CATALOGUE 2009/2010

tele

Technik Braucht Kontrolle

ORDER IN THE SYSTEM

Modern machines and systems must work - permanently and reliably. Even minimum irregularities of individual elements may have far-reaching effects and bring down complex systems. To prevent this complexity from ending in chaos, intelligent solutions are required to maintain order and control. Precisely this is the task which TELE devices undertake when assuming responsibility at crucial points of a system. Here everything is about precise measurement and regulation of parameters such as current, voltage, temperature, filling level, phase sequence or effective power. TELE creates order in accordance with a tenet: **Technik braucht Kontrolle.**

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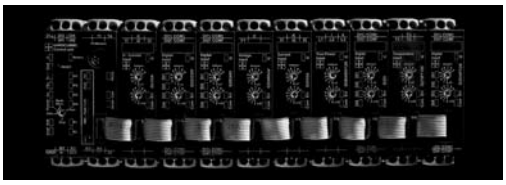
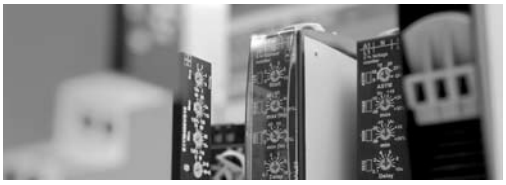
WatchDog pro

WatchDog pro is a modular, industry-compliant monitoring system that combines classical monitoring and time-related functions with the communication potential of fieldbuses, SMS and e-mail. The central control unit makes the system intelligent, so that sophisticated monitoring and automation functions can also be implemented. WatchDog pro combines the flexibility of SPC with a robust monitoring system for industrial applications.



Sensing & Monitoring Relays

TELE monitoring relays ensure the availability and reliability of your plant or machinery by precise parameter monitoring to provide sustained added value.
Choose from different models with a variety of functions for monitoring applications ranging from current and voltage, through temperature and level, to phase sequence and active power.



Loadmonitors

Cut out time-consuming maintenance, service costs and production stoppages. Expensive outages and stoppages can be prevented for relatively low investment cost.
The electrical parameters can be used to obtain an accurate picture of the mechanical forces at work on the motor drive shaft and thus provide protection against overload, blocking and misoperation.

Time Relays

Timers from TELE, ranging from the simple single-function through to the multi-function timer with display, are employed in all branches of industry. The brain chip of your application-specific miniature controller is the ideal solution for realizing custom control applications within minimum space at low-cost. Various voltage ranges or even zoom supply are available to permit worldwide application.

Compact Control Units

This range of units offer simple solutions for common tasks. Powered by the knowledge of typical challenge in automation business an easy implementation is a premium in the design of this units. Control of dual pump sets, energy management - Integrating decentralized power supplies into an overall concept hence a sustained reduction in your operating costs - or sequence control are typical applications.

Coupling Units

For reasons of safety or frequently for fault containment, control signals are isolated between the central controller and the periphery. Coupling units allowing manual intervention in the control process provide benefits in maintaining and operating individual plant sections. Current transformers for converting analog signals or temperatures to standard signals are also available.

Switching Relays

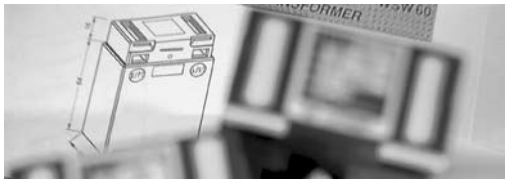
TELE provides an extensive range of electro-mechanical and electronic relays. Switching relays are proven, rugged components which still provide numerous useful features. They are robust, switching DC and AC loads ranging from milliamperes to several amperes. And there is a wide range of accessories available.

Safety Relays
The multifunctional concept of the S² series provides cross-circuit detection and evaluation of non-equivalence signals up to safety cat. 4. In addition to emergency-stop and safety door monitoring, these safety standards can also be used for safety mats and light curtain. Two-hand control and time delay for controlled shutdown complete the TELE range of safety products for man and machine.

Softstarter
Devices for different power classes are available for continuously optimized startups and shutdowns and for eliminating sudden stresses on conveyor systems, elevators and pumps. Different models ranging from compact devices with built-in bypass contactor through to large modular units with current-limited startup help to reduce maintenance costs.

Braking Units
The compact braking units from TELE can be used to brake a wide variety of motor types easily, quickly and safely without mechanical wear. Motors rated up to 400kW are braked by an electromagnetic field without additional mechanical components. Changeover delays and interlocks ensure braking is performed safely.

Thyristor control unit
A simple, systematic and economical approach is available for low-cost control and efficient regulation of ventilation, heating and lighting systems. For continuous and demand-based control for single- and three-phase loads it is possible to use phase control or in the case of heater elements, multicycle control. By eliminating wear, you increase availability and reduce costs.



Current Transformers
Providing reliable sensing results even at high currents of up to 1,500 amperes – they can be used to expand the sensing range not only on TELE monitoring relays, thyristor controllers and softstarters. The current transformers are available as bar and baffle type models with a wide variety of currents for a broad range of applications.

DC Power Supplies
TELE offers you a wide range of power supplies with a variety of voltages and functions together with very high efficiency, covering compact DC supplies, installation-type units and regulated switch-mode power supplies. The regulated switch-mode power supplies provide a wide input voltage range and electronic short-circuit protection against overloading.

Time Switches
These digital time switches can be set exactly to the minute, easily and conveniently. You can rely on them to execute your individual settings in day-, week- and year-based programs. The range of functions also includes block configuration for common switch events on several week days as well as selecting output pulses as an alternative to on/off events.

Hour Meters
TELE hour meters provide you with an accurate count and indication of the operating time clocked up by your plant, machinery or equipment. This enables you to know exactly when e.g. warranties have expired or maintenance is due. TELE hour meters are available with various mounting options and in DC and AC versions enabling them to be incorporated in a wide variety of applications.

Valued Industrial Partner

With more than forty years of experience in the development, production and distribution of automation components, and with a core expertise in monitoring technology, TELE plays a leading role in the international market. TELE‘s strong position enables us to provide customers with a service that extends beyond our own range of products. The international TELE sales network therefore provides not only proven TELE products, but also products from other leading manufucturers in selected countries.

In response to the needs of customers, TELE is extending its customer service for implementing complex solutions with the “VIP – Valued Industrial Partner” program. Make sure you too benefit from TELE‘s many years of experience in the sector. In addition to developing, producing and distributing TELE brand products, TELE will also advise and assist you in procuring verified quality from selected partners.

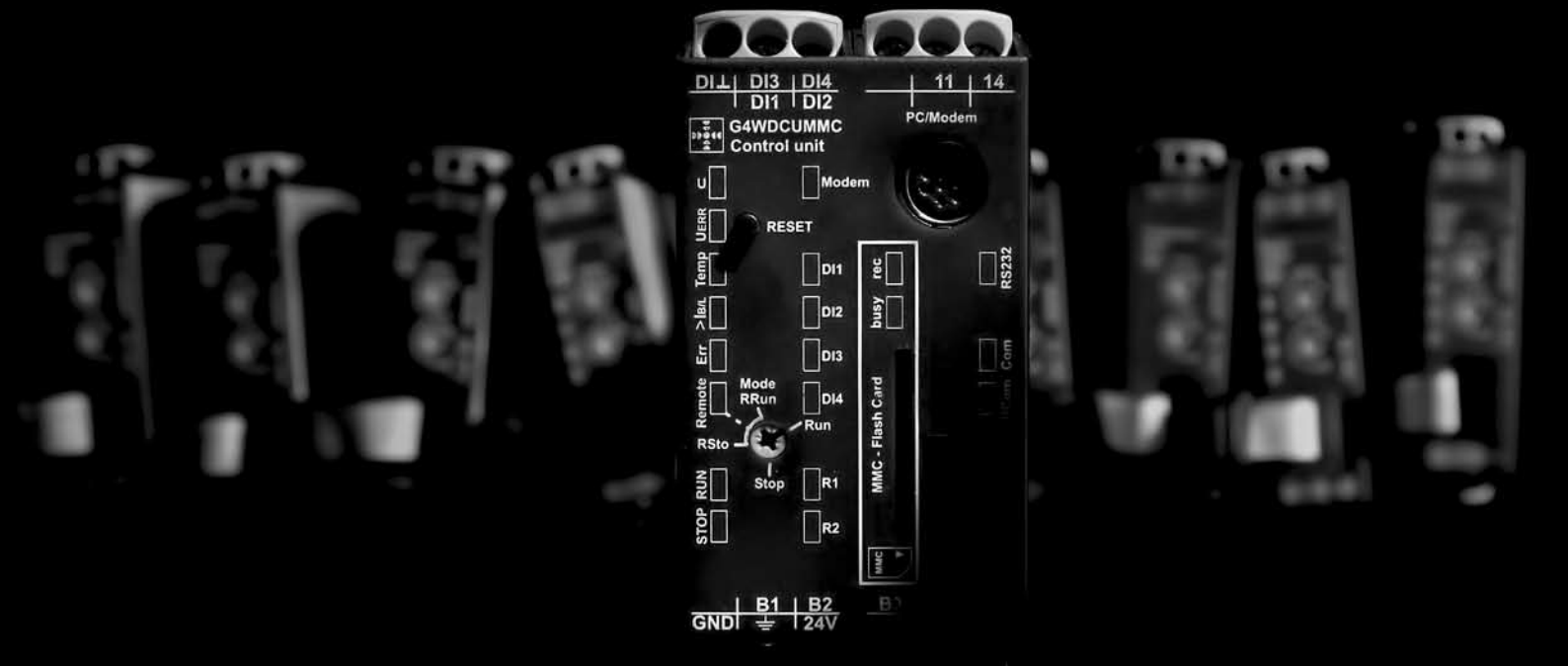
Schrack Energy technology
Schrack offers in the field of energy technology, an extensive range of solutions offering efficient energy use, state-of-the-art communication technology, industrial applications, safety and comfort products. Within a strategic partnership between TELE and Schrack customers in the UK and Germany are able to order selected components of the Schrack range throughout the TELE distribution network.

Fibox housing
The Fibox housing range comprises more than 500 different standard housings made of polycarbonate, ABS, polyester and aluminium to protect electrical and electronic components and systems. Within the VIP program – Valued Industrial Partner TELE is the distributor in Austria and your first contact for all questions regarding Fibox.

Rechner Sensors
Many consider the name RECHNER as being synonymous with the capacitive sensor. This range includes capacitive, inductive, opto-electronic, calorimetric and magneto-resistive sensors. The product range is complemented by a selection of ATEX approved sensors, ancillary equipment and transistor-based signal amplifiers, control units and power supplies.

Pro-face
With sophisticated technology Pro-face stands for development, production and distribution of programmable touch panels and industrial PCs in the area of human-machine interface communication (HMI). TELE supports this VIP partner on the austrian market.
Touch panels - The ideal command and reporting solution for WatchDog pro

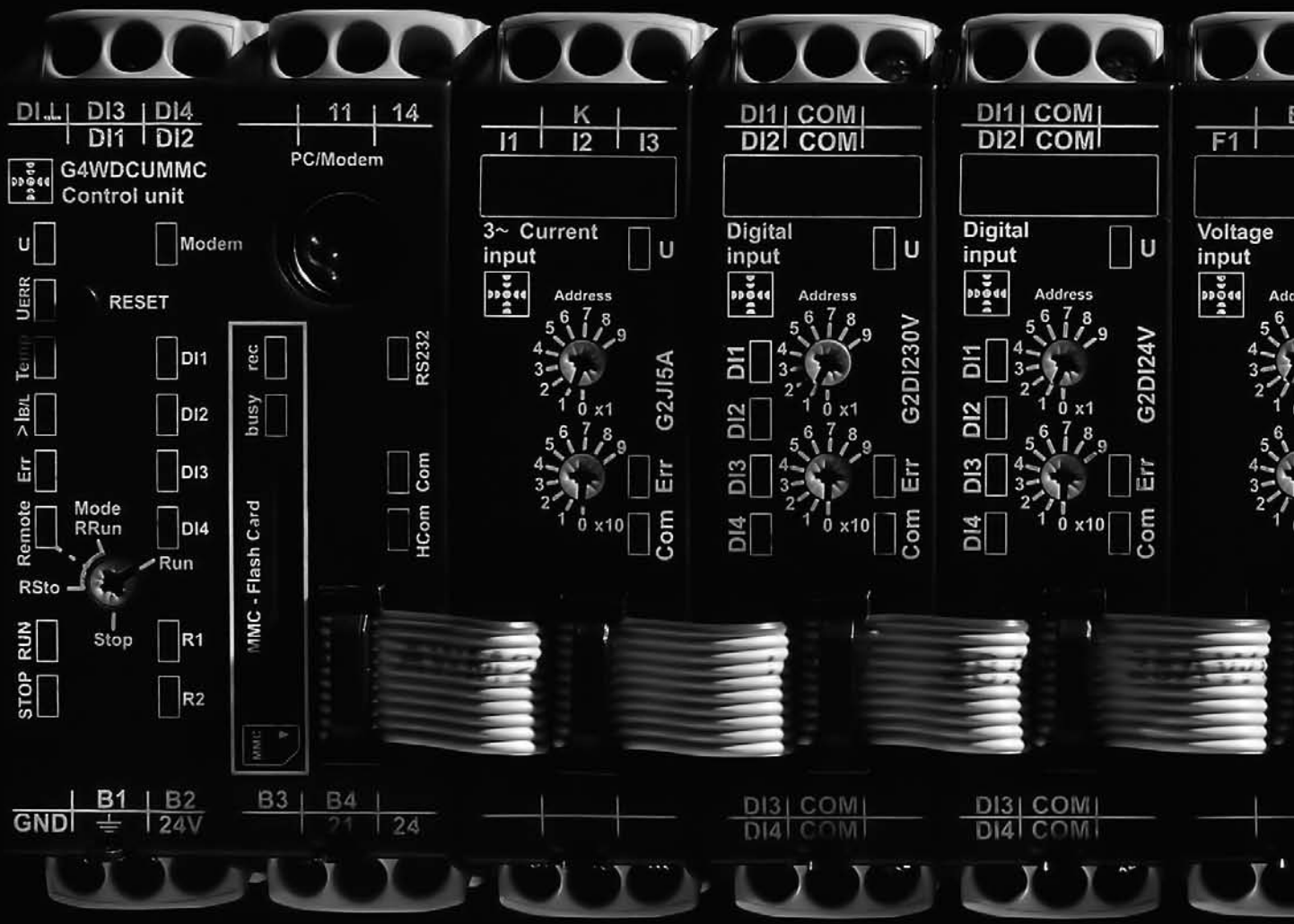
WatchDog pro



A MILESTONE IN MONITORING TECHNOLOGY

WatchDog pro is a modular, industry-compliant monitoring system that combines classical monitoring and time-related functions with the communication potential of fieldbuses, SMS and e-mail. The central control unit makes the system intelligent, so that sophisticated monitoring and automation functions can also be implemented. As the problem solver for stationary and mobile applications in the mechanical engineering field as well as for industrial and building systems, *WatchDog pro* combines the flexibility of PLC with a robust monitoring system for industrial applications. Thanks to its withstand voltage, clearances, creepage distances and rated surge voltage it can perform under the harshest industrial conditions. Its modular design will bring end-to-end advantages from planning through power-on to plant expansion.

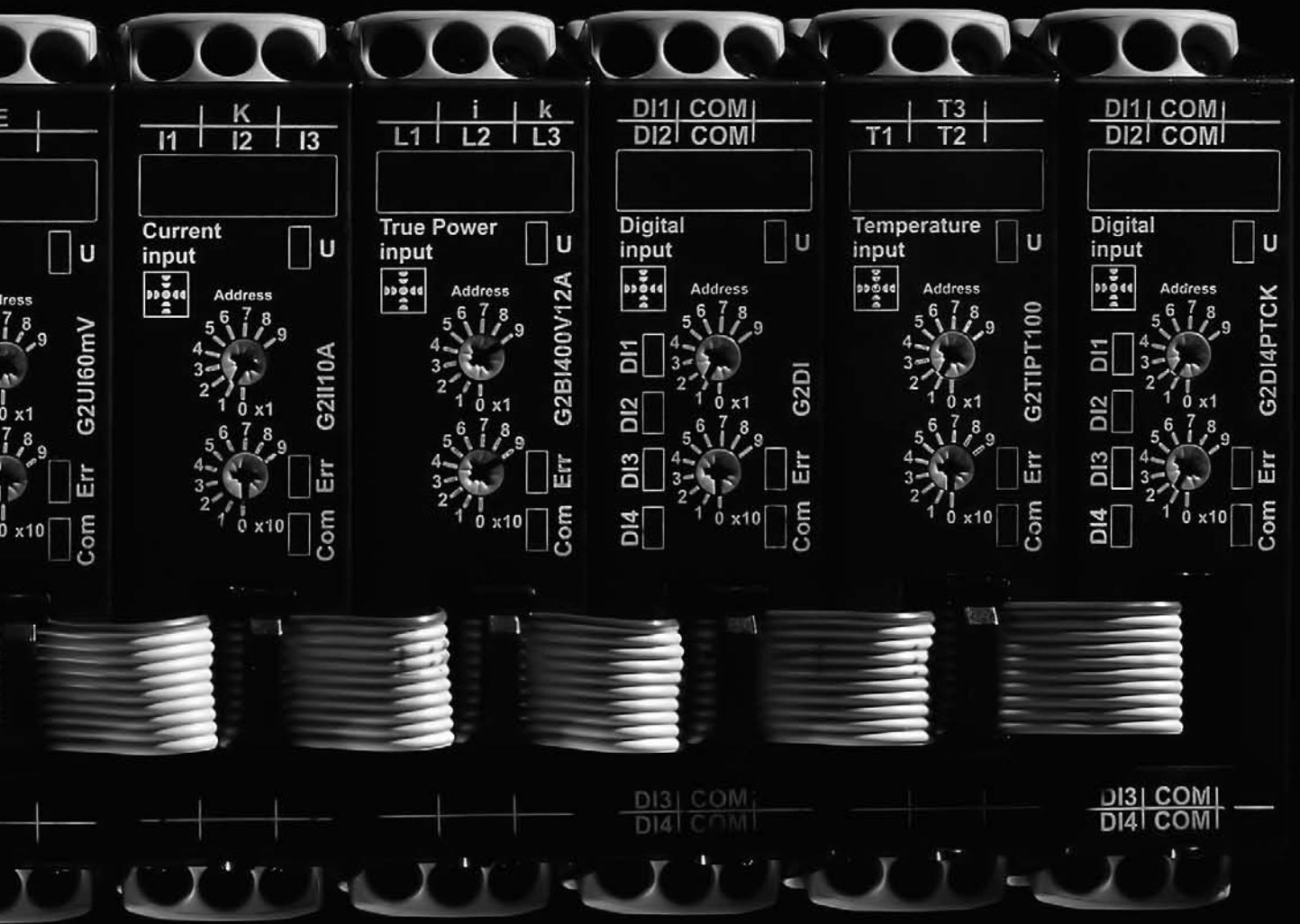
WatchDog pro is thus above the equipment class to which classical time and monitoring relays belong. The monitoring functions for current, voltage, phase sequence, phase failure, active power



and temperature have been combined into an integrated, modular monitoring scheme with a system application in mind. By combining all necessary monitoring and control functions it meets the requirements placed on an automation system.

An integral component of the central control unit is the datalogger. Supported by *WatchDog pro*, plant and system data can be logged on a memory card and used for high-speed evaluating. Forming another part of an efficient maintenance management system, the interfaces (fieldbuses, web server, SMS) will allow simple remote maintenance as well as integration into a more comprehensive process control system.

WatchDog pro is a quantum leap in the field of monitoring technology, building on the long-established TELE products of the GAMMA industrial series. Typical applications are to be found in the areas of water supply and waste water disposal, power distribution as well as heating, ventilation and air conditioning. The system's modular design and industry compliance make it perfectly suitable for monitoring small and medium-sized machines and plant as well as for use in the process industry.



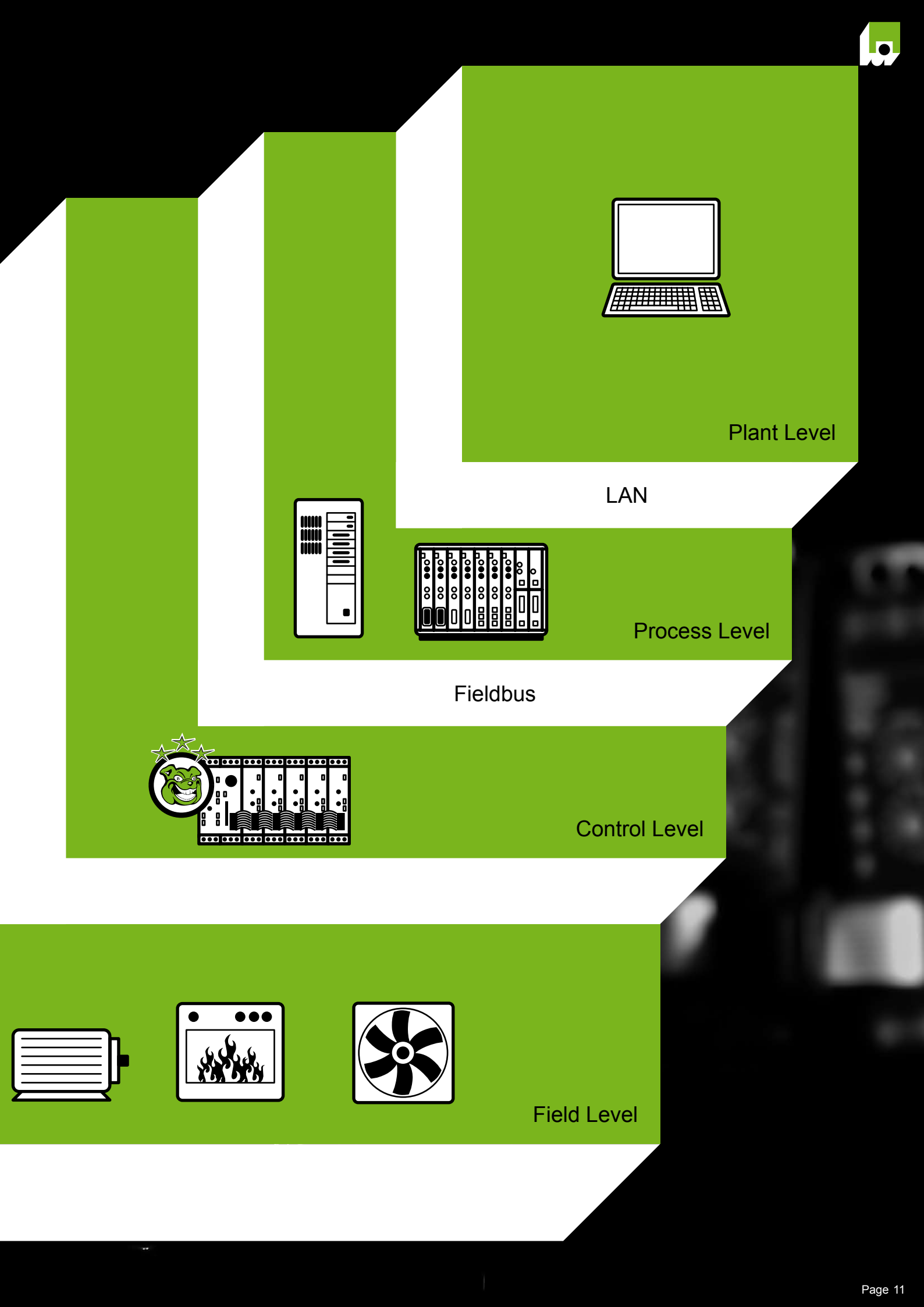
The consistently vertical networking from the operating level down to field level, means that WatchDog pro is able to access all relevant key figures and data – even including individual measured values – online from office locations.

THE MISSING LINK

A gap between field and control levels often quickly develops in actual modern measuring, monitoring and control applications. With conventional engineering, sensors and sensor relays can only be linked to an overall control-level system, e.g. a PLC or process-control system, with great technical and financial effort. Processing the measured data, i.e. associating the field level with the control level, is always a complex task.

And this is precisely where the strengths of TELE's *WatchDog pro* monitoring system lie. Direct industry-compliant monitoring in the field, the forwarding and processing of measured values at software levels and important PLC control tasks may be handled by *WatchDog pro* in proximity to the process. *WatchDog pro* is able to directly observe and control such electrical data as motor performances, rotary fields, mains voltages and motor temperatures as required, for instance, for monitoring pumps. The modular system does not only very comfortably close this gap between the two lower levels of the automation pyramid but also delivers additional functionalities at both levels.

The universal ability to network with the factory level via widely available field buses makes *WatchDog pro* a universal and manufacturer-independent partner for all types of control hardware. An innovative system therefore that in regard to functionality and comfort sets new standards in this price segment and elegantly closes the gap described – thus constituting **the missing link**.


