analysis, definition of the goal and consulting on product and system questions right through to the creation of the automation solution.

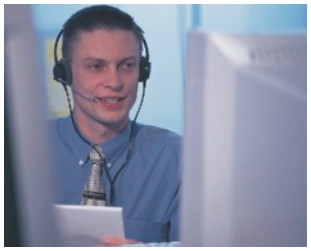
Technical Support



Expert advice on technical questions with a wide range of demand-optimized services for all our products and systems.

www.siemens.com/automation/support-request

Technical Assistance



Expert technical assistance for Industrial controls.

E-mail: technical-assistance@siemens.com

Tel.: +49 (911) 895-5900
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The unmatched complete service for the entire life cycle

Engineering Support



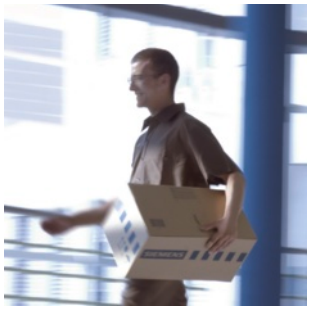
Support during project engineering and development with services fine-tuned to your requirements, from configuration through to implementation of an automation project.

Field Service



Our Field Service offers you services for commissioning and maintenance - to ensure that your machines and plants are always available.

Spare parts



In every sector worldwide, plants and systems are required to operate with constantly increasing reliability. We will provide you with the support you need to prevent a standstill from occurring in the first place: with a worldwide network and optimum logistics chains.

Repairs



Downtimes cause problems in the plant as well as unnecessary costs. We can help you to reduce both to a minimum - with our worldwide repair facilities.

Optimization



During the service life of machines and plants, there is often a great potential for increasing productivity or reducing costs. To help you achieve this potential, we are offering a complete range of optimization services.

Modernization



You can also rely on our support when it comes to modernization - with comprehensive services from the planning phase all the way to commissioning.

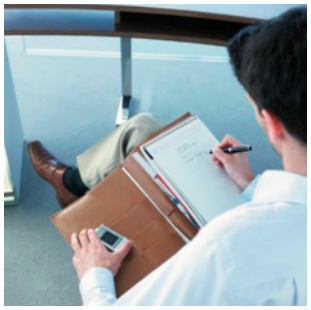
Training



Extend your competitive edge - through practical know-how directly from the manufacturer.

www.siemens.com/sitrain

Service programs



Our service programs are selected service packages for an automation and drives system or product group. The individual services are coordinated with each over to ensure smooth coverage of the entire life cycle and support optimum use of your products and systems.

The services of a Service Program can be flexibly adapted at any time and used separately.

Examples of service programs:

- Service contracts
- Plant IT Security Services
- Life Cycle Services for Drive Engineering
- SIMATIC PCS 7 Life Cycle Services
- SINUMERIK Manufacturing Excellence
- SIMATIC Remote Support Services

Advantages at a glance:

- Reduced downtimes for increased productivity
- Optimized maintenance costs due to a tailored scope of services
- Costs that can be calculated and therefore planned
- Service reliability due to guaranteed response times and spare part delivery times
- Customer service personnel will be supported and relieved of additional tasks
- Comprehensive service from a single source, fewer interfaces and greater expertise

Contact information is available in the Internet at:
www.siemens.com/automation/partner

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Übersicht

Software types

Software requiring a license is categorized into types.
The following software types have been defined:

- Engineering software
- Runtime software

Engineering software

This includes all software products for creating (engineering) user software, e.g. for configuring, programming, parameterizing, testing, commissioning or servicing.

Data generated with engineering software and executable programs can be duplicated for your own use or for use by third-parties free-of-charge.

Runtime software

This includes all software products required for plant/machine operation, e.g. operating system, basic system, system expansions, drivers, etc.

The duplication of the runtime software and executable programs created with the runtime software for your own use or for use by third-parties is subject to a charge.

You can find information about license fees according to use in the ordering data (e.g. in the catalog). Examples of categories of use include per CPU, per installation, per channel, per instance, per axis, per control loop, per variable, etc.

Information about extended rights of use for parameterization/configuration tools supplied as integral components of the scope of delivery can be found in the readme file supplied with the relevant product(s).

License types

Siemens Industry Automation & Drive Technologies offers various types of software license:

- Floating license
- Single license
- Rental license
- Trial license
- Factory license

Floating license

The software may be installed for internal use on any number of devices by the licensee. Only the concurrent user is licensed. The concurrent user is the person using the program. Use begins when the software is started.
A license is required for each concurrent user.

Single license

Unlike the floating license, a single license permits only one installation of the software.

The type of use licensed is specified in the ordering data and in the Certificate of License (CoL). Types of use include for example per device, per axis, per channel, etc.

One single license is required for each type of use defined.

Rental license

A rental license supports the "sporadic use" of engineering software. Once the license key has been installed, the software can be used for a specific number of hours (the operating hours do not have to be consecutive).
One license is required for each installation of the software.

Trial license

A trial license supports "short-term use" of the software in a non-productive context, e.g. for testing and evaluation purposes.
It can be transferred to another license.

Factory license

With the Factory License the user has the right to install and use the software at one permanent establishment only. The permanent establishment is defined by one address only.The number of hardware devices on which the software may be installed results from the order data or the Certificate of License (CoL).