Plant Level
LAN
Process Level
Fieldbus
Control Level
Field Level

WatchDog pro is industry compliant in all respects. The design of its terminals, its clearances and creepage distances, its robust structural design, and its withstand voltage allow its direct use in industrial environments.

• Enhanced plant availability

WatchDog pro increases plant availability while simultaneously delivering savings in setting up, commissioning, maintaining and expanding systems.
The system is able to recognize errors in advance and report them in a targeted fashion. Thus helping prevent expensive downtimes.

• Intelligent maintenance management

WatchDog pro is a flexible modular monitoring system for process, manufacturing and building automation. Such plant and system data as operating hours, start-ups and statuses producing greater wear on components may be captured. Such data may then be used as the basis for economic maintenance management.

• Targeted data records

WatchDog pro doesn't produce any unnecessary floods of data. Users decide whether they require the recorded information on a daily or hourly basis or only in the event of malfunctions. Which means that errors and their causes can be quickly recognized and remedied.

• Reconstruction of malfunctions

When failures occur, too many error messages make troubleshooting difficult. By recording error chains, *WatchDog pro* makes localizing the fault simple, which means that costs are saved through shorter downtimes.

• Suitable for frequency converters

WatchDog pro monitors currents, voltages and power directly at converter-fed machines even in difficult electrical conditions. And delivers precise results in those areas where measuring equipment usually fails due to PWM voltages.

• Autonomous functioning of plant components

WatchDog pro handles monitoring and control tasks directly at the process and delivers a selection of processed data to the control level. These tasks are also safely fulfilled in the event of isolated running, i.e. when communications to the control level fail.

WHY WATCHDOG PRO?

• Greater process transparency

In order to limit the flood of process and system data in extensive plants without, however, losing important information, *WatchDog pro* handles control and data-processing tasks close to the process. Which relieves the burden on the overall communications and control infrastructure.

• Modular design

WatchDog pro´s modular design saves space – and thus costs – in switch cabinets. The individual system is compiled to suit the demands of the individual application so that space- and cost-intensive units are no longer required.

• Minimum training effort

The programming environment is so simply and comprehensibly structured that time- and cost-intensive training is not required to program *WatchDog pro*.

• Intuitive programming interface

WatchDog pro´s programming interface allows all procedures to be simulated offline and to be monitored online during operations. Which permits rapid commissioning. Measured values may also be forced using the programming environment in order to overrule the actually measured value for test purposes.

• Cost savings through direct measurements

The direct measuring of electric values, e.g. voltage, phase sequence, power and active power, at field levels means that with *WatchDog pro* expensive converters and measuring transducers are no longer required to create standard signals. And the safe isolation of the measuring modules also means that costs for buffer amplifiers may be avoided.

• Manufacturer-independent communications

Modern automation systems demand components with a variety of interfaces. *WatchDog pro* supports the field buses most widely used in communications to the factory level so that it may integrated on a manufacturer-independent basis into the control level.

The fieldbus module enables WatchDog pro to be linked to the process control level. To cater for as many users as possible, WatchDog pro supports the most widely used fieldbuses: Profibus, Modbus-RTU, DeviceNet, CANopen, Modbus-TCP, Ethernet/IP.

Innovative technology and simple operation

Simple installation

The central unit and the expansion modules are simply clicked on to the DIN rail. The bus connectors are part of the modules. These are connected to the next module or the central unit. The bus doesn't only handle communications with the modules but also supplies them. Assembly and wiring is completed with the connection of the signals to be monitored. The *WatchDog pro* system is both easy and quick to design.

Addressing

Each expansion module must be assigned a unique ID to make clear addressing possible. This is achieved with the address selector switches on the front of the modules. Coordination between the existing devices and the software is concluded with the allocation of the addresses assigned in the programming environment's hardware view. It's even easier with the "refresh hardware" function where *WatchDog pro* automatically searches for existing modules.

Commissioning

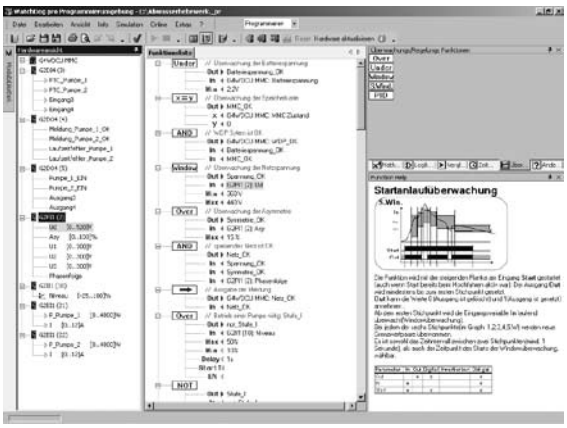
The functionality of the program created may be comfortably tested offline. While the user varies the analogue and digital input signals as required, the program monitors all registers, intermediate results and the resulting outputs. All values may even be monitored with *WatchDog pro* online with the programming interface during commissioning and regular operations. Measured values may also be simulated on the system while it is in operation. This is done to check the response to system statuses that are not usually achievable in practice or are only achievable with great difficulty.

Programming interface

WatchDog pro´s Windows-based programming interface is divided into three columns. The left column displays the installed hardware with all the available signals. The libraries explaining the functions and their possibilities are presented on the right side. The function list for solving the monitoring tasks is created in the centre. The programming interface has been kept simple and the scope of functions has been minimized to make complicated and cost-intensive training unnecessary.

Project documentation

WatchDog pro accompanies users in the preparation of function lists and will automatically create project documentation immediately on completion of commissioning. Projects may therefore be documented without additional work or cost.



More than the sum of individual sensor relays

From voltage monitoring to mains monitoring

WatchDog pro allows measured values to be logically and arithmetically linked, combined with time functions and queried for any threshold values. Users decide whether the threshold values should be constant, a product of a calculation or the result of a scaled input. Connecting to the field bus permits threshold values to also be defined from the process control system. In this way, for example, *WatchDog pro* is able to distinguish between voltage drops caused by a large machine starting up or by a fault in the mains.

From power monitoring to load monitoring

For sensitive drives (e.g. pumps with axial face seals), the S.WINDOW function is able to check that the power for a machine in the start-up phase is within a time-dependent "band". This allows pump blockages or dry-running to be recognized at an early stage thus enabling the plant to be deactivated – which means optimum protection with *WatchDog pro*.

From the control room into the machine control box

WatchDog pro may be used for all industrial requirements. Its terminal types, clearances and creepage distances, robust design and electric strength allow it to be used in industrial environments. The DC isolation of the function modules means that several plant components may be monitored with just one *WatchDog pro* system. The robust monitoring system may be installed in the machine control cabinet directly next to the application.

From insular solution to automated system

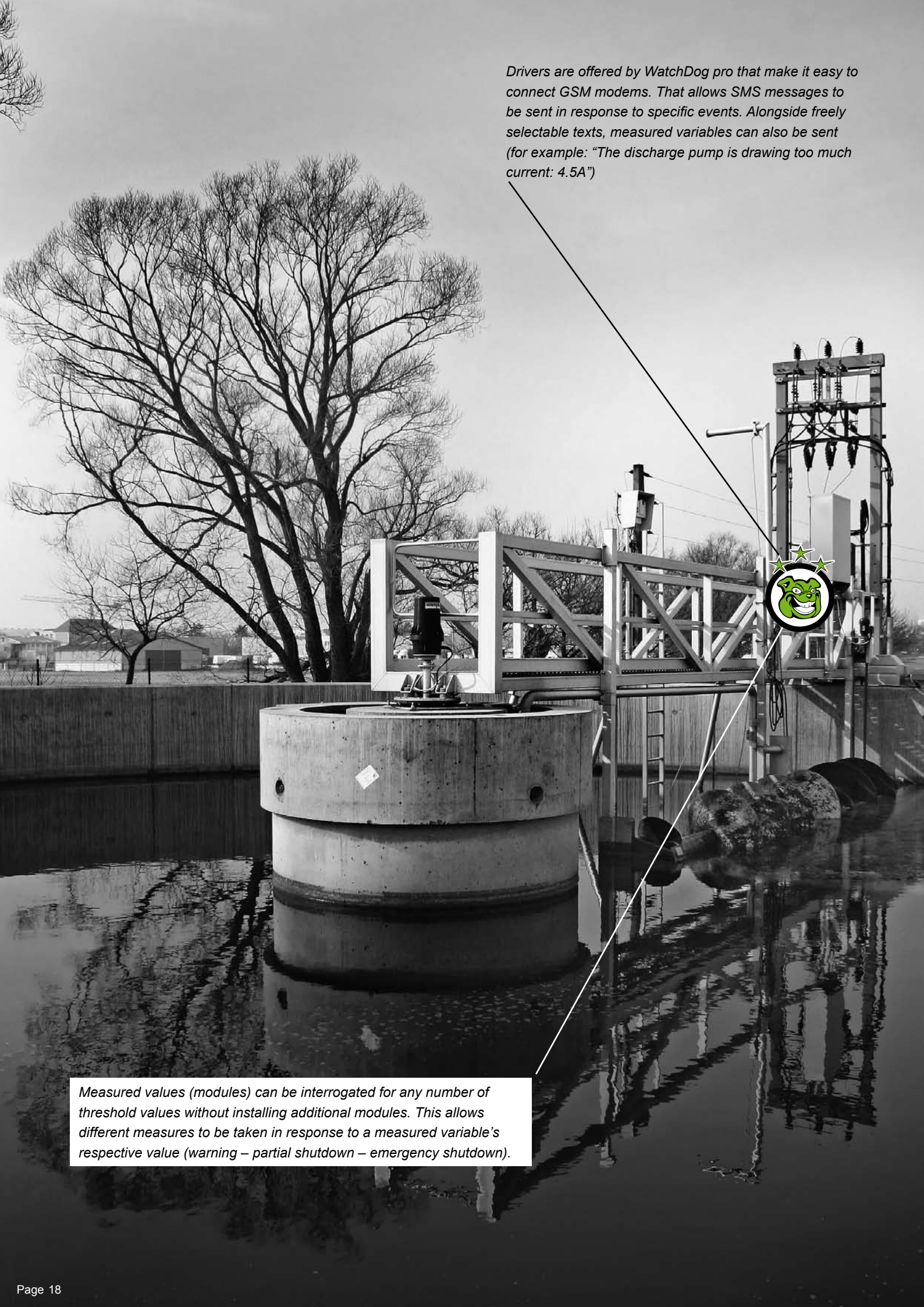
WatchDog pro functions as an independently operating monitoring system, which may be connected via the most widely used field-buses to the factory level and thus integrated into more comprehensive automated systems. It also permits event-related SMS alarms to be sent via GSM modem. Besides freely selectable texts, measured values may also be transmitted, for instance, "The waste water pump is drawing too much power: 4.5 A."

From motor monitoring to process monitoring

WatchDog pro is able to directly record electric values right up to active power as well as easily evaluate temperature sensors. Many different kinds of physical values may be mapped with sensors to unit signals (0-10V; 4-20 mA) and processed with the monitoring system. *WatchDog pro* doesn't only monitor a plant's drives, it will also check the processes, products and values behind them.

WatchDog pro's linking options and monitoring functions will satisfy any need. Logical operators and the familiar monitoring functions (OVER, UNDER, WINDOW) have been augmented by mathematical links and time functions. That cuts wiring to a minimum, eliminates the need for additional relays, and makes new options possible.

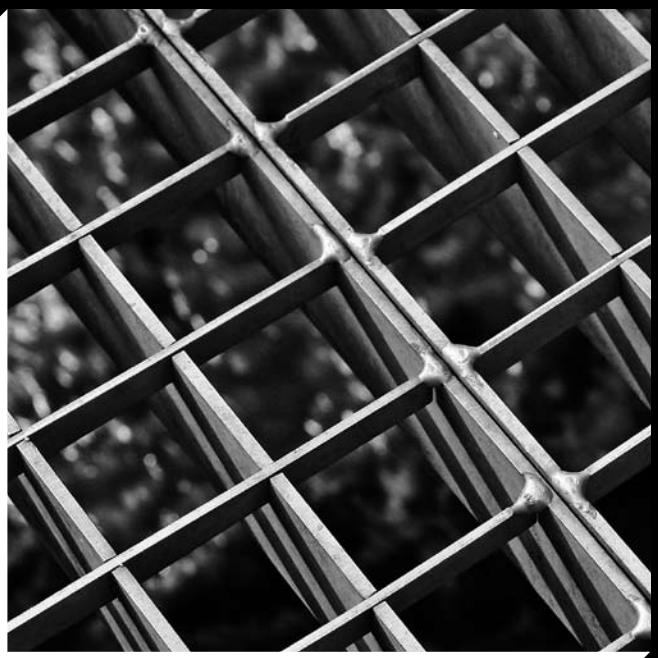
WatchDog pro can log plant and system data on a memory card (MultiMediaCard: MMC™). It can be stored periodically and/or controlled by an event (a fault, for instance). That makes fault localizing easier and safeguards against unjustified third-party claims.



Drivers are offered by WatchDog pro that make it easy to connect GSM modems. That allows SMS messages to be sent in response to specific events. Alongside freely selectable texts, measured variables can also be sent (for example: “The discharge pump is drawing too much current: 4.5A”)

Measured values (modules) can be interrogated for any number of threshold values without installing additional modules. This allows different measures to be taken in response to a measured variable’s respective value (warning – partial shutdown – emergency shutdown).

APPLICATION AREAS



Many different electric motors, servo motors, pumps and drives are used on conveyor belts employed in manufacturing industrial and consumer goods. Classical motor-protection switches safeguard each motor separately but cannot operate beyond their individual capacities. *WatchDog pro* is not limited to this simple type of motor monitoring; it is able to network individual data. The result is intelligent monitoring over the entire application. Thanks to wide-ranging communication options, it is easily possible to integrate *WatchDog pro* into process control systems.

WatchDog pro´s capabilities are also particularly good with the technical systems employed to treat **industrial and municipal waste waters**. The monitoring system may be used for controlling and monitoring unmanned waste-water pump stations. The unique monitoring system even allows pumps to be monitored when they are just starting. Through the inclusion of pressures and throughputs in monitoring, damage to pumps may be reliably recognized before they fail totally.

Redundant measuring and monitoring systems are employed in monitoring sensitive processes at refineries and in the chemicals industry. *WatchDog pro* evaluates the consumption of active power to enable pumps to be reliably monitored and in this way complement mechanical throughput sensors. Even converter-controlled pumps do not pose any problems. Intelligent monitoring means that the constancy of measuring results may be monitored and deviations immediately reported to the process control system. In the event of malfunctions,*WatchDog pro* will automatically shut down the application to create a safe mode.

WatchDog pro delivers clear functional benefits over mechanical load controls in the monitoring of lifting gear. The system is able to monitor and control crane motors through motor currents and active power. The electronic monitoring system scores points with such features as the recording of load curves, total loads for several cranes and the precise parameterization of load limits. From simple upgrading to special solutions, *WatchDog pro* makes classical mechanical solutions appear antiquated.

The right choice for any application

Central Unit

Status LEDs provide information about the *WatchDog pro* system's current operating status (fault, operating mode, status of the inputs and outputs, communication, datalogger). The central control unit's operating mode can be changed using a mode-selection switch. There are four digital inputs for control voltages and two relay outputs directly on the control unit. The datalogger records plant and system data on a MultiMediaCard™ on an event basis.

Voltage 1~

The single-phase voltage measuring modules will measure direct or alternating currents (16.6 to 400 Hz). The measuring ranges depend on the circuits and end at 60 mV and 150 mV for shunt measurements and 10 V (G2UI1 10 V) or at 30 V, 60 V and 300 V (G2UI1 300 V). Thus allowing single-phase networks, battery voltages, intermediate converter circuits and shunts to be monitored.

Voltage 3~

The 3-phase voltage-measuring module measures the phase (phase-to-neutral) voltages in 3-phase systems. The mean of the phase-conductor voltages as well as the phase sequence (direction of rotation) and asymmetry are also determined. So it registers all the data of a low-voltage 3-phase system relevant to voltage.

Current

The single-phase current-measuring module determines dc or ac voltages (16.6 to 400Hz) over measuring ranges from 20mA to 10A. With current transformers, these ranges are capable of virtually unlimited extension. The 3-phase current-measuring module determines all three phase currents (5A). In conjunction with the new S.WINDOW function, new standards have been set in monitoring quality.

Loadmonitoring

The active power measuring module (G2BI1) measures power consumption at single-phase or symmetrical three-phase loads. Up to 4800 watts may be measured directly without transformers. The current in the first phase (L1-i) will be recorded in addition to active power.
The power measuring module (G2CI1) will also measure idle power, apparent power, the power factor, the voltage in the first phase and the load type (inductive / capacitive).
The active power allows *WatchDog pro* inferences to be made about the operating status of motors from idling to overload.

Temperature

Whereas the triggering of a temperature monitor with thermistors (PTC) depends on their nominal temperature, with the temperature-measuring module and a PT100 sensor the temperature can be imaged in *WatchDog pro* in degrees Celsius. That is necessary in the case of applications having several or settable switching thresholds. It can also be used to provide temperature-dependent current monitoring.

Digital input

The *WatchDog pro* digital input modules have four channels with a common reference potential. Control voltages of 230V AC, 24V AC/DC or potential-free contacts are interrogated, depending on the type of module. Another variant allows thermistors (PTC according to DIN 44081) to be connected for temperature monitoring, with a short circuit in the sensor lead triggering a fault report just as in the case of overtemperature.

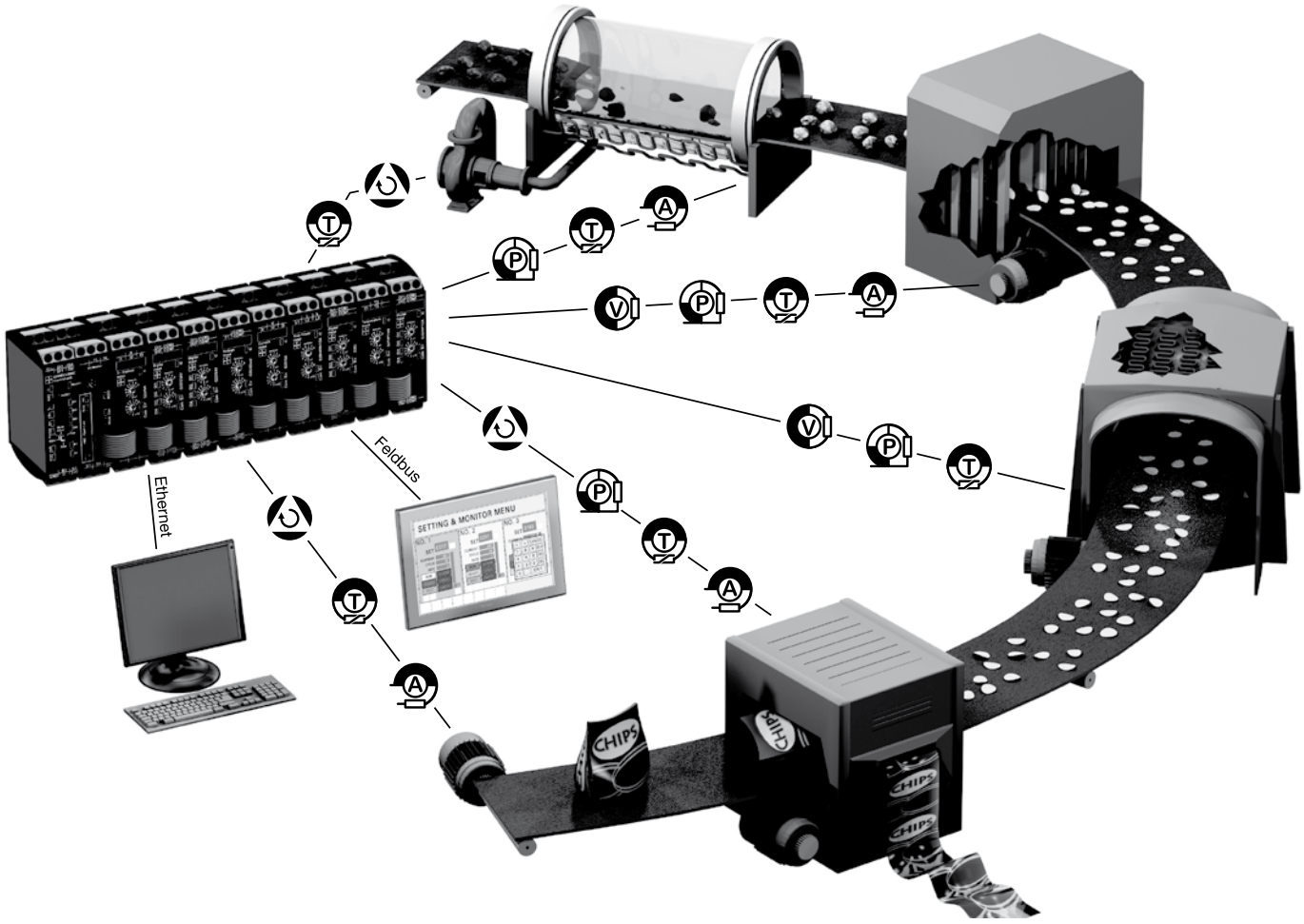
Digital output

The central control unit already possesses two relay outputs. Relay modules with up to four potential-free contacts may be added when more relay outputs are required (change-over contacts). *WatchDog pro* modules each possessing 4 NPN or PNP outputs are available for control voltages. Thus allowing systems possessing many intervention points to be controlled.

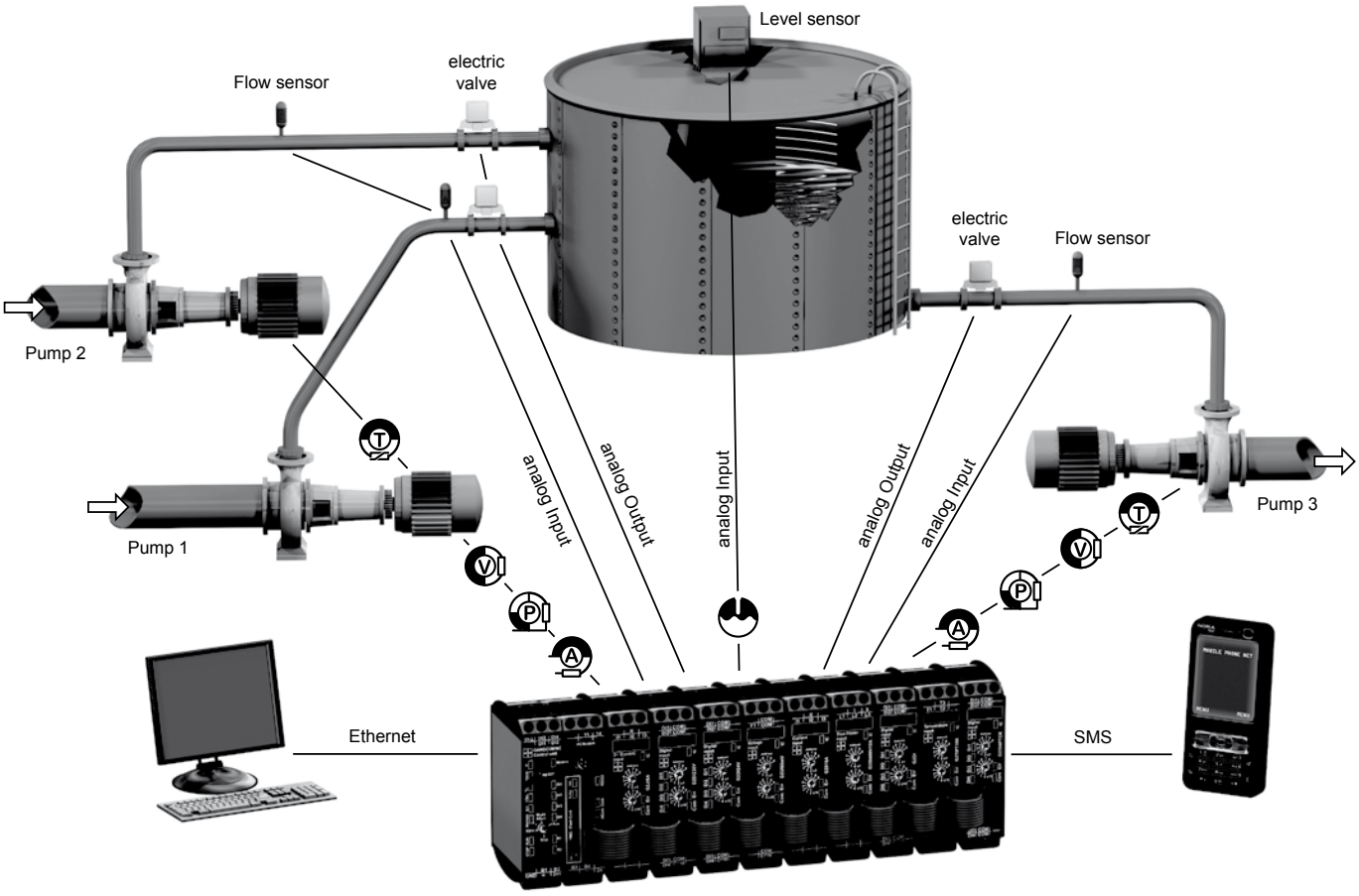
Analogue input / output

With its analogue input and output module, *WatchDog pro* offers a flexible extension that permits non-electrical values to be included in monitoring. Physical values may be read in with the help of sensors through two voltage inputs (0 to 10 V) and two current inputs (4 to 20 mA). *WatchDog pro* is able to output both voltage and current signals through the analogue output and thus assume control and governing tasks.

EXAMPLES 1



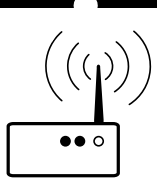
12

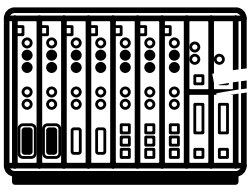


Voltage Phase sequence Current Temperature Level Load

COMMUNICATION

WatchDog pro's parameters are set using a clearly arranged software interface. Plant documentation can be produced at the press of a button from the annotated function list. Communication takes place via a serial interface or over the net using a web server (LAN or WAN).





Fieldbus (Modbus RTU)

RS232

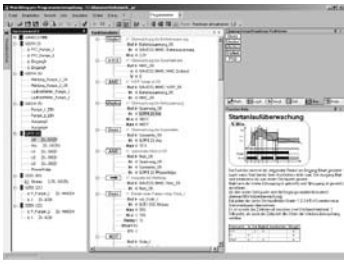
Remote Bus

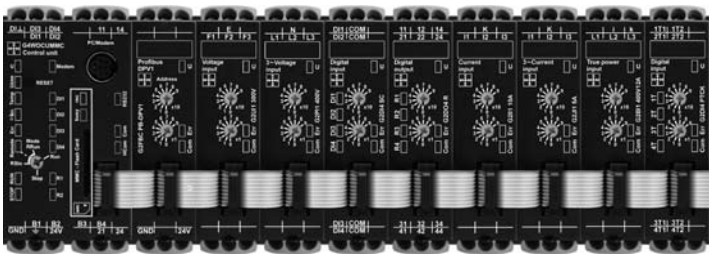
WDP Com

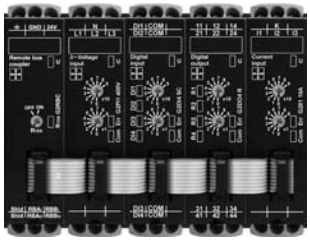
Ethernet

SMS

MMC Card







MODULE & ACCESSORIES

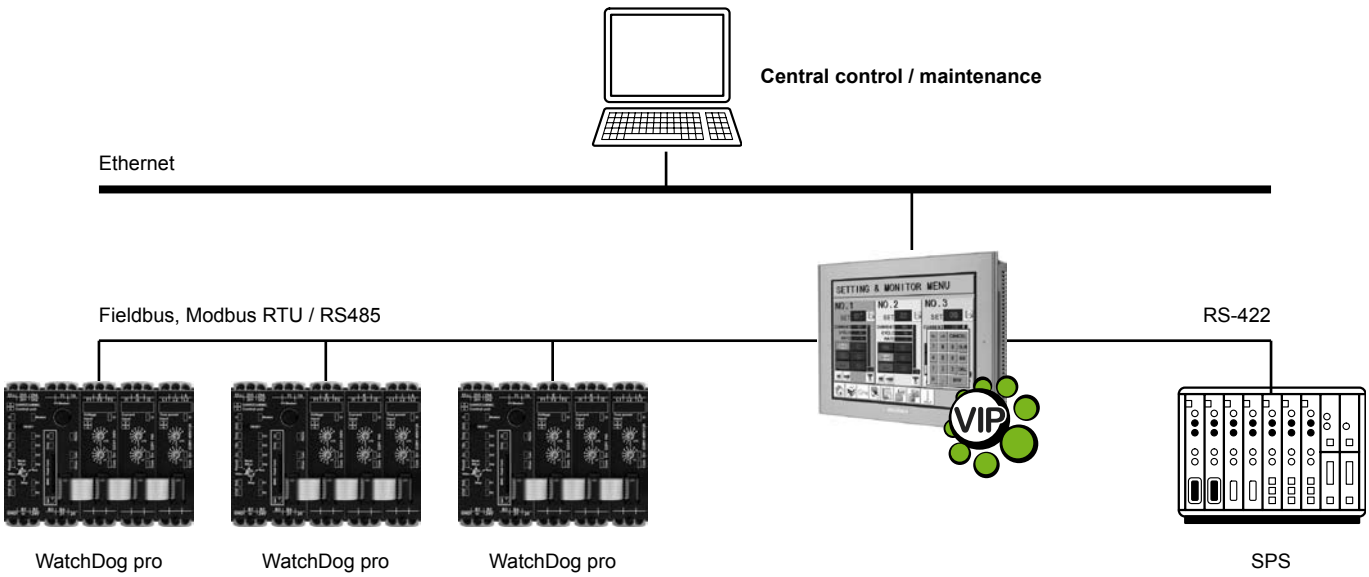
TELE is extending its customer service for implementing complex solutions with the “VIP – Valued Industrial Partner” programme. In addition to developing, producing and distributing TELE brand products, TELE will also advise and assist you in procuring verified quality from selected partners.

Touchpanels

WatchDog pro executes simple monitoring tasks in the blink of an eye. Commands from the user are entered via buttons, switches and digital inputs. If all values are within the permitted range, *WatchDog pro* switches or controls signal lamps, machinery and equipment via digital or analogue outputs.

This type of operation and display frequently no longer suffices in applications that are more demanding. Full human-machine interfaces (HMI) are then required. In conjunction with its VIP partner, ProFace, TELE has, with the AST3201A touch panel (AGP family), created a system that leaves no wishes unfulfilled where display, dimension and functions are concerned.

The HMI is able to communicate simultaneously with several *WatchDog pro* systems and other control types while also acting as a gateway. This means that data may also be easily exchanged between the individual *WatchDog pro* systems and controls. The Ethernet link allows data to be dispatched to the general control computer for logging.



AGP3500-T1-D24	AGP3400-T1-D24	AGP3400-S1-D24	AGP3300-S1-D24	AGP3301-S1-D24	AGP3302-B1-D24	AGP3200-T1-D24	AST3201-A1-D24	
								
540152	540132	540131	540124	540123	540120	540113	540010	Item number
270,5 x 212,5 x 57	215 x 170 x 60	215 x 170 x 60	167,5 x 135 x 59,5	167,5 x 135 x 59,5	167,5 x 135 x 59,5	130 x 104 x 41	130 x 104 x 41	Dimensions in mm (Width x Height x Depth)
10,4 Inches / 264mm	7,5 Inches / 188mm	7,5 Inches / 188mm	5,7 Inches / 145mm	5,7 Inches / 145mm	5,7 Inches / 145mm	3,8 Inches / 96,5mm	3,8 Inches / 96,5mm	Display size
TFT colour VGA	TFT colour VGA	STN colour QVGA	STN colour QVGA	STN colour QVGA	Blue mode QVGA	TFT colour QVGA	Amber / red QVGA	Display type
640 x 480 Pixels	640 x 480 Pixels	640 x 480 Pixels	320 x 240 Pixels	320 x 240 Pixels	320 x 240 Pixels	320 x 240 Pixels	320 x 240 Pixels	Resolution
65.536	65.536	4.096	4.096	4.096	16 Blaustufen	256 Farben	8 Graustufen	Colours
8MB	8MB	8MB	6MB	6MB	6MB	6MB	6MB	Application memory (FEPROM)
■	■	■	■	■	■	■	■	Serial SIO (RS-232C)
■	■	■	■	■	■	■	■	Serial SIO (RS-422/485)
■	■	■	■	■	■	■	■	USB
■	■	■	■	■	■			CF card
■	■	■	■	■	■			Expansion bus
■	■	■	■			■		Ethernet
■	■	■						AUX / sound out

G4WDCU MMC	Central Unit with MultiMediaCard slot and GSM modem driver
G2FBC	Fieldbus modules for communication between the Central Unit and the process level via Modbus-RTU, Profibus-DP, DeviceNet, CANopen, Modbus-TCP, EtherNet/IP
G2WDGW2	Fieldbus-Gateway modules for dircet communication between WatchDog pro modules and the process level via Modbus-RTU, Profibus-DP, DeviceNet, CANopen, Modbus-TCP, EtherNet/Central Unit
G2RBC	Remote bus coupler for decentral system extension
G2UI1 10V	1-phase voltage measurement module DC/AC (16,6 to 400Hz) • Measured ranges: 0 to 60mV; 150mV; 10V
G2UI1 300V	1-phase voltage measurement module DC/AC (16,6 bis 400Hz) • Measured ranges: 0 to 30V; 60V; 300V
G2PI1 400V	3~ voltage measurement module AC for 3- and 4-wire circuit (48 to 63Hz) • Measuring of phase voltage, asymmetry and phase sequence
G2II1 5A	1-phase current measurement module DC/AC (16,6 to 400Hz) • Measured ranges: 0 to 20mA; 1A; 5A
G2II1 10A	1-phase current measurement module DC/AC (16,6 to 400Hz) • Measured ranges: 0 to 100mA; 1A; 10A
G2JI1 5A	3-phase current measurement module AC (48 to 63Hz) with common return • Measured ranges 0 to 5A
G2BI1 400V12A	True power monitoring module AC (10 to 400Hz) for 230/400V loads up to 12A
G2CI1 400V12A	Power factor and power measurement module AC (10 to 400Hz) for 230/400V loads up to 12A
G2DI4 PTCK	Thermistor monitoring module for 4 digital PTC inputs
G2TI1 PT100	Temperature measurement module for one PT100 sensor
G2DI4 24V	Digital input module for signal voltage DC/AC (48 to 63Hz) • Switch points DC: 9,3V/5,3V; AC: 12,4V/9,2V
G2DI4 230V	Digital input module for signal voltage DC/AC (48 to 63Hz) • Switch points AC: 153V/53V
G2DI4 SC	Digital input module for potential free inputs and NPN sensors • Switch points 4,1V at 1,1mA
G2AM4 M	Analog input and output module for standard signals 0 - 10V / 4 - 20mA
G2DO4 R	Digital output module with 4 separated relay contacts
G2DO4 SP24VDC	Digital outputs modules with 4 potential free digital relay outputs
G2DO4 SN24VDC	Digital outputs modules with 4 semiconductor outputs
MMC	Formated MulitMediaCard™ for the datalogger function with 1 to 2GB memory
WDP SOFT	Parameterisation software on CD, running on Windows 98/ME/2000/XP
MMC-READER	MMC read out package including Datalogger software and MulitMediaCard Reader
WDP COM	Communication equipment: USB serial converter and interface cable RS232
WDP GSM	GSM package: GSM modem, data cable, antenna, power supply unit and DIN-rail adapter

WatchDog pro

Central Unit

- Information about the operating status (error, operation mode, status of in- and outputs, communication and datalogger)
- Selectable operation mode
- Recording of facility- and system data via MultiMediaCard™ (MMC™)
- Reinforced insulation of the input and output circuit
- 4 digital inputs
- 2 relay outputs
- Width 45mm
- Industrial design

Type	G4WDCU MMC

Art.No. (PQ1)	2500000
Art.No. (PQ10)	-
EAN13-Code	900866200329
Input circuit Digital inputs	Voltage AC/DC AC Sinus (48 to 63Hz) 24 to 230V AC • 24 to 100V DC (input activ)
Switching point	9,5V AC (typ.) • 9,0V DC (typ.)
Internal values	Device temperature • Current remote bus • Current local interface • Supply voltage • Battery voltage
Controls	RRun • RStop • Run • Stop
Indicators (LEDs)	U • U_{ERR} • Temp • $I_{RB/LI}$ • Err • Remote • RUN • STOP • Modem • DI1 • DI2 • DI3 • DI4 • R1 • R2 • ready • busy • RS232 • HCom • Com
Datalogger	yes (with MMC)
Businterface	Standard bus (RS485)
Communication	RS232 with PC • Webserver • Modem
Remote bus	RS485 over RB⊥ , (RB+), RBA, RBB
Overvoltage cat.	III (in accordance with IEC 60664-1)
Rated surge voltage	6kV
Registers	max. 845
Permanent registers	27 and 128 permanent boolean registers
Supply	24VDC
Output	2 NO contacts 250V AC, 3A AC
Width	45mm
Certificates	CE • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP20 • Mounted on DIN-rail TS 35 in accordance with EN 60715 • Mounting position: any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque: max. 1Nm
Terminal capacity	1 x 0.5 to 2.5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0.5 to 1.5mm² with/without multicore cable end • 2 x 2.5mm² flexible without multicore cable end
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1); -25 to +40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • Relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Absolute humidity: 1g to 25g H_2O/m^3 (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 2 (in accordance with IEC 60664-1) • Vibration resistance: 10 to 55Hz 0.35mm (in accordance with IEC 60068-2-6) • Shock resistance: 15g 11ms (in accordance with IEC 60068-2-27)
Accessories	WDP SOFT • WDP COM • WDP GSM • MMC Card

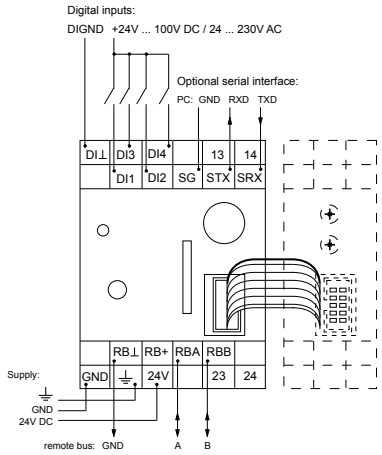
Functions

The user-defined program is stored and executed in the central unit (CU).
The LED's provide information about the current operation status (error, mode of operation, status of in-/outputs, communication and data-logger) of the system. Facility- and system data are saved event-triggerd on the MultiMediaCard™ (MMC™) by the usage of the datalogger.
The operation mode can be chosen by the use of the mode selector with following settings:

RRun	Remote Run (program runs after reset, access of the programming environment to the Central unit is possible)
RStop	Remote Stop (program doesn't run after reset, access of the programming environment to the Central unit is possible)
Run	Program runs after reset, access of the programming environment to the Central unit is only possible to a limited degree, communication with modem
Stop	Program doesn't run after reset, access of the programming environment to the CU is only possible to a limited degree

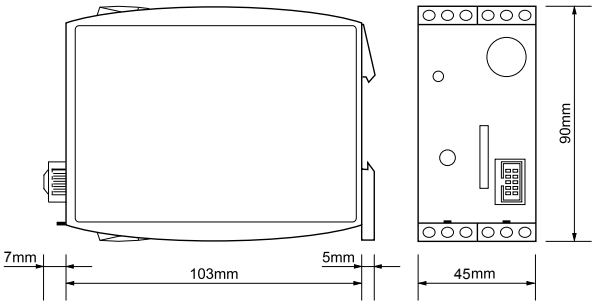
An update of the firmware, the program and the MMC-table can be done by the help of the PC-based programming environment.

Connections



Dimensions

Width 45mm



G4NG230V24V2.5A	Power supply, 230VAC, 24VDC/2,5A, 1-phase	2600000
WDP SOFT	Parameterisation software Programming environment on CD, running on Windows 98/ME/2000/XP	2500030
MMC-READER	MMC read out package including Datenlogger software and MMC Card Reader	2500035
WDP COM	Communication equipment WatchDog pro including USB serial converter and interface cable RS232	2500040
WDP GSM Datacenter	WatchDog pro GSM Datensolotion for the two-way communication	2500046
WDP GSM	WatchDog pro GSM Package for the simple report of informations via SMS	2500045
MMC 1GB	MultiMediaCard 1GB (formated memorycard)	2500010
MMC 2GB	MultiMediaCard 2GB (formated memorycard)	2500020
STANDARD CABLE HMI/WDP RS485 5M	RS485 Standard connecting cable WDP/Touchpanel, display type LCD/STN/TFT	2500894

WatchDog pro

Fieldbus interface module

- WatchDog pro fieldbus connection to the process level
- Communication of I/O information to third party controls
- Data transmission via high speed bus
- Fieldbus interface modules are slaves on the fieldbus
- Modbus-RTU; Standard connection to touch panels
- Modbus-TCP
- Profibus-DPV1
- Width 22,5mm
- Industrial design

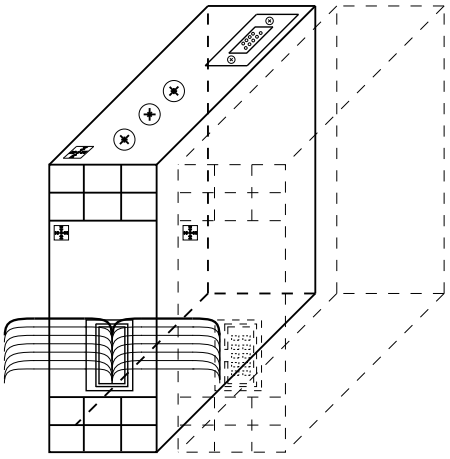
Type	G2FBC MB-RTU	G2FBC MB-TCP	G2FBC PB-DPV1
			
Art.No. (PQ1)	2500500	2500510	2500501
Art.No. (PQ10)	-	-	-
EAN13-Code	9008662005679	9008662005716	9008662005686
Fieldbus	Modbus-RTU	Modbus-TCP	Profibus-DPV1
Connector	Sub-D (female)	RJ45	Sub-D (female)
Controls	Baud rate Address adjustment WatchDog pro: Address range 1 to 99 Address adjustment Fieldbus: Address range 1 to 247	Address adjustment WatchDog pro: Address range 1 to 99	Address adjustment WatchDog pro: Address range 1 to 99 Address adjustment Fieldbus: Address range 1 to 126
Indicators (LEDs)	U • Err • Com	U • Err • Com	U • Err • Com
Businterface	High speed bus (RS485)	High speed bus (RS485)	High speed bus (RS485)
Galvanic separated	yes	yes	yes
Supply	24V DC from local interface	24V DC from local interface	24V DC from local interface
Width	22,5mm	22,5mm	22,5mm
Certificates	CE • GOST	CE • GOST	CE • GOST
Mechanical Design	Self-extinguishing plastic housing, IP rating IP20 • Mounted on DIN-rail TS 35 in accordance with EN 60715 • Mounting position: any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque: max. 1Nm		
Terminal capacity	1 x 0.5 to 2.5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0.5 to 1.5mm² with/without multicore cable end • 2 x 2.5mm² flexible without multicore cable end		
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1); -25 to +40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • Relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Absolute humidity: 1g to 25g H_2O/m^3 (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 2 (in accordance with IEC 60664-1) • Vibration resistance: 10 to 55Hz 0.35mm (in accordance with IEC 60068-2-6) • Shock resistance: 15g 11ms (in accordance with IEC 60068-2-27		
Accessories G2FBC MB-RTU	STANDARD CABLE HMI/WDP RS485 5M • CABLE HMI/WDP RS485 5M		

Functions

Measured values, alarms and system information are sent from WatchDog pro to controllers or the process level with the field bus interface module. Control signals, nominal values or thresholds are sent to WatchDog pro via fieldbusses and the fieldbus interface modules too. For the connection of touch panels to WatchDog pro with the Modbus-RTU interface module TELE provides cables as accessory.

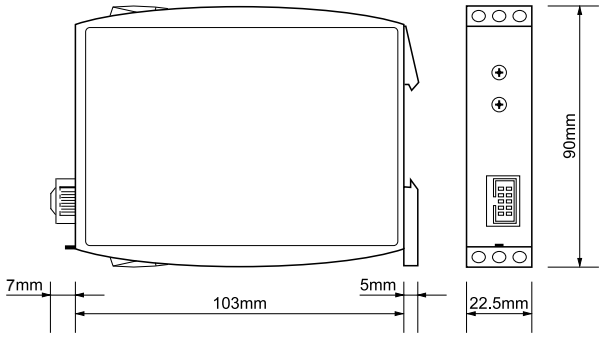
Connections

G2FBC



Dimensions

Width 22,5mm



WatchDog pro

Fieldbus gateways

- Fieldbus connection between WatchDog pro modules and the process level
- No central unit, no monitoring functions
- Communication of measured values to third party controllers
- Gateways are slaves on the fieldbus
- Modbus-RTU
- Modbus-TCP
- Profibus-DPV1
- Width 22,5mm
- Industrial design

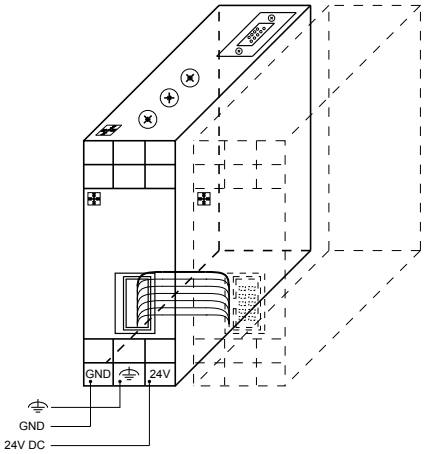
Type	G2WDGW2 MB-RTU	G2WDGW2 MB-TCP	G2WDGW2 PB-DVP1
			
Art.No. (PQ1)	2500550	2500560	2500551
Art.No. (PQ10)	-	-	-
EAN13-Code	9008662005693	9008662005747	9008662005709
Fieldbus	Modbus-RTU	Modbus-TCP	Profibus-DPV1
Connector	Sub-D (female)	RJ45	Sub-D (female)
Controls	Baud rate Address adjustment Fieldbus: Address range 1 to 247	-	Address adjustment Fieldbus: Address range 1 to 126
Indicators (LEDs)	U • Err • Com	U • Err • Com	U • Err • Com
Businterface	Standard bus (RS485)	Standard bus (RS485)	Standard bus (RS485)
Galvanic separated	yes	yes	yes
Supply	24V DC	24V DC	24V DC
Width	22,5mm	22,5mm	22,5mm
Certificates	CE • GOST	CE • GOST	CE • GOST
Mechanical Design	Self-extinguishing plastic housing, IP rating IP20 • Mounted on DIN-rail TS 35 in accordance with EN 60715 • Mounting position: any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque: max. 1Nm		
Terminal capacity	1 x 0.5 to 2.5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0.5 to 1.5mm² with/without multicore cable end • 2 x 2.5mm² flexible without multicore cable end		
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1); -25 to +40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • Relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Absolute humidity: 1g to 25g H_2O/m^3 (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 2 (in accordance with IEC 60664-1) • Vibration resistance: 10 to 55Hz 0.35mm (in accordance with IEC 60068-2-6) • Shock resistance: 15g 11ms (in accordance with IEC 60068-2-27)		
Accessories	-		

Functions

Measured values from the WatchDog pro modules are put direct to the used fieldbus. The output modules are controlled with the fieldbus. Monitoring and controlling tasks have to be managed with external controllers or in the process level.