Certificate of license

The Certificate of License (CoL) is the licensee's proof that the use of the software has been licensed by Siemens. A CoL is required for every type of use and must be kept in a safe place.

Downgrading

The licensee is permitted to use the software or an earlier version/release of the software, provided that the licensee owns such a version/release and its use is technically feasible.

Delivery versions

Software is constantly being updated.
The following delivery versions

- PowerPack
- Upgrade

can be used to access updates.

Existing bug fixes are supplied with the ServicePack version.

PowerPack

PowerPacks can be used to upgrade to more powerful software. The licensee receives a new license agreement and CoL (Certificate of License) with the PowerPack. This CoL, together with the CoL for the original product, proves that the new software is licensed.
A separate PowerPack must be purchased for each original license of the software to be replaced.

Upgrade

An upgrade permits the use of a new version of the software on the condition that a license for a previous version of the product is already held.
The licensee receives a new license agreement and CoL with the upgrade. This CoL, together with the CoL for the previous product, proves that the new version is licensed.
A separate upgrade must be purchased for each original license of the software to be upgraded.

ServicePack

ServicePacks are used to debug existing products.
ServicePacks may be duplicated for use as prescribed according to the number of existing original licenses.

License key

Siemens Industry Automation & Drive Technologies supplies software products with and without license keys.

The license key serves as an electronic license stamp and is also the "switch" for activating the software (floating license, rental license, etc.).

The complete installation of software products requiring license keys includes the program to be licensed (the software) and the license key (which represents the license).

Detailed explanations concerning license conditions can be found in the “Terms and Conditions of Siemens AG” or under
www.siemens.com/industrymall
(Industry Mall Online-Help System)

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for Industry Automation, Drive Technologies and Low Voltage Distribution	**CA 01**

Drive Systems	
Variable-Speed Drives	
SINAMICS G130 Drive Converter Chassis Units SINAMICS G150 Drive Converter Cabinet Units	D 11
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SINAMICS S120 Chassis Format Units and Cabinet Modules SINAMICS S150 Converter Cabinet Units	D 21.3
SINAMICS DCM Converter Units	D 23.1
SINAMICS and Motors for Single-Axis Drives	D 31
Three-phase Induction Motors • H-compact • H-compact PLUS	D 84.1
Asynchronous Motors Standardline	D 86.1
Synchronous Motors with Permanent-Magnet Technology, HT-direct	D 86.2
DC Motors	DA 12
SIMOREG DC MASTER 6RA70 Digital Chassis Converters	DA 21.1
SIMOREG K 6RA22 Analog Chassis Converters	DA 21.2
PDF: SIMOREG DC MASTER 6RM70 Digital Converter Cabinet Units	*DA 22*
SIMOVERT PM Modular Converter Systems	DA 45
SIEMOSYN Motors	DA 48
MICROMASTER 420/430/440 Inverters	DA 51.2
MICROMASTER 411/COMBIMASTER 411	DA 51.3
SIMOVERT MASTERDRIVES Vector Control	DA 65.10
SIMOVERT MASTERDRIVES Motion Control	DA 65.11
Synchronous and asynchronous servomotors for SIMOVERT MASTERDRIVES	DA 65.3
SIMODRIVE 611 universal and POSMO	DA 65.4
SIMOTION, SINAMICS S120 and Motors for Production Machines	PM 21
SINUMERIK, SIMODRIVE and Motors for Machine Tools	NC 60
SINUMERIK, SINAMICS S120 and Motors for Machine Tools	NC 61
Low-Voltage Three-Phase-Motors	
IEC Squirrel-Cage Motors	D 81.1
MOTOX Geared Motors	D 87.1
Mechanical Driving Machines	
FLENDER Standard Couplings	MD 10.1
FLENDER SIG Standard industrial gear unit	MD 30.1

Low-Voltage Power Distribution and Electrical Installation Technology	
SENTRON Protection, Switching, Measuring and Monitoring Devices	LV 10.1
SIVACON · ALPHA Switchboards and Distribution Systems	LV 10.2
SIVACON 8PS Busbar Trunking Systems	LV 70
GAMMA Building Control	ET G1
PDF: DELTA Switches and Socket Outlets	*ET D1*

Motion Control	*Catalog*
SINAMICS and Motors for Single-Axis Drives	D 31
SINUMERIK & SIMODRIVE Automation Systems for Machine Tools	NC 60
SINUMERIK & SINAMICS Equipment for Machine Tools	NC 61
SINUMERIK 828D BASIC T/BASIC M, SINAMICS S120 Combi and 1FK7/1PH8 motors	NC 82
SIMOTION, SINAMICS S120 and Motors for Production Machines	PM 21
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Power Supply and System Cabling	
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Field Instruments for Process Automation	FI 01
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Safety Integrated	
Safety Technology for Factory Automation	SI 10

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Human Machine Interface Systems/ PC-based Automation	ST 80/ ST PC

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Industrial Identification Systems	ID 10

SIMATIC Industrial Automation Systems	
Products for Totally Integrated Automation and Micro Automation	ST 70
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PDF: Migration solutions with the SIMATIC PCS 7 Process Control System	*ST PCS 7.2*

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Industrial Communication	IK PI

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Inverters and Components for Photovoltaic Installations	RE 10

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