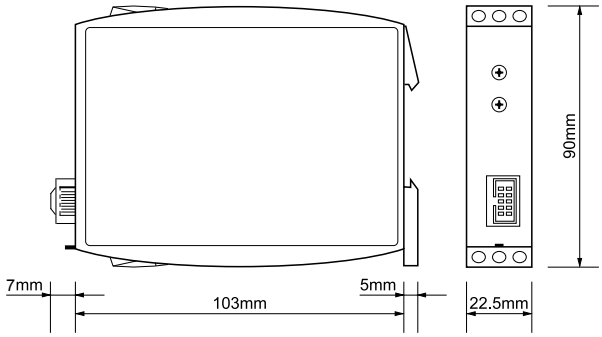
Connections

G2WDGW2



Dimensions

Width 22,5mm



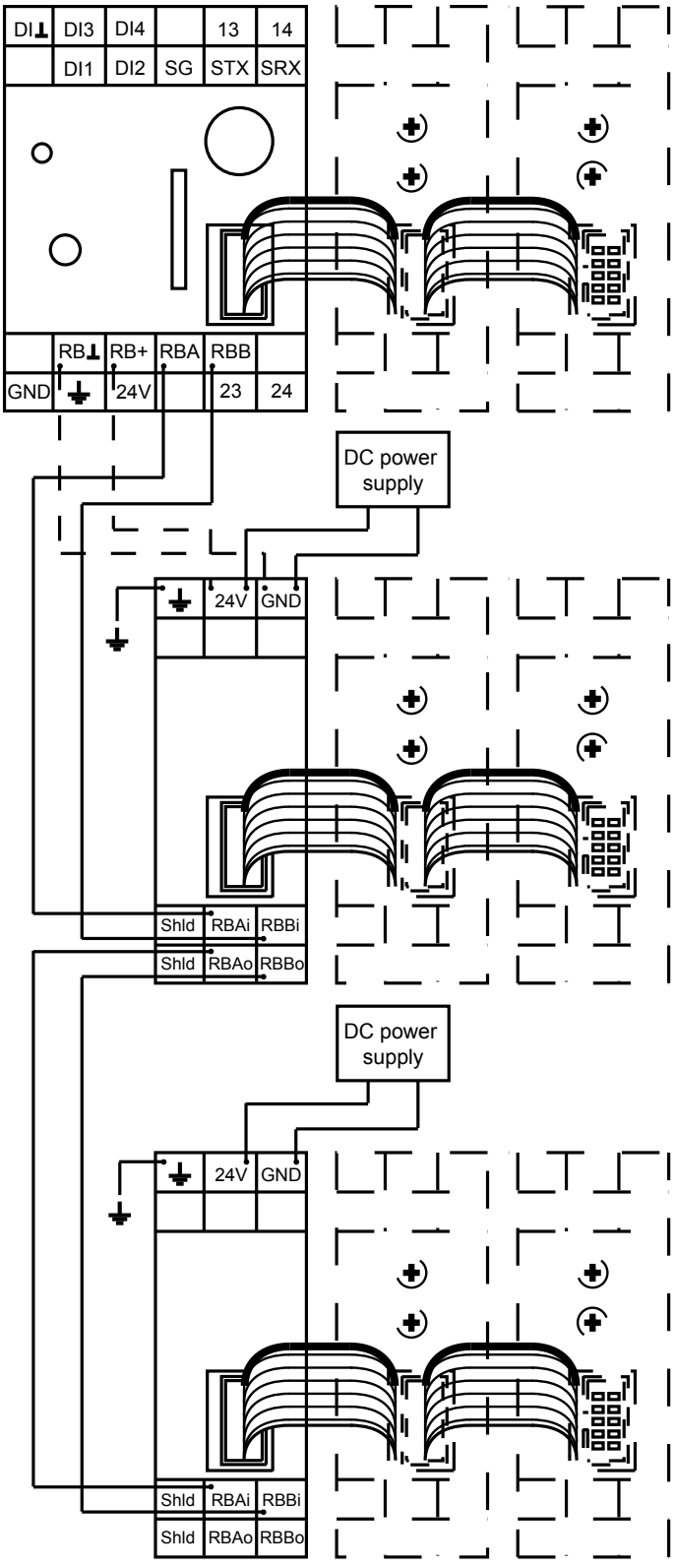
WatchDog pro

Remote bus coupler

- Distributed WatchDog pro system enlargement
- System extension up to 99 modules
- Up to 24 modules per remote bus coupler
- Up to 40 remote bus couplers per central unit
- Bus length is limited with 500 meters (remote bus cable)
- Width 22,5mm
- Industrial design

Type	G2RBC
	
Art.No. (PQ1)	2500700
Art.No. (PQ10)	-
EAN13-Code	90086620059
Interface	WatchDog pro remote bus
Terminals	Shld • RBA • RBB
Controls	R_{TER} (terminator)
Indicators (LEDs)	U • R_{TER}
Businterface	WatchDog pro remote bus (RS485)
Galvanic separated	yes
Supply	24V DC
Width	22,5mm
Certificates	CE • GOST
Mechanical Design	Self-extinguishing plastic housing, IP rating IP20 • Mounted on DIN-rail TS 35 in accordance with EN 60715 • Mounting position: any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque: max. 1Nm
Terminal capacity	1 x 0.5 to 2.5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0.5 to 1.5mm² with/without multicore cable end • 2 x 2.5mm² flexible without multicore cable end
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1); -25 to +40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • Relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Absolute humidity: 1g to 25g H_2O/m^3 (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 2 (in accordance with IEC 60664-1) • Vibration resistance: 10 to 55Hz 0.35mm (in accordance with IEC 60068-2-6) • Shock resistance: 15g 11ms (in accordance with IEC 60068-2-27)
Accessories	-

The remote bus coupler enables distributed WatchDog pro system enlargement. The central unit as well as the remote bus coupler are able to supply 24 modules. The number of modules in one WatchDog pro system (Central unit and remote bus coupler) is limited by 99.



WatchDog pro

Voltage monitoring in 1-phase mains

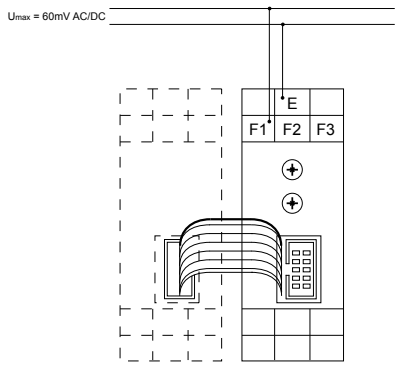
- Voltage measurement in 1-phase mains
- Reinforced insulation of the measuring circuit
- Measured value transmitting via standard bus
- Modular monitoring system
- Measuring ranges for 30V, 60V and 300V (G2UI1 300V)
- Measured range 10V for standard signal (G2UI1 10V)
- Measuring ranges 60mV and 150mV for shunt measurement (G2UI1 10V)
- Width 22,5mm
- Industrial design

Type	G2UI1 10V	G2UI1 300V
		
Art.No. (PQ1)	2500050	2500051
Art.No. (PQ10)	-	-
EAN13-Code	900866200523	900866200488
Measured variable	Voltage AC/DC DC or AC Sinus (16,6 to 400Hz)	Voltage AC/DC DC or AC Sinus (16,6 to 400Hz)
Measured ranges	60mV AC/DC; terminals E-F1(+) 150mV AC/DC; terminals E-F2(+) 10V AC/DC; terminals E-F3(+)	30V AC/DC; terminals E-F1(+) 60V AC/DC; terminals E-F2(+) 300V AC/DC; terminals E-F3(+)
Controls	Address adjustment: Address range 1 to 99	Address adjustment: Address range 1 to 99
Indicators (LEDs)	U • Err • Com	U • Err • Com
Businterface	Standard bus (RS485)	Standard bus (RS485)
Overvoltage cat.	III (in accordance with IEC 60664-1)	III (in accordance with IEC 60664-1)
Rated surge voltage	6kV	6kV
Supply	24V DC from local interface	24V DC from local interface
Output	-	-
Width	22,5mm	22,5mm
Certificates	CE • GOST	CE • GOST
Mechanical Design	Self-extinguishing plastic housing, IP rating IP20 • Mounted on DIN-rail TS 35 in accordance with EN 60715 • Mounting position: any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque: max. 1Nm	
Terminal capacity	1 x 0.5 to 2.5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0.5 to 1.5mm² with/without multicore cable end • 2 x 2.5mm² flexible without multicore cable end	
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1); -25 to +40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • Relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Absolute humidity: 1g to 25g H_2O/m^3 (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 2 (in accordance with IEC 60664-1) • Vibration resistance: 10 to 55Hz 0.35mm (in accordance with IEC 60068-2-6) • Shock resistance: 15g 11ms (in accordance with IEC 60068-2-27)	
Accessories	-	

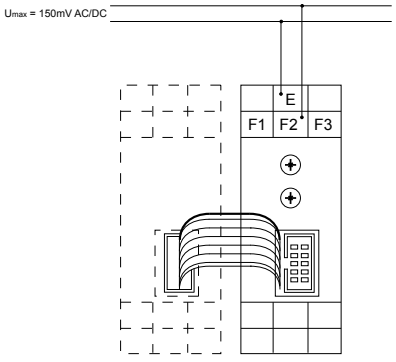
WatchDog pro module for voltage measurement in 1-phase mains.

Functions

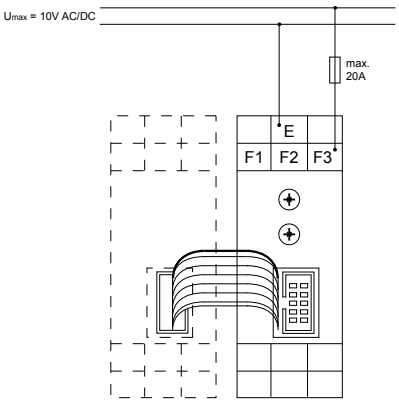
Measured ranges 60mV AC/DC



Measured ranges 150mV AC/DC



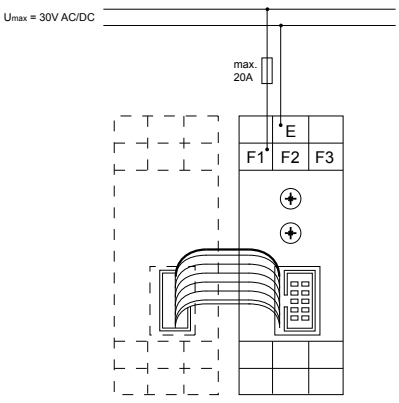
Measured ranges 10V AC/DC



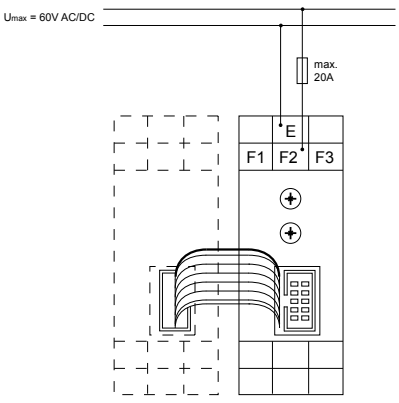
Connections

G2UI1 10V

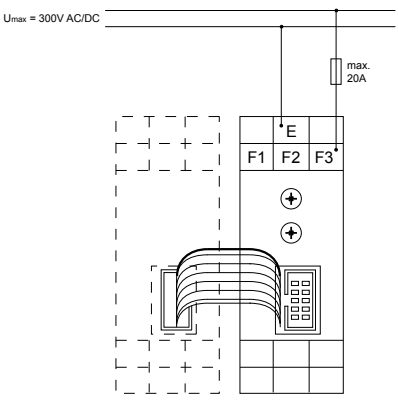
Measured ranges 30V AC/DC



Measured ranges 60V AC/DC



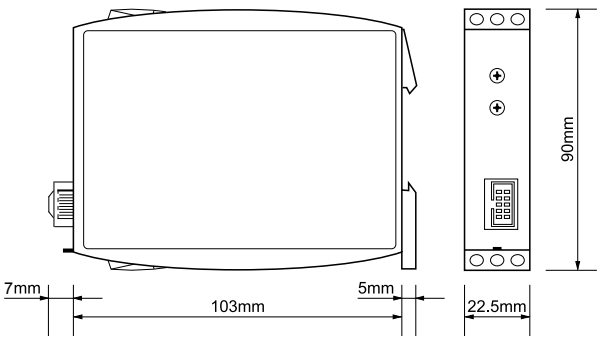
Measured ranges 300V AC/DC



Connections

G2UI1 300V

Width 22,5mm



Dimensions

WatchDog pro

Voltage monitoring in 3-phase mains

- Voltage measurement in 3-phase mains for 3- and 4-wire circuit
- Connection of neutral conductor optional
- Monitoring of phase sequence and phase failure
- Monitoring of asymmetry
- Reinforced insulation of the measuring circuit
- Measured value transmitting via standard bus
- Modular monitoring system
- Width 22,5mm
- Industrial design

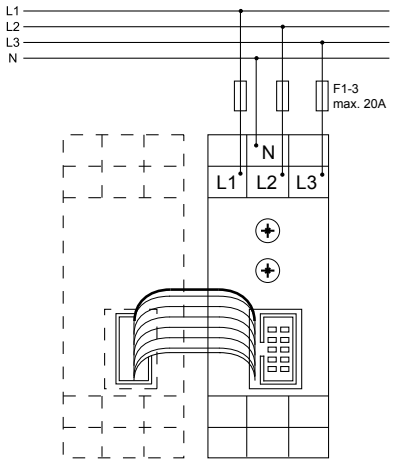
Type	G2PI1 400V
	
Art.No. (PQ1)	2500350
Art.No. (PQ10)	-
EAN13-Code	900866200490
Measured variable	Voltage AC Sinus (48 to 63Hz)
Measured ranges	Phase voltages (U_1, U_2, U_3): 0 to 300V Average phase-phase voltage (U_{AVG}): 0 to 520V Asymmetry: 0% to 100% Phase sequence: 1 (clockwise rotation) • 0 (counter clockwise rotation)
Controls	Address adjustment: Address range 1 to 99
Indicators (LEDs)	U • Err • Com
Businterface	Standard bus (RS485)
Overvoltage cat.	III (in accordance with IEC 60664-1)
Rated surge voltage	6kV
Supply	24V DC from local interface
Output	-
Width	22,5mm
Certificates	CE • GOST
Mechanical Design	Self-extinguishing plastic housing, IP rating IP20 • Mounted on DIN-rail TS 35 in accordance with EN 60715 • Mounting position: any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque: max. 1Nm
Terminal capacity	1 x 0.5 to 2.5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0.5 to 1.5mm² with/without multicore cable end • 2 x 2.5mm² flexible without multicore cable end
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1); -25 to +40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • Relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Absolute humidity: 1g to 25g H_2O/m^3 (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 2 (in accordance with IEC 60664-1) • Vibration resistance: 10 to 55Hz 0.35mm (in accordance with IEC 60068-2-6) • Shock resistance: 15g 11ms (in accordance with IEC 60068-2-27)
Accessories	-

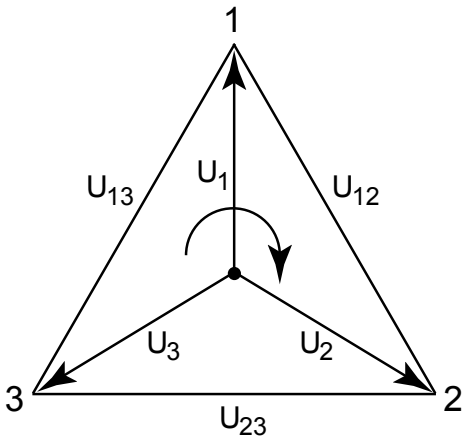
Functions

WatchDog pro module for voltage measurement in 3-phase mains for 3- and 4-wire circuits. Monitoring of phase failure, phase sequence and asymmetry.

Connections

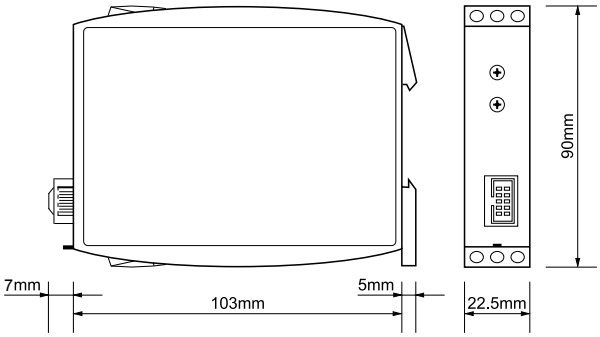
G2PI1 400V





Dimensions

Width 22,5mm



WatchDog pro

Digital Input

- 4 digital inputs with common ground (COM)
- Reinforced insulation of the input circuit
- Digital state transmitting via standard bus
- Modular monitoring system
- Width 22,5mm
- Industrial design

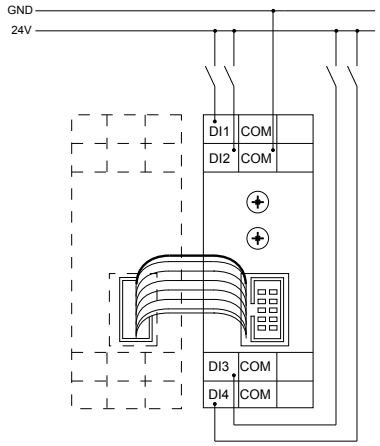
Type	G2DI4 24V	G2DI4 230V	G2DI4 SC
			
Art.No. (PQ1)	2500100	2500101	2500103
Art.No. (PQ10)	-	-	-
EAN13-Code	900866200330	900866200493	900866200492
Measured variable	Voltage AC/DC AC Sinus (48 to 63Hz)	Voltage AC AC Sinus (48 to 63Hz)	for potential free inputs NPN sensors
Switch point On / Off	DC: 9,3V / 5,3V AC: 12,4V / 9,2V	AC: 153V / 53V	1,1mA / 4,1V
Controls	Address adjustment: Address range 1 to 99	Address adjustment: Address range 1 to 99	Address adjustment: Address range 1 to 99
Indicators (LEDs)	U • Err • Com • DI1 • DI2 • DI3 • DI4	U • Err • Com • DI1 • DI2 • DI3 • DI4	U • Err • Com • DI1 • DI2 • DI3 • DI4
Businterface	Standard bus (RS485)	Standard bus (RS485)	Standard bus (RS485)
Overvoltage cat.	III (in accordance with IEC 60664-1)	III (in accordance with IEC 60664-1)	III (in accordance with IEC 60664-1)
Rated surge voltage	6kV	6kV	6kV
Supply	24V DC from local interface	24V DC from local interface	24V DC from local interface
Output	-	-	-
Width	22,5mm	22,5mm	22,5mm
Certificates	CE • GOST	CE • GOST	CE • GOST
Mechanical Design	Self-extinguishing plastic housing, IP rating IP20 • Mounted on DIN-rail TS 35 in accordance with EN 60715 • Mounting position: any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque: max. 1Nm		
Terminal capacity	1 x 0.5 to 2.5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0.5 to 1.5mm² with/without multicore cable end • 2 x 2.5mm² flexible without multicore cable end		
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1); -25 to +40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • Relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Absolute humidity: 1g to 25g H_2O/m^3 (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 2 (in accordance with IEC 60664-1) • Vibration resistance: 10 to 55Hz 0.35mm (in accordance with IEC 60068-2-6) • Shock resistance: 15g 11ms (in accordance with IEC 60068-2-27)		
Accessories	-		

Functions

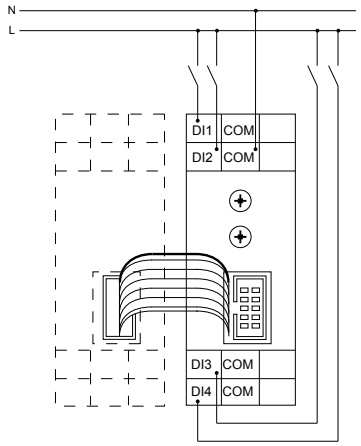
WatchDog pro module with 4 digital inputs.

Connections

G2DI4 24V

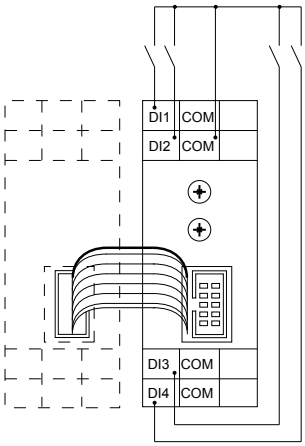


G2DI4 230V



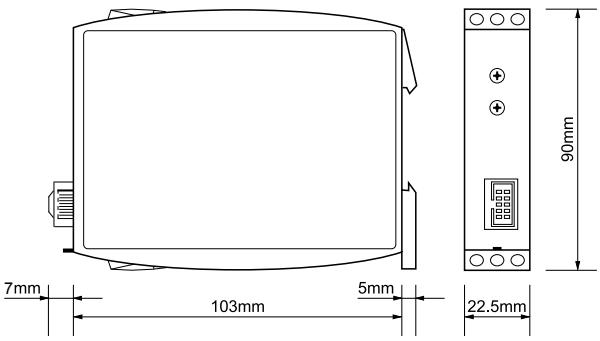
Connections

G2DI4 SC



Dimensions

Width 22,5mm



WatchDog pro

Standard signal In- and Output

- Analogue and digital input and output module for standard signals
- Common ground (GND)
- Reinforced insulation of the measuring circuits
- 2 voltage inputs (0-10V DC / 0-24V DC / NPN / PNP)
- 2 current inputs (0-20mA DC)
- 1 output (0-20mA DC / 0-10V DC / 12V / 24V)
- Measured value transmitting via standard bus
- Width 22,5mm
- Industrial design

Type	G2AM4 M

Art.No. (PQ1)	2500600
Art.No. (PQ10)	-
EAN13-Code	9008662005631
Measured variable	Standard signals Analog/Digital output
Measured ranges	0-20mA DC; terminals INI3 / INI4 0-10V / 0-24V / PNP / NPN; terminals INU1 / INU2
Controls	Address adjustment: Address range 1 to 99
Indicators (LEDs)	U • Err • Com
Businterface	Standard bus (RS485)
Overvoltage cat.	III (in accordance with IEC 60664-1)
Rated surge voltage	4kV
Supply	24V DC from local interface
Output	0-20mA DC / 0-10V DC / 12V DC / 24V DC; terminals OUT-GND
Width	22,5mm
Certificates	CE • GOST
Mechanical Design	Self-extinguishing plastic housing, IP rating IP20 • Mounted on DIN-rail TS 35 in accordance with EN 60715 • Mounting position: any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque: max. 1Nm
Terminal capacity	1 x 0.5 to 2.5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0.5 to 1.5mm² with/without multicore cable end • 2 x 2.5mm² flexible without multicore cable end
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1); -25 to +40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • Relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Absolute humidity: 1g to 25g H_2O/m^3 (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 2 (in accordance with IEC 60664-1) • Vibration resistance: 10 to 55Hz 0.35mm (in accordance with IEC 60068-2-6) • Shock resistance: 15g 11ms (in accordance with IEC 60068-2-27)
Accessories	-

Functions

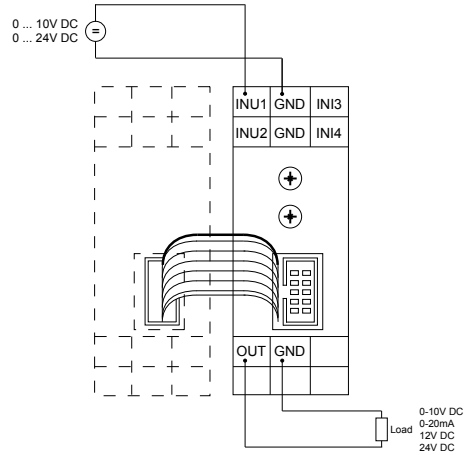
WatchDog pro module with digital inputs and analog in- and outputs for standard signals with a common ground (GND).

Input signals: 0-10V DC, 0-24V DC, 0-20mA DC, NPN, PNP

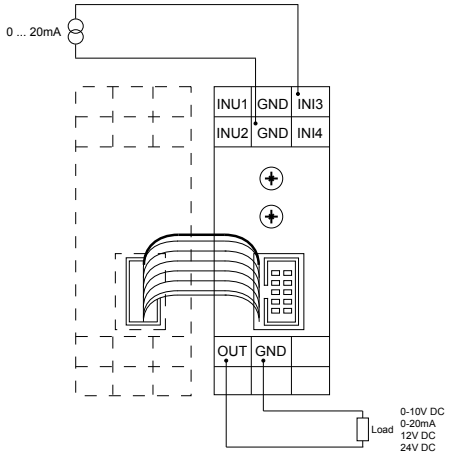
Output signals: 0-10V DC, 0-20mA DC, 12V DC, 24V DC

Connections

G2AM4 M with voltage input signal

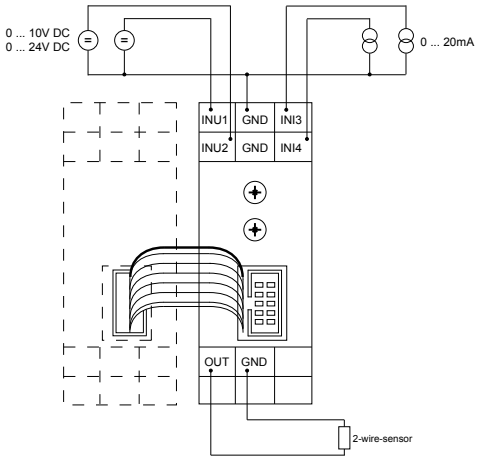


G2AM4 M with current input signal

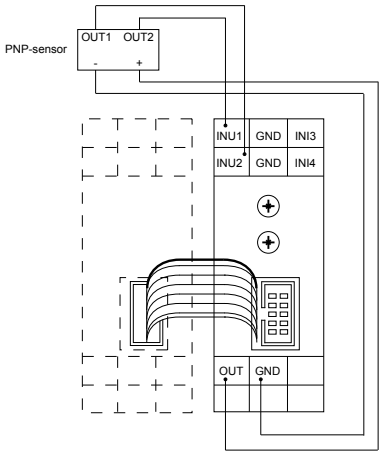


Connections

G2AM4 M with current and voltage input signal

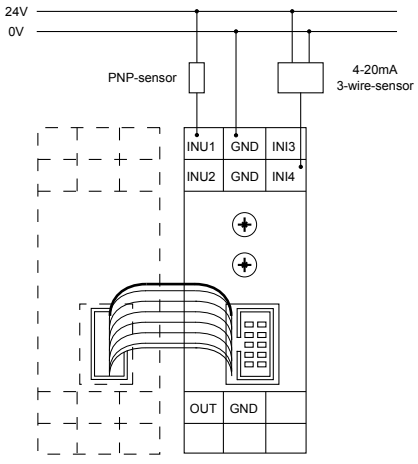


G2AM4 M with 2 PNP-sensors (supplied via G2AM4 M)

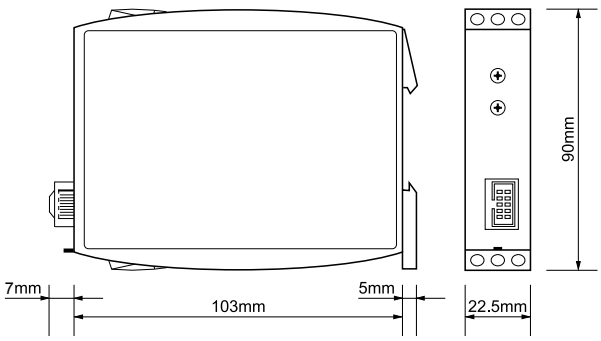


Connections, Dimensions

G2AM4 M with PNP-sensor and 4-20mA 3-wire-sensor



Width 22,5mm



WatchDog pro

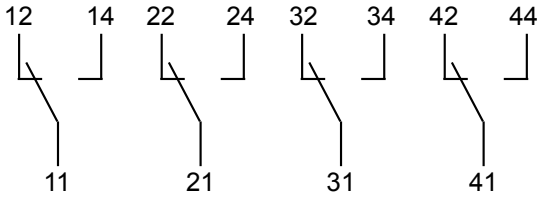
Digital outputs

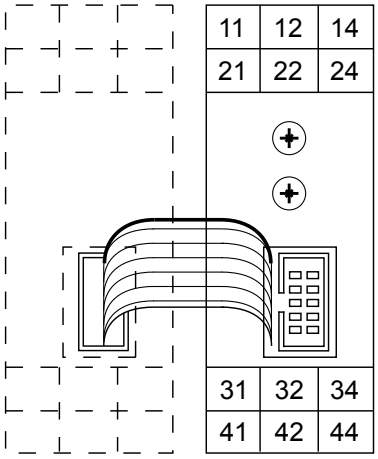
- 4 potential free digital relay or semiconductor outputs
- Reinforced isolation between the outputs and the bus
- Reinforced isolation between the outputs, relay version (G2DO4 R)
- Functional islolation between the outputs, semiconductor version (G2DO4 S)
- Short circuit protection of the outputs with error indicators (G2DO4 S)
- Output state transmitting via standard bus
- Modular monitoring system
- Width 22,5mm
- Industrial design

Type	G2DO4 R	G2DO4 SP24VDC	G2DO4 SN24VDC
			
Art.No. (PQ1)	2500200	2500201	2500203
Art.No. (PQ10)	-	-	-
EAN13-Code	900866200525	9008662005655	9008662005662
Controls	Address adjustment: Address range 1 to 99	Address adjustment: Address range 1 to 99	Address adjustment: Address range 1 to 99
Indicators (LEDs)	U • Err • Com • R1 • R2 • R3 • R4	U • Err • Com • O1 • O2 • O3 • O4	U • Err • Com • O1 • O2 • O3 • O4
Businterface	Standard bus (RS485)	Standard bus (RS485)	Standard bus (RS485)
Overvoltage cat.	III (in accordance with IEC 60664-1)	III (in accordance with IEC 60664-1)	III (in accordance with IEC 60664-1)
Rated surge voltage	6kV	2,5kV	2,5kV
Supply	24V DC from local interface	24V DC from local interface 24V DC for each output	24V DC from local interface 24V DC for each output
Output	4 potential free CO contacts	4 isolated PNP semiconductor outputs	4 isolated NPN semiconductor outputs
Switching capacity	1250VA (5A / 250V)	2A / 24V DC	2A / 24V DC
Width	22,5mm	22,5mm	22,5mm
Certificates	CE • GOST	CE • GOST	CE • GOST
Mechanical Design	Self-extinguishing plastic housing, IP rating IP20 • Mounted on DIN-rail TS 35 in accordance with EN 60715 • Mounting position: any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque: max. 1Nm		
Terminal capacity	1 x 0.5 to 2.5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0.5 to 1.5mm² with/without multicore cable end • 2 x 2.5mm² flexible without multicore cable end		
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1); -25 to +40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • Relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Absolute humidity: 1g to 25g H_2O/m^3 (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 2 (in accordance with IEC 60664-1) • Vibration resistance: 10 to 55Hz 0.35mm (in accordance with IEC 60068-2-6) • Shock resistance: 15g 11ms (in accordance with IEC 60068-2-27)		
Accessories	-		

G2DO4 R

Connections

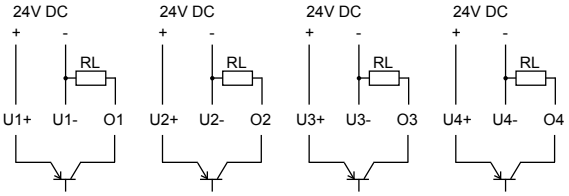


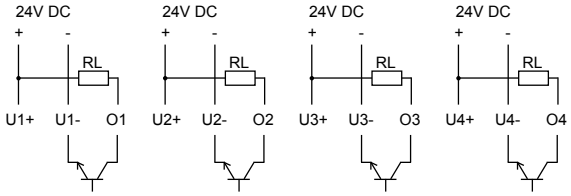


G2DO4 SP24VDC

G2DO4 SN24VDC

Connections

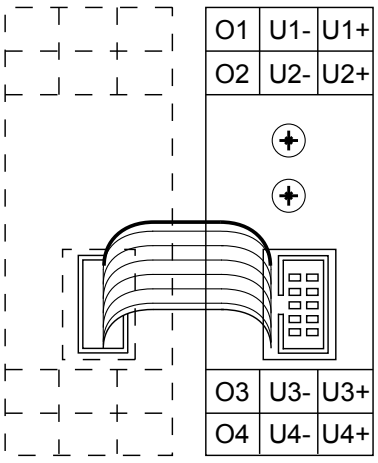


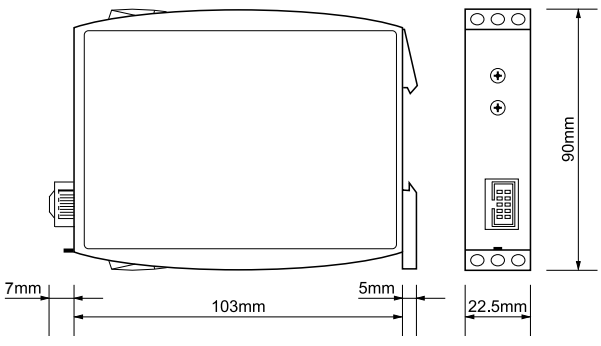


G2DO4 SP24VDC and G2DO4 SN24VDC

Width 22,5mm

Connections, Dimensions





WatchDog pro

Current monitoring in 1-phase mains

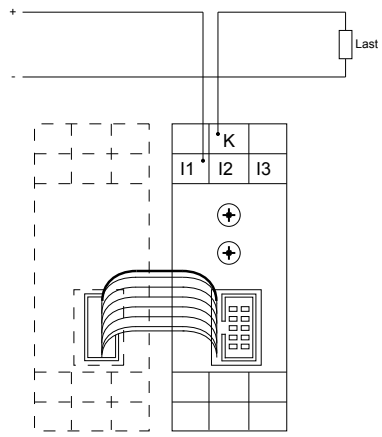
- Current measurement in 1-phase mains
- Reinforced insulation of the measuring circuit
- Measured value transmitting via standard bus
- Modular monitoring system
- Measuring range between 20mA and 5A (G2II1 5A)
- Measuring range between 100mA to 10A (G2II1 10A)
- Width 22,5mm
- Industrial design

Type	G2II1 5A	G2II1 10A
		
Art.No. (PQ1)	2500251	2500250
Art.No. (PQ10)	-	-
EAN13-Code	900866200511	900866200491
Measured variable	Current AC/DC DC or AC Sinus (16,6 to 400Hz)	Current AC/DC DC or AC Sinus (16,6 to 400Hz)
Measured ranges	20mA AC/DC; terminals K-I1(+) 1A AC/DC; terminals K-I2(+) 5A AC/DC; terminals K-I3(+)	100mA AC/DC; terminals K-I1(+) 1A AC/DC; terminals K-I2(+) 10A AC/DC; terminals K-I3(+)
Controls	Address adjustment: Address range 1 to 99	Address adjustment: Address range 1 to 99
Indicators (LEDs)	U • Err • Com	U • Err • Com
Businterface	Standard bus (RS485)	Standard bus (RS485)
Overvoltage cat.	III (in accordance with IEC 60664-1)	III (in accordance with IEC 60664-1)
Rated surge voltage	6kV	6kV
Supply	24V DC from local interface	24V DC from local interface
Output	-	-
Width	22,5mm	22,5mm
Certificates	CE • GOST	CE • GOST
Mechanical Design	Self-extinguishing plastic housing, IP rating IP20 • Mounted on DIN-rail TS 35 in accordance with EN 60715 • Mounting position: any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque: max. 1Nm	
Terminal capacity	1 x 0.5 to 2.5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0.5 to 1.5mm² with/without multicore cable end • 2 x 2.5mm² flexible without multicore cable end	
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1); -25 to +40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • Relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Absolute humidity: 1g to 25g H_2O/m^3 (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 2 (in accordance with IEC 60664-1) • Vibration resistance: 10 to 55Hz 0.35mm (in accordance with IEC 60068-2-6) • Shock resistance: 15g 11ms (in accordance with IEC 60068-2-27)	
Accessories	-	

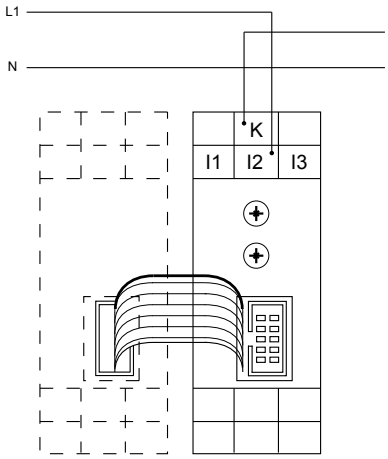
WatchDog pro module for current monitoring in 1-phase mains.

Functions

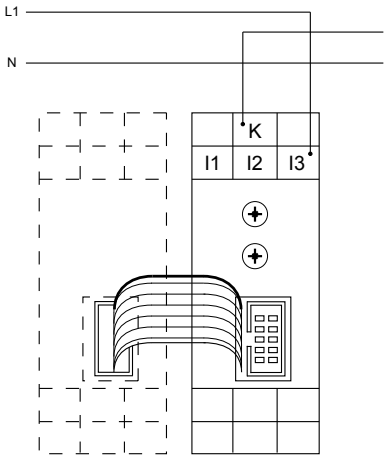
Measured range 20mA



Measured range 1A



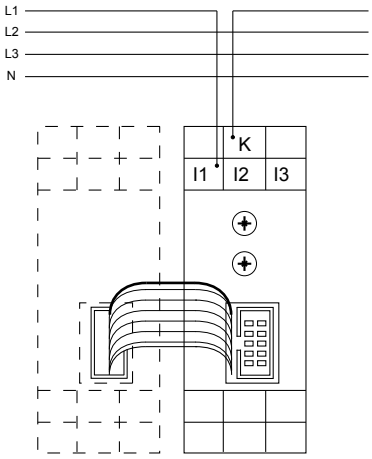
Measured range 5A



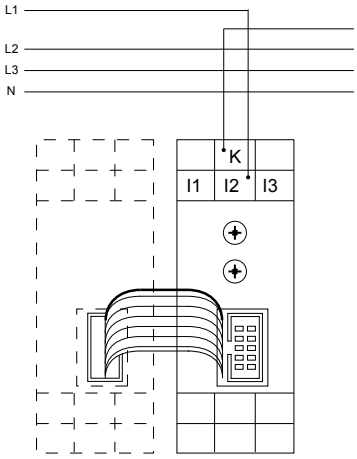
Connections

G2II1 5A

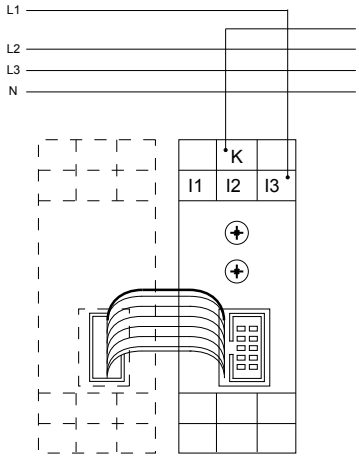
Measured range 100mA



Measured range 1A



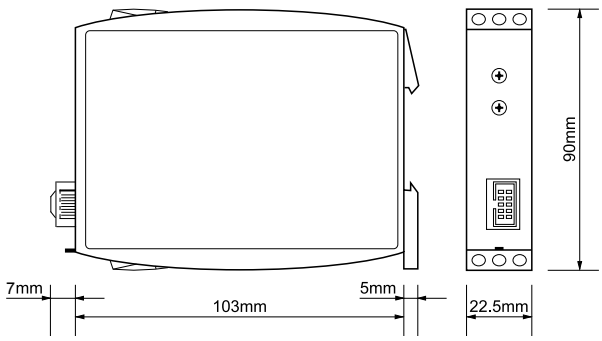
Measured range 10A



Connections

G2II1 10A

Width 22,5mm



Dimensions

WatchDog pro

Current monitoring in 3-phase mains

- Current measurement in 3-phase mains
- Reinforced insulation of the measuring circuit
- Measured value transmitting via standard bus
- Modular monitoring system
- Width 22,5mm
- Industrial design

Type	G2JI1 5A

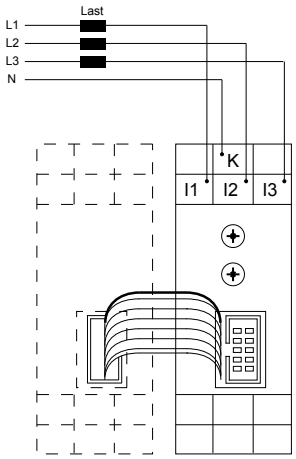
Art.No. (PQ1)	2500400
Art.No. (PQ10)	-
EAN13-Code	900866200526
Measured variable	Current AC/DC AC Sinus (48 to 63Hz)
Measured ranges	5A AC; terminals K-I1, K-I2, K-I3
Controls	Address adjustment: Address range 1 to 99
Indicators (LEDs)	U • Err • Com
Businterface	Standard bus (RS485)
Overvoltage cat.	III (in accordance with IEC 60664-1)
Rated surge voltage	6kV
Supply	24V DC from local interface
Output	-
Width	22,5mm
Certificates	CE • GOST
Mechanical Design	Self-extinguishing plastic housing, IP rating IP20 • Mounted on DIN-rail TS 35 in accordance with EN 60715 • Mounting position: any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque: max. 1Nm
Terminal capacity	1 x 0.5 to 2.5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0.5 to 1.5mm² with/without multicore cable end • 2 x 2.5mm² flexible without multicore cable end
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1); -25 to +40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • Relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Absolute humidity: 1g to 25g H_2O/m^3 (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 2 (in accordance with IEC 60664-1) • Vibration resistance: 10 to 55Hz 0.35mm (in accordance with IEC 60068-2-6) • Shock resistance: 15g 11ms (in accordance with IEC 60068-2-27)
Accessories	-

Functions

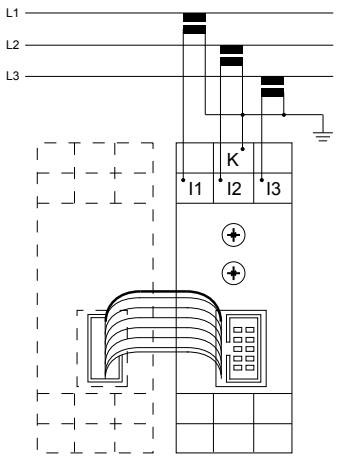
WatchDog pro module for current measurement in 3-phase mains.

Connections

G2JI1 5A without current transformer with common return

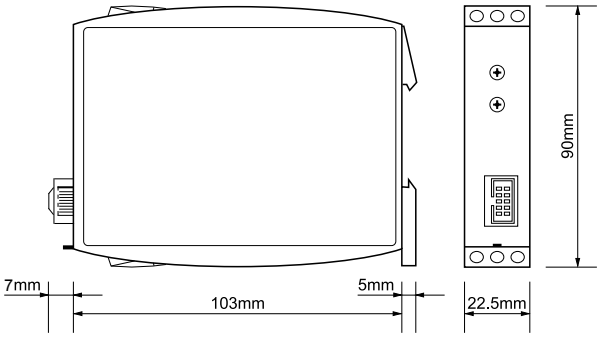


G2JI1 5A with current transformer with common return



Dimensions

Width 22,5mm



WatchDog pro

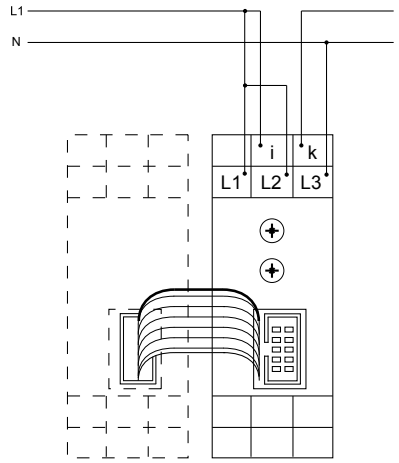
True power monitoring

- True power measurement of 1- or 3-phase loads
- Measurement ranges from 600W to 4,8kW
- Range adjustment via Central Unit
- Measured value transmitting via standard bus
- Modular monitoring system
- Width 22,5mm
- Industrial design

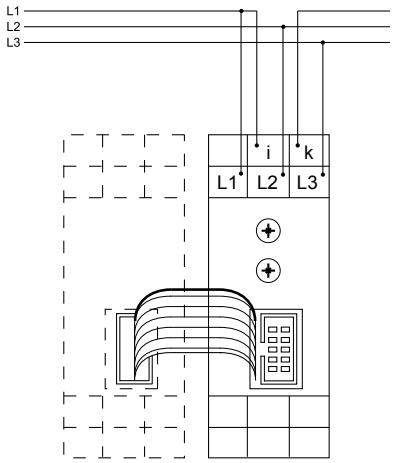
Type	G2BI1 400V12A
	
Art.No. (PQ1)	2500300
Art.No. (PQ10)	-
EAN13-Code	900866200489
Measured variable	True power of 1- or 3-phase loads AC Sinus (10 to 400Hz)
Measured values	P • I_1
True power ranges P_N	0,6kW • 1,2kW • 2,4kW • 4,8kW
Voltage ranges	1-phase loads: 415VAC 3-phase loads: 0 to 415/240VAC
Current ranges	Ranges 0,6 and 1,2kW: 6A Ranges 2,4 and 4,8kW: 12A
Controls	Address adjustment: Address range 1 to 99
Indicators (LEDs)	U • Err • Com
Businterface	Standard bus (RS485)
Overvoltage cat.	III (in accordance with IEC 60664-1)
Rated surge voltage	6kV
Supply	24V DC from local interface
Output	-
Width	22,5mm
Certificates	CE • GOST
Mechanical Design	Self-extinguishing plastic housing, IP rating IP20 • Mounted on DIN-rail TS 35 in accordance with EN 60715 • Mounting position: any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque: max. 1Nm
Terminal capacity	1 x 0.5 to 2.5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0.5 to 1.5mm² with/without multicore cable end • 2 x 2.5mm² flexible without multicore cable end
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1); -25 to +40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • Relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Absolute humidity: 1g to 25g H_2O/m^3 (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 2 (in accordance with IEC 60664-1) • Vibration resistance: 10 to 55Hz 0.35mm (in accordance with IEC 60068-2-6) • Shock resistance: 15g 11ms (in accordance with IEC 60068-2-27)
Accessories	-

True power monitoring of 1- and 3-phase loads

G2BI1 400V12A in 1-phase mains

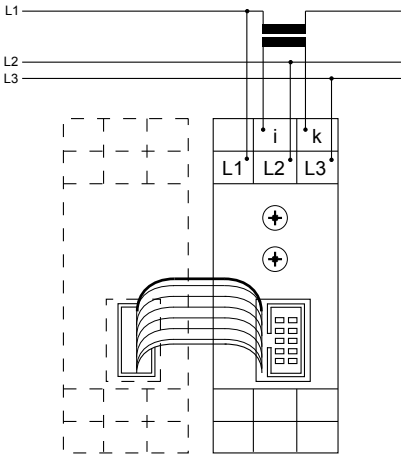


G2BI1 400V12A in 3-phase mains without current transformer

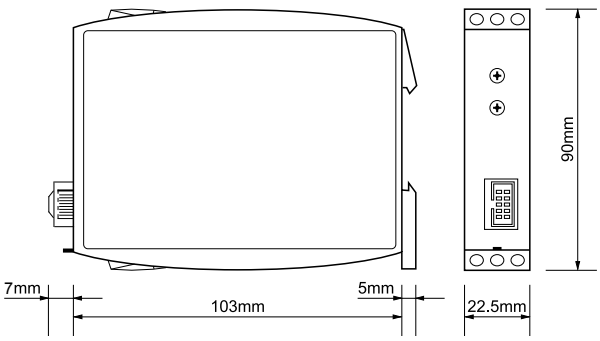


Phase voltage = 3 x U_1

G2BI1 400V12A in 3-phase mains with current transformer



Width 22,5mm



WatchDog pro

Power factor and power measurement

- Power factor and power measurement in 1- or 3-phase mains
- RMS measurement of one phase voltage and current of one phase
- Monitoring of motor / generator / capacitive / inductive loads
- 2 Measurement range 1,2kW and 4,8kW
- Measurement range adjustment with Central Unit
- Reinforced insulation of the measuring circuits
- Measured value transmitting via standard bus
- Width 22,5mm
- Industrial design

Type	G2CI1 400V12A

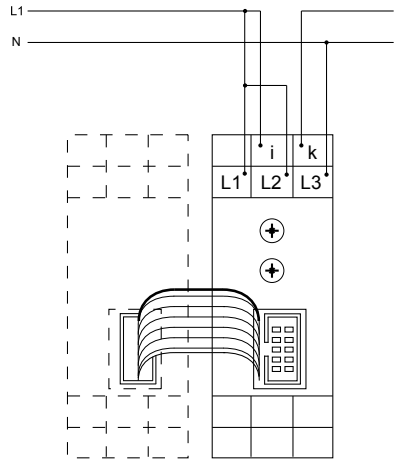
Art.No. (PQ1)	2500450
Art.No. (PQ10)	-
EAN13-Code	
Measured variable	True power • Apparent power • Power factor • Phase voltage • Phase current AC Sinus (10 to 400Hz)
Measured values	PF, P, S, Q, $U_{\lambda eff}$, I_{eff}
Measuring input current	6A • 12A
Measured range	1,2kW • 4,8kW
Voltage range	1-phase loads: 0 to 415VAC 3-phase loads: 0 to 415/240VAC
Controls	Address adjustment: Address range 1 to 99
Indicators (LEDs)	U • Err • Com
Businterface	Standardbus (RS485)
Overvoltage cat.	III (in accordance with IEC 60664-1)
Rated surge voltage	6kV
Supply	24V DC from local interface
Output	-
Width	22,5mm
Certificates	CE • GOST
Mechanical Design	Self-extinguishing plastic housing, IP rating IP20 • Mounted on DIN-rail TS 35 in accordance with EN 60715 • Mounting position: any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque: max. 1Nm
Terminal capacity	1 x 0.5 to 2.5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0.5 to 1.5mm² with/without multicore cable end • 2 x 2.5mm² flexible without multicore cable end
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1); -25 to +40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • Relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Absolute humidity: 1g to 25g H_2O/m^3 (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 2 (in accordance with IEC 60664-1) • Vibration resistance: 10 to 55Hz 0.35mm (in accordance with IEC 60068-2-6) • Shock resistance: 15g 11ms (in accordance with IEC 60068-2-27)
Accessories	-

Power monitoring and measurement of power factor of 1- and 3-phase loads

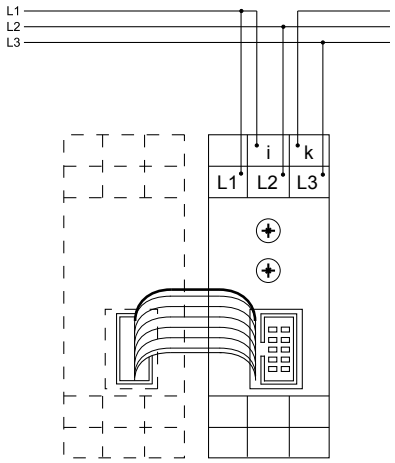
Functions

Connections

G2CI1 400V12A in 1-phase mains

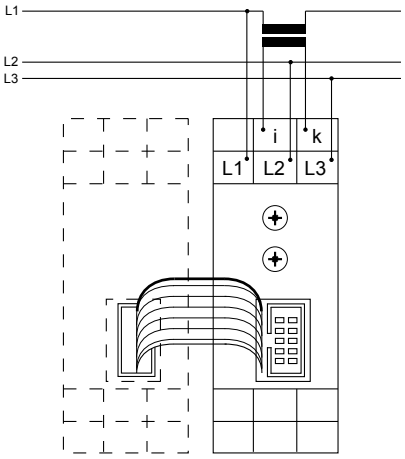


G2CI1 400V12A in 3-phase mains without current transformer



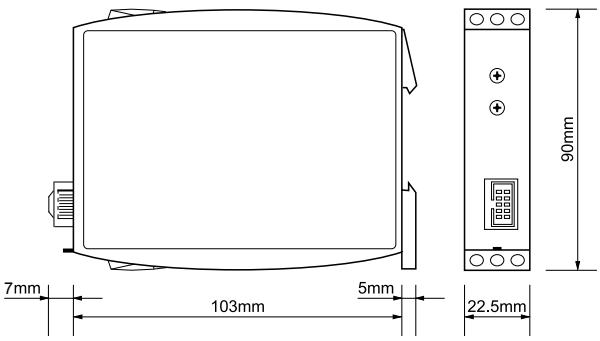
Connections

G2CI1 400V12A in 3-phase mains with current transformer



Dimensions

Width 22,5mm



WatchDog pro

Overtemperature monitoring

- 4 PTC inputs
- Temperature monitoring
- Short circuit monitoring of the PTC inputs
- Reinforced insulation of the input circuit
- State transmission over Standard bus
- Modular monitoring system
- Width 22,5mm
- Industrial design

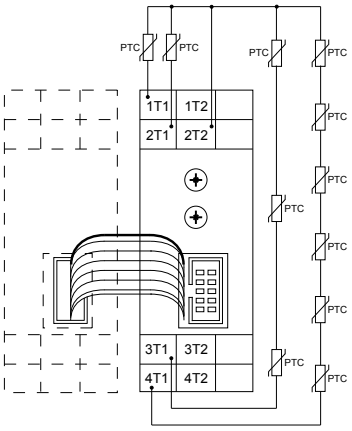
Type	G2DI4 PTCK
	
Art.No. (PQ1)	2500102
Art.No. (PQ10)	-
EAN13-Code	900866200494
Input circuit	PTC (Motor temperature) max. 6 PTC sensors per input
Measured ranges	Initial resistance <1,5kΩ
Measuring voltage	max. 5V; ≤2,5V DC at R_{PTC} ≤4kΩ
Controls	Address adjustment: Address range 1 to 99
Indicators (LEDs)	U • Err • Com • 1T • 2T • 3T • 4T
Response value	>3,6kΩ
Release value	<1,8kΩ
Short circuit monitoring	20Ω ± 10Ω
Businterface	Standard bus (RS485)
Overvoltage cat.	III (in accordance with IEC 60664-1)
Rated surge voltage	6kV
Supply	24V DC from local interface
Output	-
Width	22,5mm
Certificates	CE • GOST
Mechanical Design	Self-extinguishing plastic housing, IP rating IP20 • Mounted on DIN-rail TS 35 in accordance with EN 60715 • Mounting position: any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque: max. 1Nm
Terminal capacity	1 x 0.5 to 2.5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0.5 to 1.5mm² with/without multicore cable end • 2 x 2.5mm² flexible without multicore cable end
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1); -25 to +40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • Relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Absolute humidity: 1g to 25g H_2O/m^3 (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 2 (in accordance with IEC 60664-1) • Vibration resistance: 10 to 55Hz 0.35mm (in accordance with IEC 60068-2-6) • Shock resistance: 15g 11ms (in accordance with IEC 60068-2-27)
Accessories	-

WatchDog pro Modul with 4 digitale inputsfor temperature monitoring with max. 6PTC.

Functions

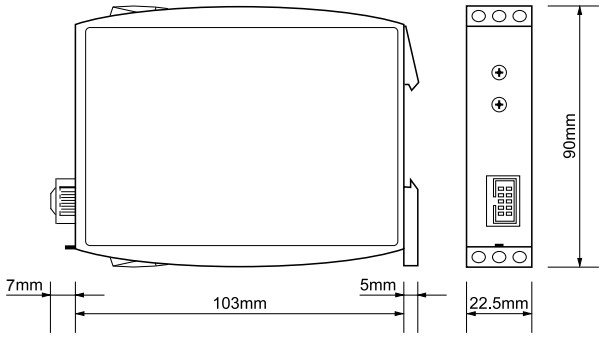
G2DI4 PTCK

Connections



Width 22,5mm

Dimensions



WatchDog pro

Temperature monitoring

- Temperature measurement with PT100 sensors (2- and 3-wire connection)
- Reinforced insulation of the input circuit
- Measured value transmitting via standard bus
- Modular monitoring system
- Width 22,5mm
- Industrial design

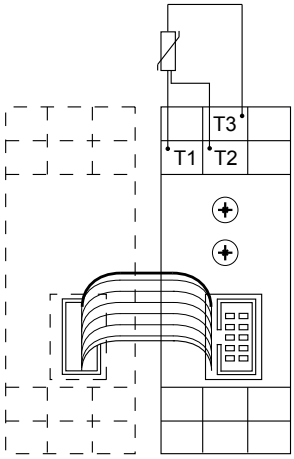
Type	G2TI1 PT100
	
Art.No. (PQ1)	2500150
Art.No. (PQ10)	-
EAN13-Code	900866200524
Measured variable	Temperature measurement PT100 2-wire (with external bridge) and 3-wire connection
Measured ranges	-50°C to +200°C terminals T1-T2-T3
Controls	Address adjustment: Address range 1 to 99
Indicators (LEDs)	U • Err • Com
Businterface	Standard bus (RS485)
Overvoltage cat.	III (in accordance with IEC 60664-1)
Rated surge voltage	6kV
Supply	24V DC from local interface
Output	-
Width	22,5mm
Certificates	CE • GOST
Mechanical Design	Self-extinguishing plastic housing, IP rating IP20 • Mounted on DIN-rail TS 35 in accordance with EN 60715 • Mounting position: any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque: max. 1Nm
Terminal capacity	1 x 0.5 to 2.5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0.5 to 1.5mm² with/without multicore cable end • 2 x 2.5mm² flexible without multicore cable end
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1); -25 to +40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • Relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Absolute humidity: 1g to 25g H_2O/m^3 (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 2 (in accordance with IEC 60664-1) • Vibration resistance: 10 to 55Hz 0.35mm (in accordance with IEC 60068-2-6) • Shock resistance: 15g 11ms (in accordance with IEC 60068-2-27)
Accessories	-

Functions

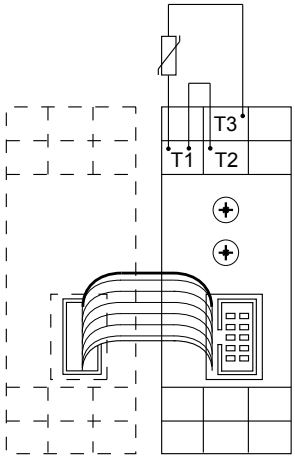
WatchDog pro module for temperature measurement.

Connections

G2TI1 PT100: 3-wire measuring method

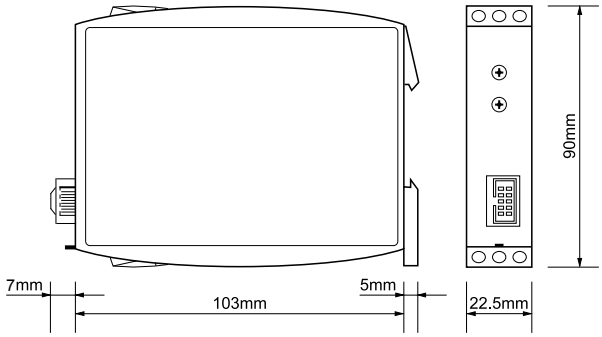


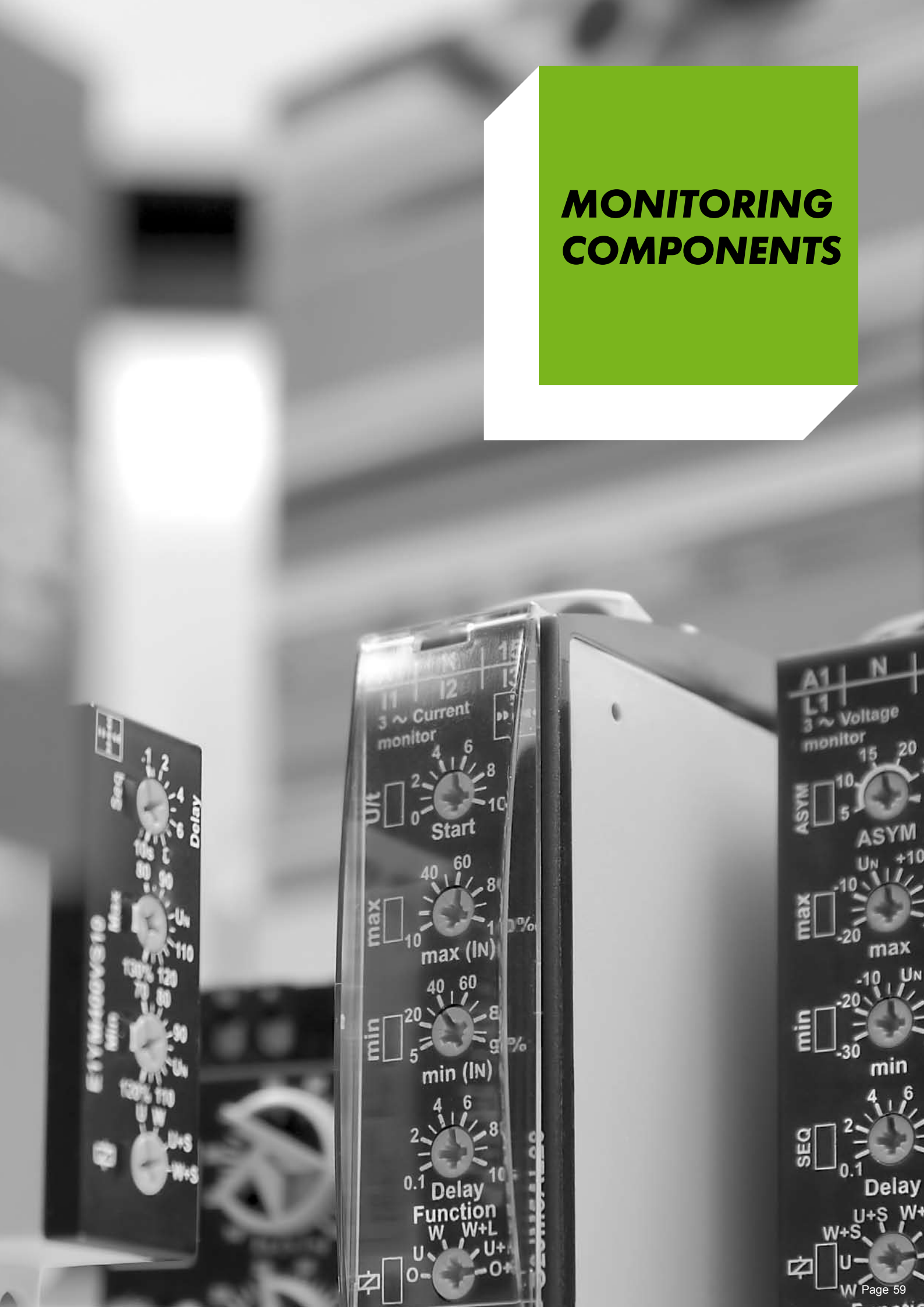
G2TI1 PT100: 2-wire measuring method



Dimensions

Width 22,5mm





MONITORING COMPONENTS

WELCOME TO THE WORLD OF THE WATCHDOGS

The monitoring relays with the WatchDog label can display electrical values such as current, voltage, power factor, power performance, conductivity, resistance, temperature etc., meaning these can be monitored based on a limit value and deviations displayed on a message contact.
The housing is already a sign that the system has a robust design. The overvoltage category is consistently indicated with 3 so that industrial network environments do not present a problem. With the disruptive influences burst and surge, the normative requirements are more than fulfilled. The operating safety of the devices is thus ensured even with high disruption potential.
One difference that makes a difference. The temperature range in which the devices can be operated is between –25°C and +55°C.
The spacious operating front permits the accommodation of

Watc

coolZoom

The components mounted in a switching cabinet lead in total to a substantial heat development that has a negative impact on the lifecycle of the entire control unit. Through the use of state-of-the-art switching power supply technology, TELE reduces the energy consumption and thus also the heat development. The typical power consumption of the new products thus lies below the 1W mark – simply ‘cool’. The lower operating temperature firstly has a positive effect on the lifecycle and reliability of the components and secondly results in substantial savings potential in the switching cabinet air climate control system and ventilation. Another benefit is demonstrated in the use of products in battery-buffered systems. Due to the lower power consumption, the battery can be designed in a smaller size with extended follow-up time.
With their extreme adaptability (zoom) to any voltage supply in the range of 24 to 240VAC/DC, generous tolerance ranges (20.4 to 264VAC or 19.2 to 300VDC) and their usage options in the frequency range of 16 2/3 to 400Hz, the devices from TELE are suitable for any conceivable application.

many setting options and display elements. A clear display with a separate LED for each operating mode is thus possible. There is only one rule here, and this has been valid with TELE for years: flashing LED means ‘time running’, continuously illuminated LED means ‘time expired’. The operating elements have a flush arrangement in the front, whereby up to 5 setting elements are possible in a 22.5 mm construction width. This permits maximum functionality on minimum space. As supply variants for the auxiliary voltage, CoolZoom with 24-240VAC/DC or the power modules with nominal voltages of up to 400V(TR2) or 500V(TR3) are available.

The Watchdogs are now also being used in the installation construction form thanks to the ENYA series. With up tp 5 setting elements, an excellent operating comfort can be reached in this construction form too that is supplemented by up to four display elements.

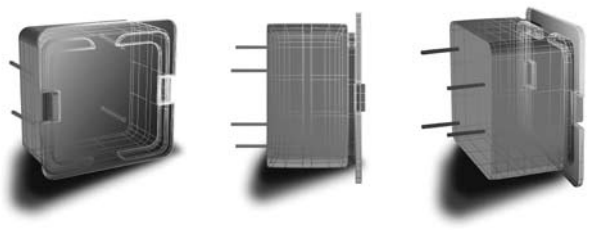
These can also serve as a diagnosis display in ongoing operation, in order to e.g. recognise in which phase the breakdown has occurred. ENYA devices can fit in every energy distribution cabinet and are thus ideally suited for use in building automation and control systems. They can be used to protect against an unwanted operating status, the detection of consumption points that are switched on or for classical control tasks. The application areas range from the monitoring of a four-wire network via one-phase monitoring applications to DC monitoring of battery-buffered systems. A diversity of current and voltage monitoring relays in one- and three-phase design are available. The supply with these devices is integrated into the measuring circuit to save clamp connections.

PowerModules

In a simple and cost-effective manner, you adapt the WatchDog monitoring relays and load sentinels and the timing relays of the GAMMA series to the respective supply voltage. The plug-in power modules TR2 and TR3 are available for this and they only have to be inserted into the lateral supply slot of the devices.

The power modules TR2, with selectable nominal voltages of 12 to 400VAC, are envisaged for designs in 22.5mm construction width, while the power modules TR3 with nominal voltages of up to 500 V are suitable for types with a 45-mm wide housing. The supply voltage can therefore also be taken up by the outer conductor voltage if a neutral cable is not necessary in the application. The power modules work particularly ‘quietly’ in the network, which means they are entirely suited for class B applications according to EN 55011 (living area). Another advantage: In the event of maintenance, the plug-in power module can be quickly and conveniently replaced.

You simply order the right plug-in power modules for your application separately.



MONITORING COMPONENTS

WatchDogs keep guard. And they enjoy doing that thoroughly and reliably. For keeping guard is their greatest passion and they don't miss a thing. Their job is their life. WatchDogs work because they enjoy it. They protect their territory – attentively, persistently and always on the look-out. They feel at home where things are tough and dirty. They don't miss a thing with their keen sense and they protect their environment with a strong sense of duty. If they notice something, they ensure that law and order is restored – for they are the boss.

Series KAPPA

Single- or Multifunction

Monitoring of Voltage (1~ or 3~); phase sequence and phase failure; Asymmetry and Current (1~)

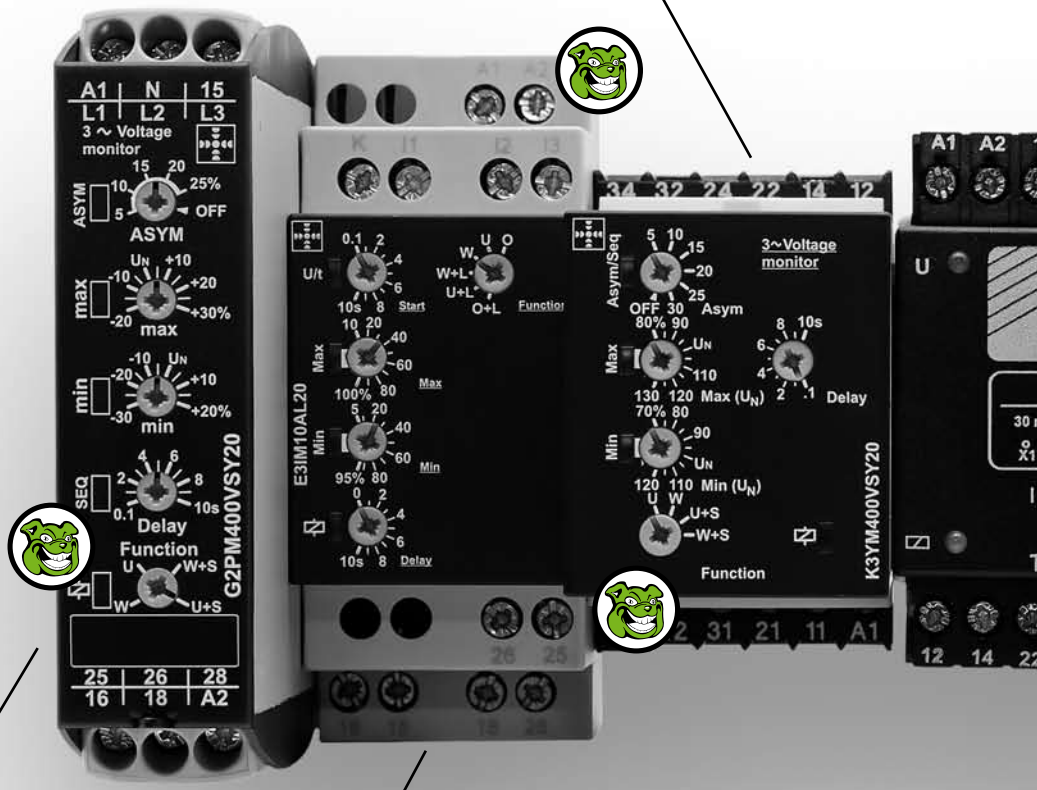
With or without Fault Latch

2 CO contacts

Supply by measured signal (self powered)

Width 38mm

Plug-in mounting



Series GAMMA

Single- or Multifunction

Monitoring of voltage (1~ or 3~); phase sequence and phase failure; asymmetry; current (1~ or 3~); temperature (PTC, PT100) and level of conductive substances

With or without Fault Latch

1 or 2 CO contacts

Supply voltage via PowerModules, single voltage, zoom voltage or by measured signal

Width 22,5mm (G2) or 45mm (G4)

Industrial Design

Series ENYA

Single- or Multifunction

Monitoring of voltage (1~ or 3~); phase sequence and phase failure; asymmetry; current (1~); temperature (PTC) and level of conductive substances

Variable or fixed setpoints

With or without Fault Latch

1 or 2 CO contacts

Supply by measured signal (self powered)

Width 17,5mm (E1) or 35mm (E3)

Installation Design

Load monitors series VOX

Monitoring in 1- or 3-phase mains for under- and overload

True Power Monitoring

Temperature Monitoring (PTC)

Start-Up Suppression and Tripping Delay

Fault Latch

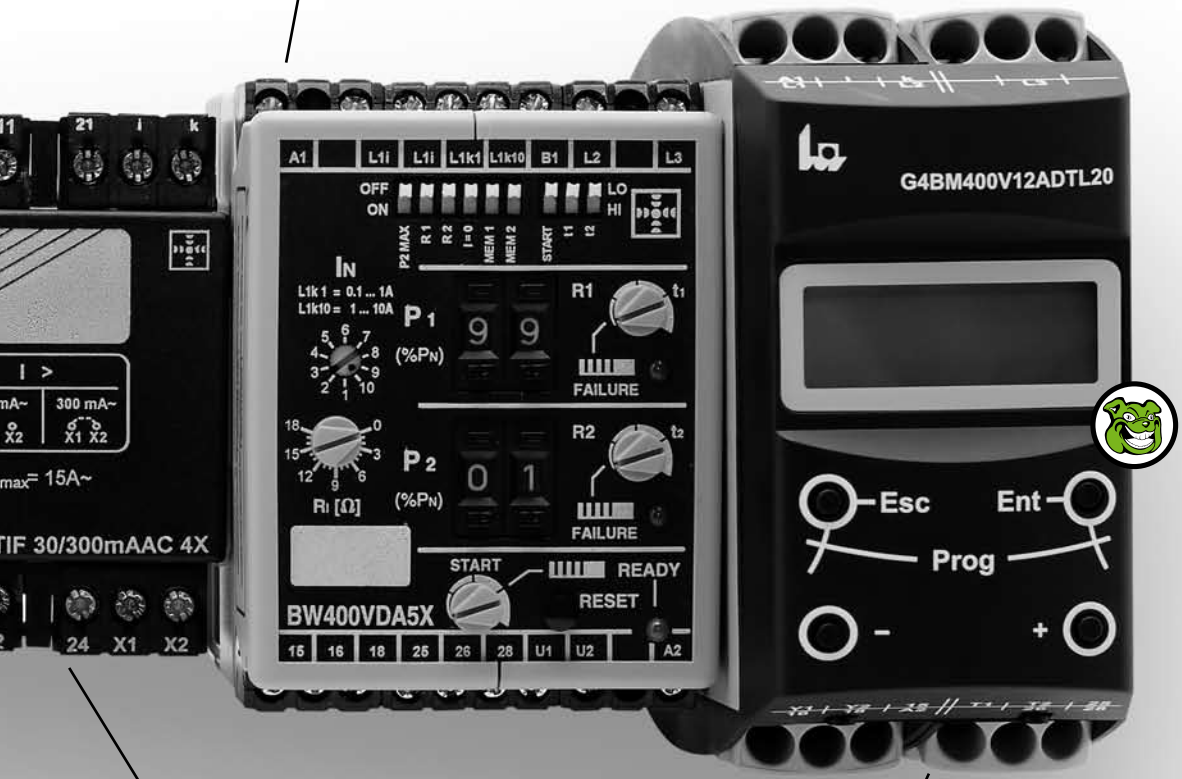
Supply voltage via PowerModules

Relay setting invertible

1 or 2 CO contacts

Analogue output

Industrial Design



Series TREND

Single- or Multifunction

Monitoring of voltage (1~ or 3~); phase sequence and phase failure; asymmetry; current (1~); temperature (PTC) and level of conductive substances

With or without Fault Latch

1 or 2 CO contacts

Supply voltage via PowerModules, single voltage or by measured signal

Width 22,5mm or 45mm

Industrial Design

Load monitors series GAMMA

Monitoring in 1- or 3-phase mains for under- and overload

True Power or Power Factor Monitoring

Start-Up Suppression and Tripping Delay

With or without Fault Latch

Supply voltage via PowerModules

1 or 2 CO contacts

Width 22,5mm (G2) or 45mm (G4)

Industrial Design

ACCURACY AND EFFICIENCY

Power Monitoring made by TELE

Time consuming maintenance tasks, service technicians, interrupted production – expensive services and spare parts are a drain on budgets in almost any modern industrial company. Expensive breakdowns and down time however can be prevented by relatively small investments. TELE's load monitors are a particularly cost-effective precaution providing reliable protection for plant and machinery.

By accurately analyzing the power factor (cos phi) or effective power, you are for example protecting against damage caused by overloading, blocking or operator error. Pumps can be protected against cavitation and dry-running; broken v-belts or heavily soiled filters are recognized reliably.

Possible Uses

If bulk solids are being carried by a helix conveyor, then the so-called helix must not be overfilled as otherwise the motor becomes overloaded and damage can be caused to the machinery. TELE load monitors measure the effective power uptake and recognize overloading or idling. The devices can for example be used to control the slide bar for the bulk material. In addition, belt conveyors etc can be controlled so as to prevent excess quantities of piece goods being carried or none carried at all.

Motor driven chain or cable hoists are used with lifting platforms, cranes, in lift technology or in platform technology. If the load is excessive, the motor may be damaged or the suspension may even be torn free.

With fans used in building technology, ventilators are frequently driven by a motor and v-belt. In order to recognize and control possible breakage of a v-belt, easily and without additional sensors, TELE load monitors measure the power factor (cos phi), issue reports and switch the motor off.

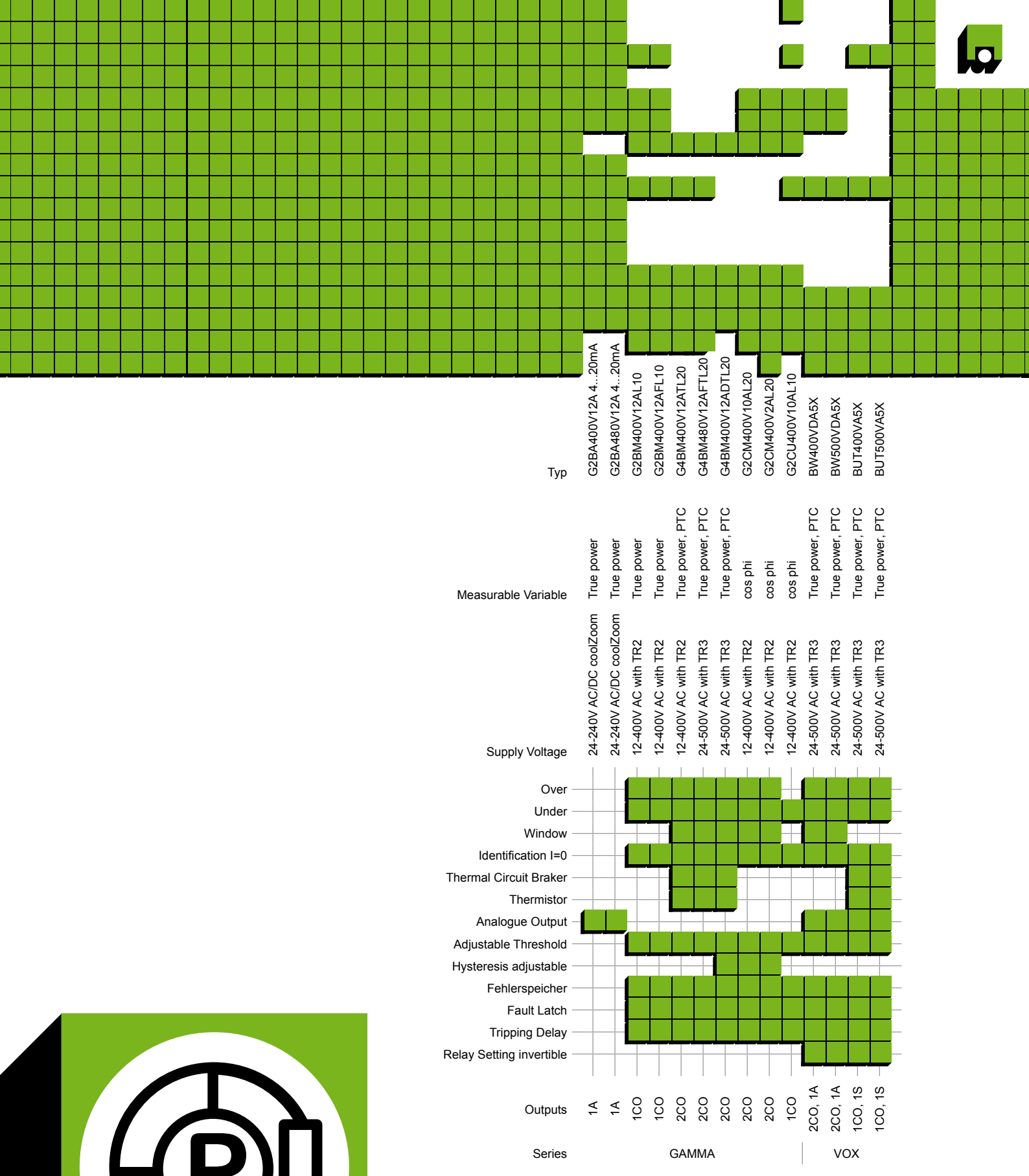
Some of the TELE load monitors are equipped with an analog output for higher level control systems or indicating instruments.

TELE load monitors are particularly adaptable on account of their versatile and flexible setup options and as a result can be optimally configured for countless applications. Extensive functions such as fault storage, accurate detection of the current range,

starting up suppression time, tripping delay, detection of which consumers have been switched off and various operating modes such as utilization of two maximum thresholds or a maximum and/or minimum threshold allow almost any operating state of a machine to be analyzed. The devices' very flexible power range can be extended at will using standard current transformers.

TELE load monitors however also excel in terms of their compact construction and are particularly easy to install. Moreover, they are designed and manufactured in such a way that even under the most adverse environmental conditions they work reliably, accurately and above all without needing to be maintained.

In combination with plug-in power modules, each TELE load monitor is ideally suited for international use.


Typ
G2BA400V12A 4...20mA
G2BA480V12A 4...20mA
G2BM400V12AL10
G2BM400V12AFL10
G4BM400V12ATL20
G4BM480V12AFTL20
G4BM400V12ADTL20
G2CM400V10AL20
G2CM400V2AL20
G2CU400V10AL10
BW400VDA5X
BW500VDA5X
BUT400VA5X
BUT500VA5X
Measurable Variable
True power
True power
True power
True power
True power, PTC
True power, PTC
True power, PTC
cos phi
cos phi
cos phi
True power, PTC
True power, PTC
True power, PTC
True power, PTC
Supply Voltage
24-240V AC/DC coolZoom
24-240V AC/DC coolZoom
12-400V AC with TR2
12-400V AC with TR2
12-400V AC with TR2
24-500V AC with TR3
24-500V AC with TR3
12-400V AC with TR2
12-400V AC with TR2
12-400V AC with TR2
24-500V AC with TR3
24-500V AC with TR3
24-500V AC with TR3
24-500V AC with TR3
Over
Under
Window
Identification I=0
Thermal Circuit Braker
Thermistor
Analogue Output
Adjustable Threshold
Hysteresis adjustable
Fehlerspeicher
Fault Latch
Tripping Delay
Relay Setting invertible
Outputs
1A
1A
1CO
1CO
2CO
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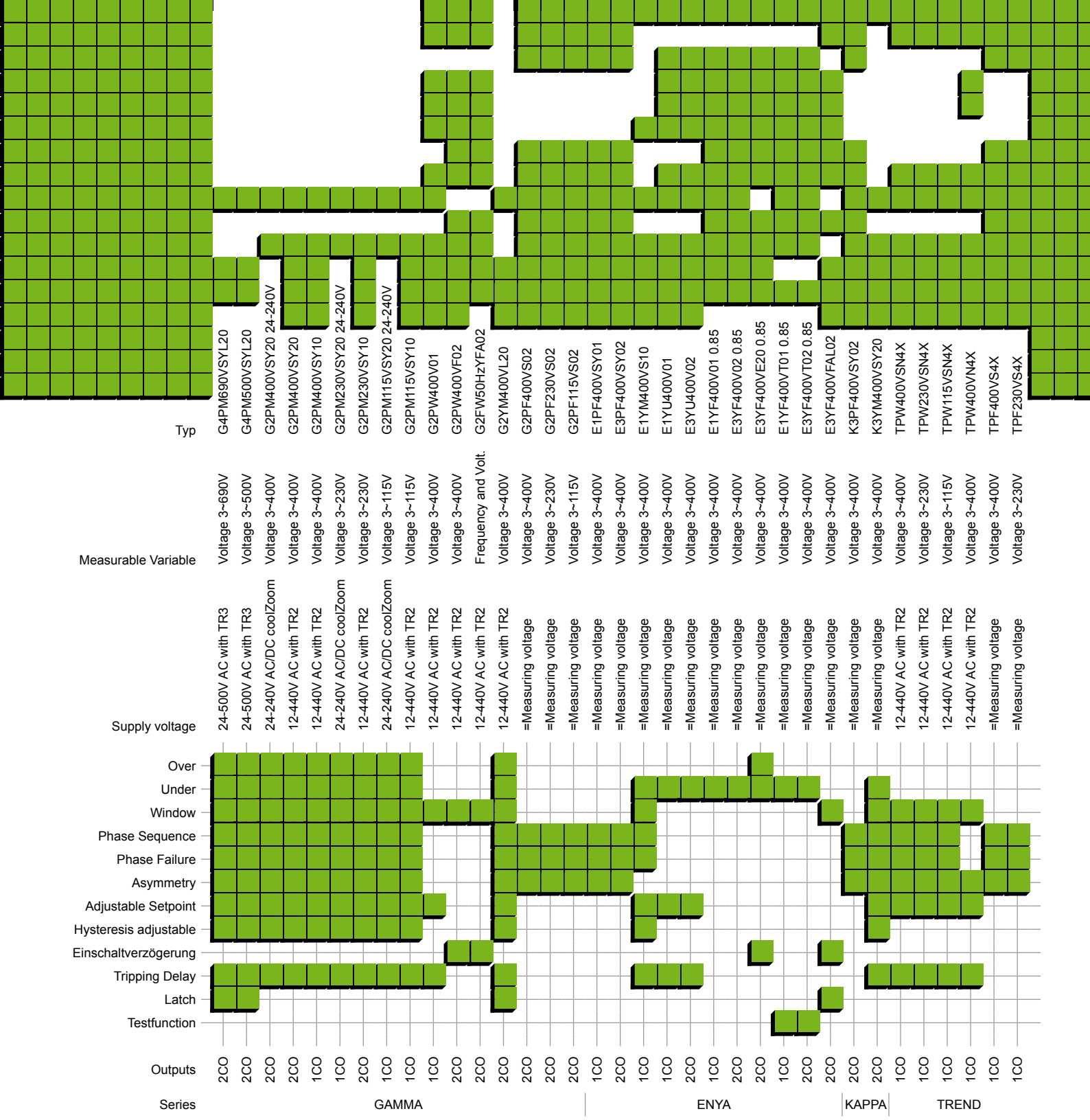
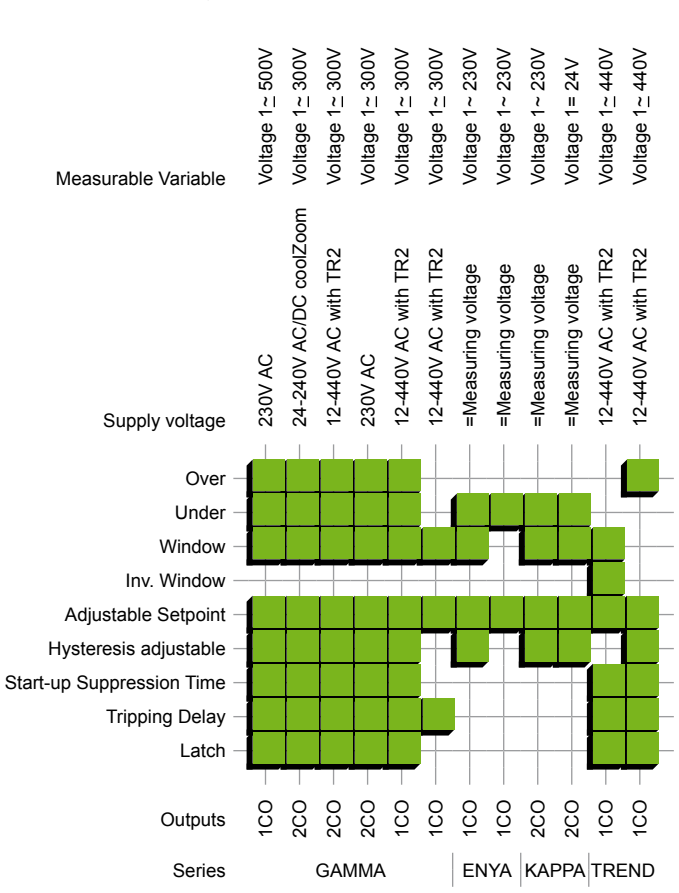
1CO, 1S
Series
GAMMA
VOX



3~ voltage monitoring

TELE offers voltage monitoring for complex multi-wire networks. This means that also networks with strongly non-symmetric loads and with disruptive influences, TELE monitoring relays carry out their reliable work. And they do so not only in Europe for the usual three-wire networks with or without zero cable 3(N)~ 400/230V, but also for global application in different voltage levels and multi-wir systems that are switched in other ways.

A major application area for three-phase voltage monitoring is building technology. Here, it is important to monitor the height of the individual phase voltage in order to initiate emergency lighting with undervoltage and to protect consumption points from overvoltage. With the TELE devices specialised in these fields, the deviation of



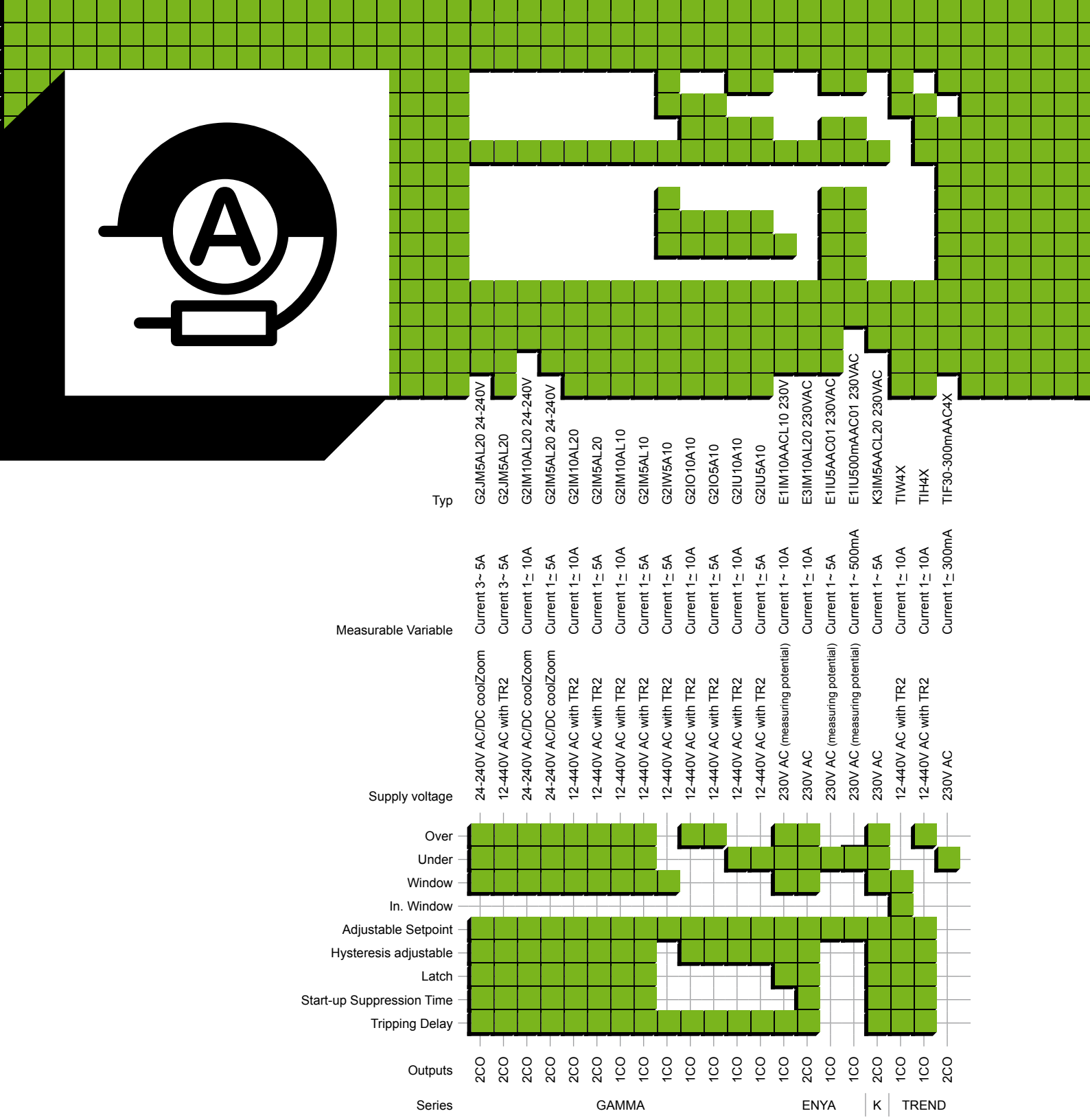
the phase voltage is set directly and the device switches off when at least one of the phases leaves the permissible range. The ENYA and KAPPA series are designed for contact-safe installation in the installation distributor. To simplify the wiring, most devices take their auxiliary energy from the current circuit measured.

The GAMMA industry series focuses on the monitoring of the supply voltage of motor. Damage can be prevented by switching off the motor in the event of network errors. Over- and undervoltage as well as asymmetrics errors are also reliably detected in complex industry networks. TELE monitoring relays are immune to voltage retroactivity of three-phase loads.

1~ voltage monitoring

To ensure the operation of 1-phase consumption points, it is worthwhile monitoring the power network. If the power supply is interrupted, this can lead to malfunctions in the system. TELE monitoring relays detect unreliable statuses at an early stage and initiate the measures envisaged for this. However, overvoltage can result from a network error that represents a major risk for entire system parts. This, however, can largely be prevented with robust monitoring technology.

The application areas of one-phase voltage monitoring range from battery monitoring to the control of the inverter in solar systems with insufficient energy production or the recognition of a drop in voltage with overlong cables. One-phase voltages over a wide area can be monitored with the devices of the GAMMA and TREND series. The compact automatic voltage controllers of the ENYA and KAPPA series are specialised in the undervoltage monitoring for typically standardised supply voltages.

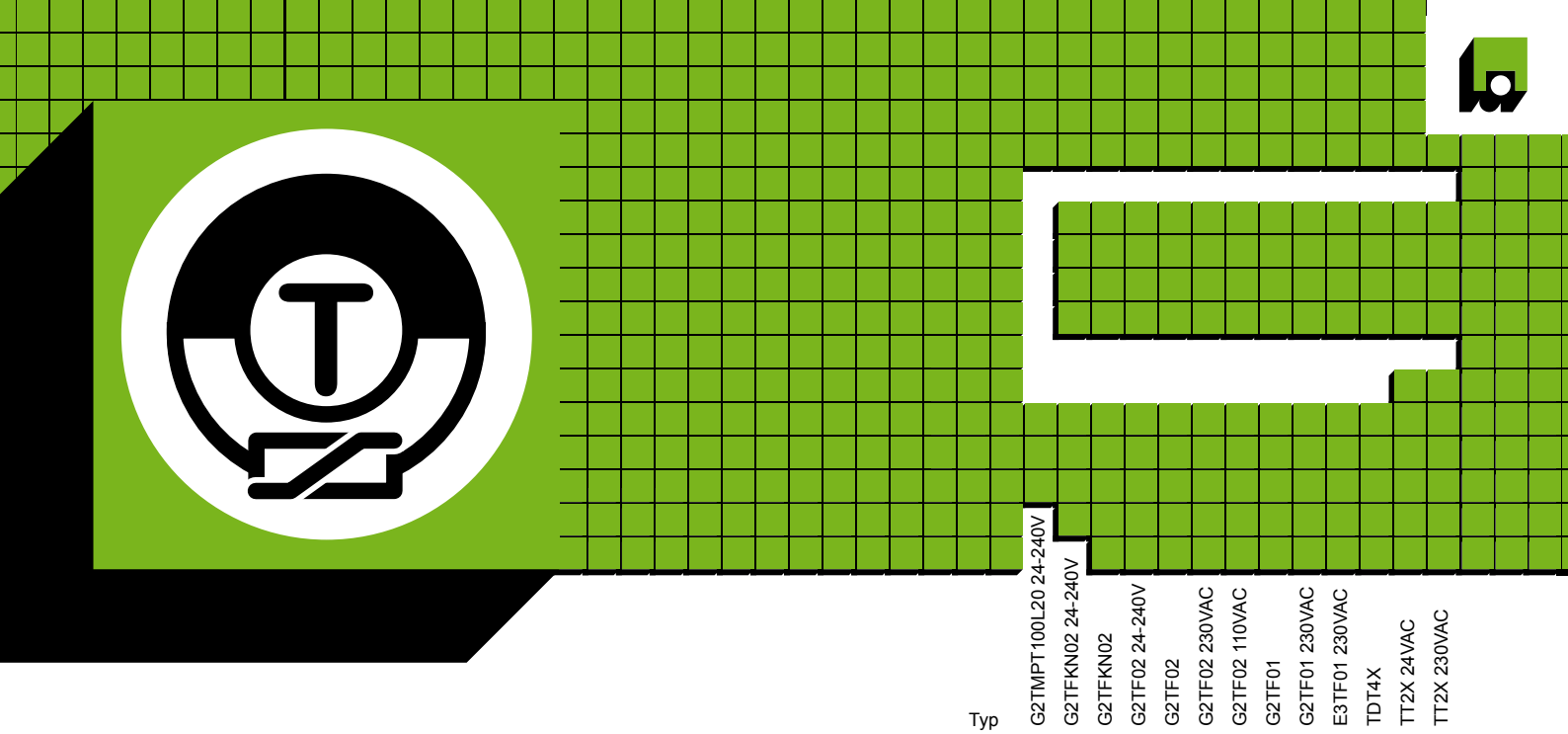


Current monitoring

TELE current sentinels protect machines and loads through the monitoring of the system for overvoltage or undervoltage. During monitoring of the overvoltage, switched off or failed consumption points are recognised and the TELE current sentinel issues an alarm message.

For universal use, the WatchDogs of the GAMMA series have 3 measurement ranges. Specifically for use in combination with current or signal converters, the inputs are designed with a nominal value of 5A, 1A or 20mA respectively.

The integrated start-up bridging avoids false activation resulting from the increased start-up current of a motor.

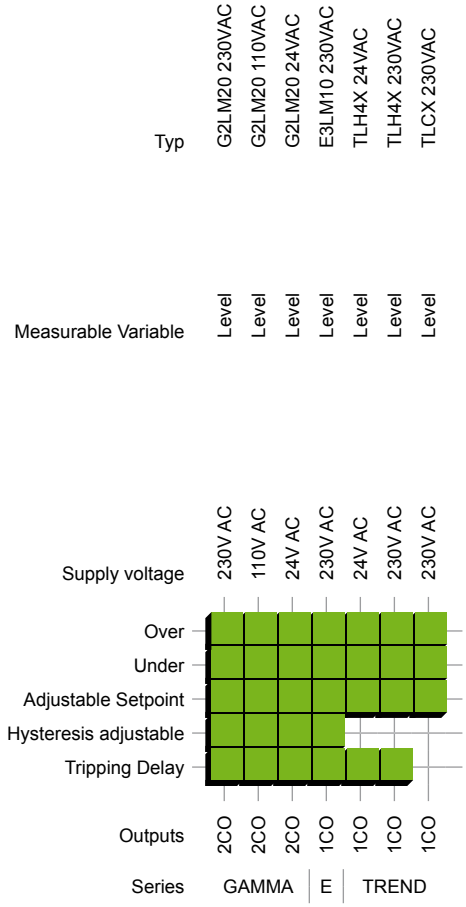


Temperature monitoring

The motor protection switch as protection against heating is good yet only a direct measurement by TELE temperature monitoring relays gives certainty. Motor protection switches determine the current and imitate the thermal characteristics of the motor. However, if problems occur with the cooling of the motor or if the motor protection switch is not correctly set, this can quickly result in overheating.

The recording of the actual winding temperature is facilitated by TELE monitoring relays. One method is the analysis of the PTC sensor (thermal resistor) installed by the manufacturer in the motor. The limiting temperature is oriented to the type of thermal resistance with which the resistance value can change erratically. One to six sensors can be directly connected. The monitoring of the sensor cable for short circuit and the retention of the memory also in voltage-free state are optional (zero voltage safe).

The option of free selection of the switch temperature is given with the help of a PT-100 sensor. The setting range is between –50°C and +200°C. With a connection in the three-wire technology, the inner resistance of the sensor feeder cable is compensated. The TELE temperature monitoring relays are characterised by practice-oriented setting ranges and a clear signalisation of the function parameters.

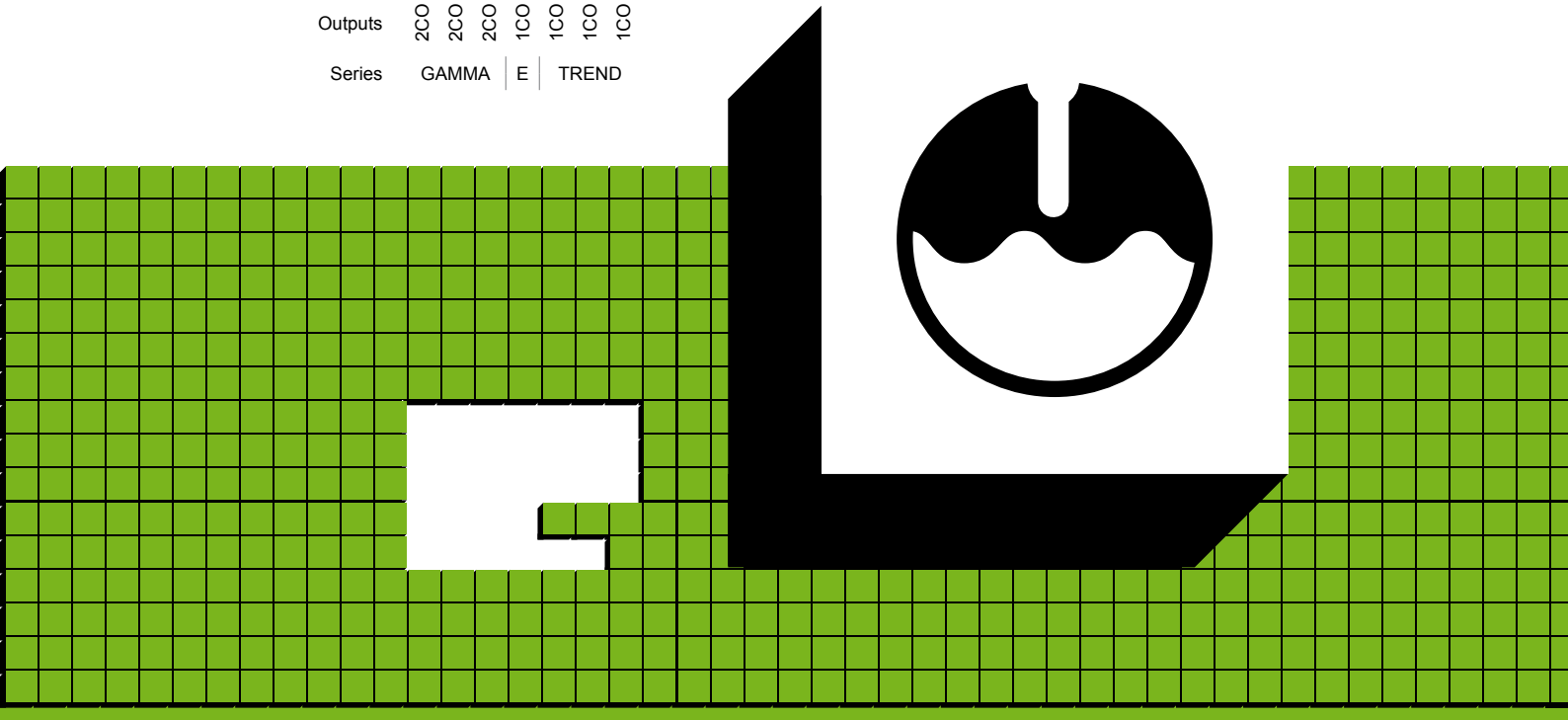


Fill-level monitoring

In the conductive fill-level monitoring, the moistening of the probe rods is analysed. The recording of the conductivity using alternating current of a few milli-amperes with 12V voltage is used. The use of alternating current effectively suppresses galvanic effects such as those that can occur with a static direct voltage.

The advantage of this method is that the probe rods only have to meet the condition of electrically isolated installation and the conductivity of the probe themselves. The probes can therefore be simply adapted to the requirements of the environment. Whether it is particularly robust in animal breeding, agriculture or wastewater preparation, or also resistant against high temperatures such as those that can arise with sterilisation through hot steam.

To avoid the connected pumps being frequently switched on and off too frequently, a switching hysteresis can be defined by the distance of the max & min probe. However, this can also be completely deactivated, if the device is to be used as an overfill protection or dry-run protection for a pump.



Loadmonitors **Series GAMMA**

True power monitoring of 1- or 3-phase loads

- Multifunction
- Digital setting
- Fault latch
- Recognition of disconnected load I=0
- Suitable for VFI (10 to 100Hz)
- Supply voltage selectable via power modules
- 2 CO
- Width 45mm
- Industrial design

Type	G4BM480V12ADTL20

Art. No. (VE1)	2394700
Art. No. (VE10)	-
EAN13-Code	9008662006072
Measured variable	True power consumption of 1- or 3-phase loads AC Sinus (10 to 400Hz)
Mesaruring range	2,5kW and 10kW
Measuring voltage	1-phase loads: 0 to 480VAC 3-phase loads: 3~ 0 to 480/277V
Measuring range Current	Measuring ranges 2,5kW: 0,15 to 6A Measuring ranges 10kW: 0,3 to 12A
Controls	Programming buttons
Indicators (LEDs)	Display
Functions	OVER • OVER+I=0 ON • UNDER • UNDER+I=0 ON 2MIN • 2MIN+I=0 ON • 2MAX • 2MAX+I=0 ON WIN • WIN+I=0 ON • MIN/MAX • MIN/MAX+I=0 ON
Threshold Th_A und Th_B	Measuring ranges 2,5kW: 120W to 2490W Measuring ranges 10kW: 480W to 9960W
Hysteresis	fixed 5% or adjustable
Triggering delay	0,1s to 50s
Start-up suppresion time	0s to 100s
Fault latch	wire link Y1-Y2
Supply	PowerModule TR3 (12 - 500V AC) terminals A1-A2
Output	2 CO contact 250V 5A AC
Width	45mm
Certificates	CE
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque max. 1Nm
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end
Ambient conditions	Ambient temperature: -25 to 55°C (in accordance with IEC 60068-1); -25 to 40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 3 (in accordance with IEC 60664-1) • Vibration resistance: 10 to 55Hz 0,35mm (in accordance with IEC 60068-2-6) • Shock resistance: 15g 11ms (in accordance with IEC 60068-2-27)
Accessories	PowerModules TR3 (12 - 500V AC) • sealable intervention protection shield FA-G2

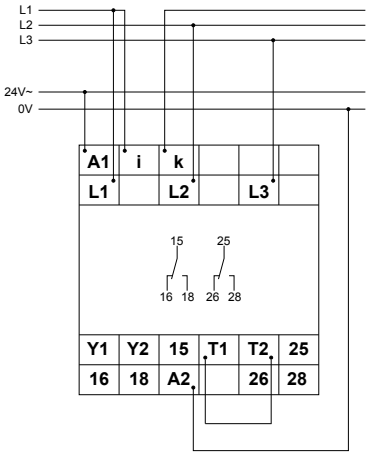
Functions

True power monitoring of 1- or 3-phase loads with adjustable switching thresholds, adjustable start-up suppression time, separately adjustable tripping delay, selectable fault latch and temperature monitoring of the motor winding.

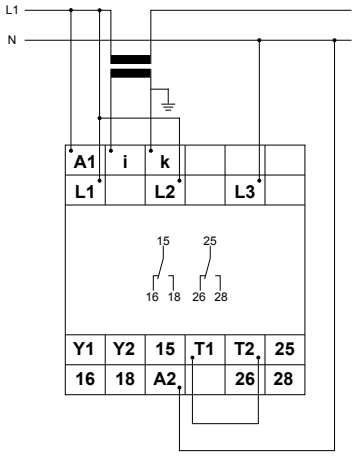
OVER: Overload monitoring
OVER+I=0 ON: Overlaod monitoring and recognition of disconnected consumers (relay ON or OFF)
UNDER: Underload monitoring
UNDER+I=0 ON: Underlaod monitoring and recognition of disconnected consumers (relay ON or OFF)
2MIN: Minimum monitoring
2MIN+I=0 ON: Minimum monitoring and recognition of disconnected consumers (relay ON or OFF)
2MAX: Maximum monitoring
2MAX+I=0 ON: Maximum monitoring and recognition of disconnected consumers (relay ON or OFF)
WIN: Monitoring the window between MIN and MAX
WIN+I=0 ON: Monitoring the window between MIN and MAX and recognition of disconnected consumers (relay ON or OFF)
MIN/MAX: Minimum- and Maximum monitoring
MIN/MAX+I=0 ON: Minimum- and maximum monitoring and recognition of disconnected consumers (relay ON or OFF)

Connections

Connected 3~ 400V with power module 24V AC without fault latch
I_N<12A

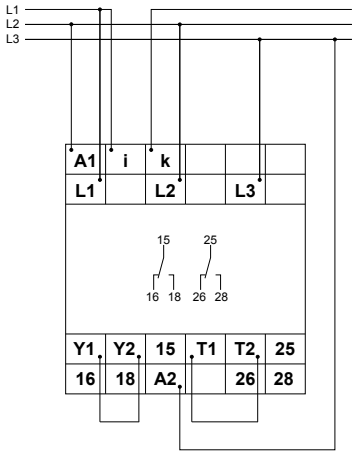


Connected 1~ 230V with power module 230V AC without fault latch but with current transformer. I_N>12A

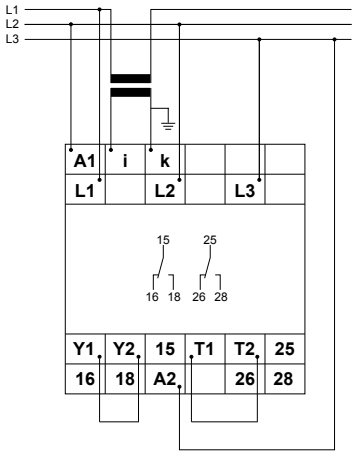


Connections

Connected 3~ 400V with power module 400V AC with fault latch
I_N<12A

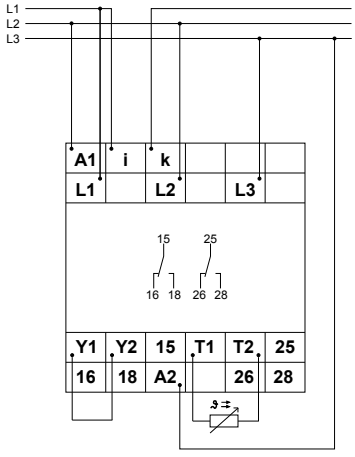


Connected 3~ 400V with power module 400V AC with fault latch and current transformer. I_N>12A

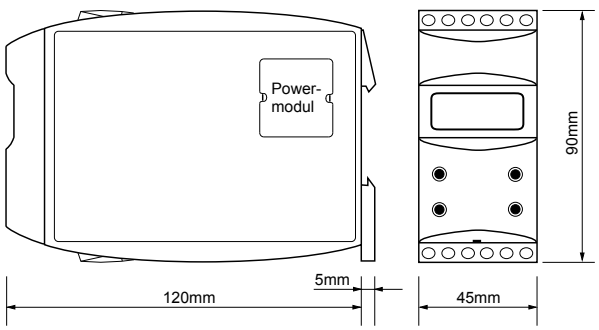


Connections
Dimensions

Connected 3~ 400V with power module 400V AC with fault latch and temperature monitoring sensor. I_N<12A



Width 45mm



Loadmonitors **Series GAMMA**

True power monitoring of 1- or 3-phase loads

- Multifunction
- 2 trigger levels (G4BM); 1 trigger level (G2BM)
- Fault latch
- Recognition of disconnected consumers
- Suitable for VFI (10 to 100Hz)
- Supply voltage selectable via PowerModules
- 1 CO contact; 2 CO contacts
- Width 22,5mm or 45mm
- Industrial design

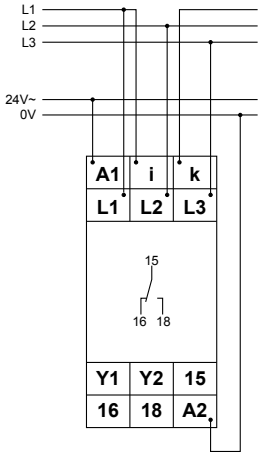
types	G4BM480V12ATL20	G2BM400V12AL10	G2BM400V12AFL10
			
Art.No. (PQ1)	2394703	2390700	2390702
EAN13-Code		900866200291	900866200292
Measured variable	True power consumption of 1- or 3-phase loads AC Sinus (10 to 400Hz)	True power consumption of 1- or 3-phase loads AC Sinus (10 to 400Hz)	True power consumption of 1- or 3-phase loads AC Sinus (10 to 400Hz)
Measuring ranges P_N	0,5kW • 1kW • 2kW • 4kW	0,5kW • 1kW • 2kW • 4kW	0,5kW • 1kW • 2kW • 4kW
Measuring voltage	1-phase loads: 0 to 230VAC 3-phase loads: 3~ 0 to 415/240V	1-phase loads: 0 to 415VAC 3-phase loads: 3~ 0 to 415/240V	1-phase loads: 0 to 415VAC 3-phase loads: 3~ 0 to 415/240V
Measuring ranges Current	Measuring ranges 0,5 and 1kW: 0 to 6A Measuring ranges 2 and 4kW: 0 to 12A	Measuring ranges 0,5 and 1kW: 0 to 6A Measuring ranges 2 and 4kW: 0 to 12A	Measuring ranges 0,5 and 1kW: 0 to 6A Measuring ranges 2 and 4kW: 0 to 12A
Controls	Start • P1 • Delay • Range • Function • I< • P2 • Reset	Start • Power • Delay • Range • Function	Start • Power • Delay • Range • Function
Indicators (LEDs)	U/t • Failure P1 • Rel1 • I=0 • Failure P2 • Temp • Rel2	U/t • Failure • I=0 • R	U/t • Failure • I=0 • R
Functions	2MAX 2MIN WIN MIN/MAX I=0 engageable with selectable relay-position	OVER OVER + I=0 UNDER UNDER + I=0	OVER + $\overline{I=0}$ OVER + I=0 UNDER UNDER + I=0
Trigger level P	P1: 10% to 120% of P_N P2: 5% to 110% of P_N	5% to 120% of P_N	5% to 120% of P_N
Hysteresis	-	fixed, approx. 3% of P_N	fixed, approx. 3% of P_N
Tripping delay	0,1s to 50s	0,1s to 50s	0,1s to 2s
Start-up suppression time	1s to 100s	1s to 100s	0,1s to 2s
Fault latch	wire link Y1-Y2	wire link Y1-Y2	wire link Y1-Y2
Supply	PowerModule TR3 (12 - 500V AC) terminals A1-A2	PowerModule TR2 or SNT2 terminals A1-A2	PowerModule TR2 or SNT2 terminals A1-A2
Output	2 CO contacts 250V 5A AC	1 CO contact 250V 5A AC	1 CO contact 250V 5A AC
Width	45mm	22,5mm	22,5mm
Certificates	CE	CE • GOST	CE • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque max. 1Nm		
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end •2 x 2,5mm² flexible without multicore cable end		
Ambient conditions	Ambient temperature: -25 to 55°C (in accordance with IEC 60068-1); -25 to 40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 3 (in accordance with IEC 60664-1) • Vibration resistance: 10 to 55Hz 0,35mm (in accordance with IEC 60068-2-6) • Shock resistance: 15g 11ms (in accordance with IEC 60068-2-27)		
Accessories	PowerModules TR2 (12 - 400V AC) and TR3 (12 - 500V AC) • sealable intervention protection shield FA-G2 • DC power supply SNT2 24VDC		

OVER	Overload monitoring
UNDER	Underload monitoring
OVER+I=0	Overload monitoring with recognition of disconnected consumers
UNDER+I=0	Underload monitoring with recognition of disconnected consumers
OVER+$\overline{I=0}$	Overload monitoring with recognition of disconnected consumers (Rel.ON if I=0)

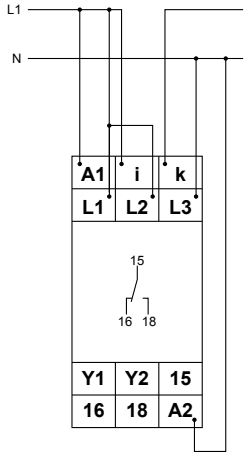
G4BM480V12ATL20:

2MIN	Underload monitoring for two seperate thresholds
2MAX	Overload monitoring for two seperate thresholds
WIN	Monitoring of the switching thresholds between the ranges Min and Max
MIN/MAX	Under- and Overload monitoring for two seperate thresholds

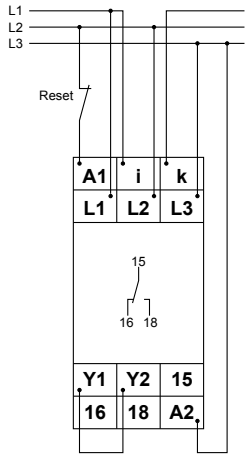
Connected 3~ 400V mains with PowerModule 24V AC without fault latch. I_N<12A



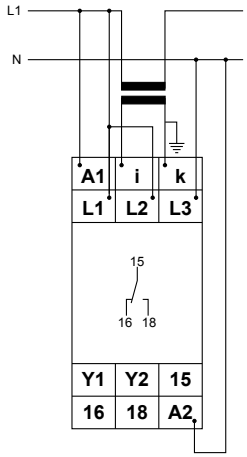
Connected 1~ 230V mains with PowerModule 230V AC without fault latch. I_N<12A



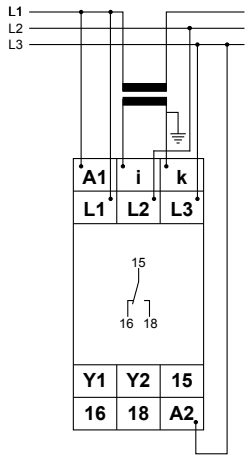
Connected 3~ 400V mains with PowerModule 400V AC and fault latch. I_N<12A



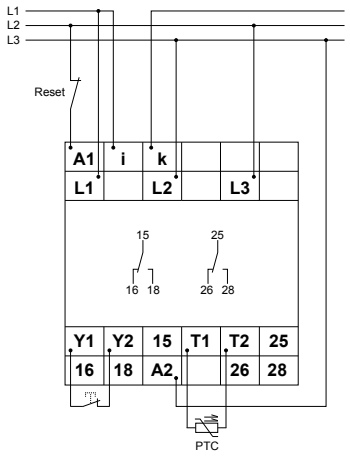
Connected 1~ 230V mains with PowerModule 230V AC without fault latch. I_N>12A



Connected 3~ 400V with PowerModule 400V AC without fault latch. I_N>12A



G4BM480V12ATL20: Connected 3~ 480V with PowerModule 400V AC with fault latch and temperature monitoring



Loadmonitors **Series GAMMA**

Power factor monitoring (cosφ) in 1- or 3-phase mains

- Multifunction (G2CM)
- Underload monitoring (G2CU)
- Fault latch
- Recognition of disconnected consumers I=0
- Suitable for VFI (10 to 100Hz)
- Supply voltage selectable via PowerModules
- 2 CO contacts (G2CM); 1 CO contact (G2CU)
- Width 22,5mm
- Industrial design

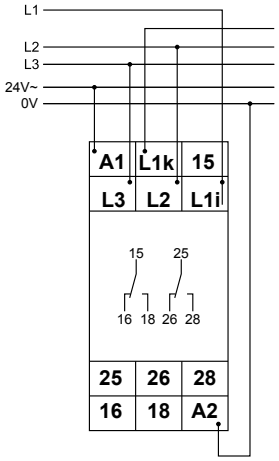
types	G2CM400V10AL20	G2CM400V2AL20	G2CU400V10AL10
			
Art.No. (PQ1)	2390602	2390606	2390600
Art.No. (PQ10)	-	-	-
EAN13-Code	900866200289	900866200290	900866200288
Measured variable	Power factor (cosφ) of 1- or 3-phase loads AC Sinus (10 to 100Hz)	Power factor (cosφ) of 1- or 3-phase loads AC Sinus (10 to 100Hz)	Power factor (cosφ) of 1- or 3-phase loads AC Sinus (10 to 100Hz)
Measured range	0,1 to 1	0,1 to 1	0,1 to 1
Measuring voltage	1-phase mains: 40 to 240VAC 3-phase mains: 3~ 40/23 to 415/240V	1-phase mains: 40 to 240VAC 3-phase mains: 3~ 40/23 to 415/240V	1-phase mains: 40 to 240VAC 3-phase mains: 3~ 40/23 to 415/240V
Rated current	0,5 to 10A	0,05 to 2A	0,5 to 10A
Controls	Start • max • min • Delay • Function	Start • max • min • Delay • Function	Start • min • Delay • Function
Indicators (LEDs)	U/t • min • max • I=0 • R	U/t • min • max • I=0 • R	U/t • min • I=0 • R
Functions	OVER OVER+LATCH UNDER UNDER+LATCH WIN WIN+LATCH	OVER OVER+LATCH UNDER UNDER+LATCH WIN WIN+LATCH	UNDER UNDER+LATCH
Switching threshold max.	cosφ = 0,2 to 1,0	cosφ = 0,2 to 1,0	-
Switching threshold min.	cosφ = 0,1 to 0,99	cosφ = 0,1 to 0,99	cosφ = 0,1 to 1,0
Hysteresis	-	-	fixed, approx. 3° (according to 3% bei cosφ=0,8)
Tripping delay	0,1s to 40s	0,1s to 40s	0,1s to 40s
Start-up suppression time	1s to 100s	1s to 100s	1s to 100s
Fault latch	selectable	selectable	selectable
Supply	PowerModules TR2 or SNT2 terminals A1-A2	PowerModules TR2 or SNT2 terminals A1-A2	PowerModules TR2 or SNT2 terminals A1-A2
Output	2 CO contacts; 250V, 5A AC	2 CO contacts; 250V, 5A AC	1 CO contact; 250V, 5A AC
Width	22,5mm	22,5mm	22,5mm
Certificates	CE • UL • cUL • GOST	CE • UL • cUL • GOST	CE • UL • cUL • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque max. 1Nm		
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end		
Ambient conditions	Ambient temperature: -25 to 55°C (in accordance with IEC 60068-1); -25 to 40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 3 (in accordance with IEC 60664-1) • Vibration resistance: 10 to 55Hz 0,35mm (in accordance with IEC 60068-2-6) • Shock resistance: 15g 11ms (in accordance with IEC 60068-2-27)		
Accessories	PowerModules TR2 (12 - 400V AC) • sealable intervention protection shield FA-G2 • DC power supply SNT2 24 VDC		

Functions

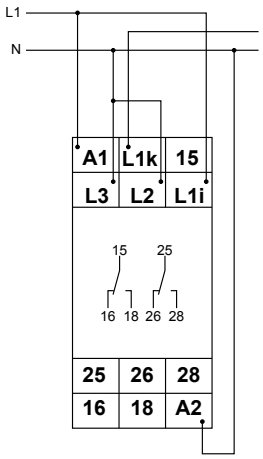
OVER	Overload monitoring
OVER+LATCH	Overload monitoring with fault latch
UNDER	Unterload monitoring
UNDER+LATCH	Unterload monitoring with fault latch
WIN	Monitoring the window between Min and Max
WIN+LATCH	Monitoring the window between Min and Max with fault latch

Connections

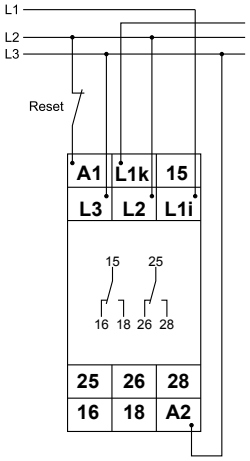
Connected to 3~ 400V mains with PowerModules 24V AC without fault latch. I_N<10A



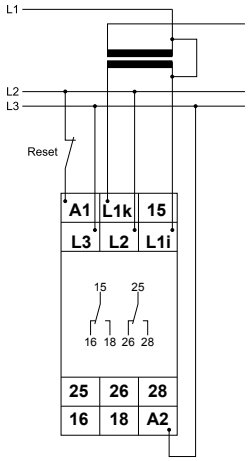
Connected to 1~ 230V mains with PowerModules 230V AC without fault latch. I_N<10A



Connected to 3~ 400V mains with PowerModules 400V AC and fault latch. I_N<10A

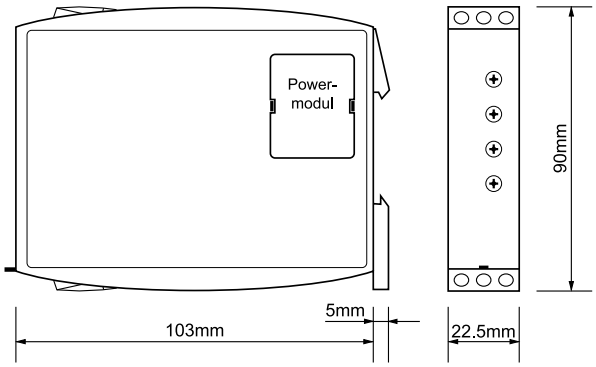


Connected to 3~ 400V mains with PowerModule 400V AC and fault latch. I_N>10A



Dimensions

Width 22,5mm



Loadmonitors **Series GAMMA**

Transducer

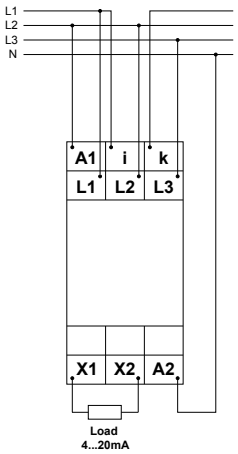
- Active power transducer
- True power monitoring of 1- or 3-phase loads
- Analog output 4...20mA
- Suitable for VFI (10 to 100Hz)
- Zoom voltage 24V to 240V DC and 48V to 240V AC
- Width 22,5mm
- Industrial design

types	G2BA400V12A 4...20mA

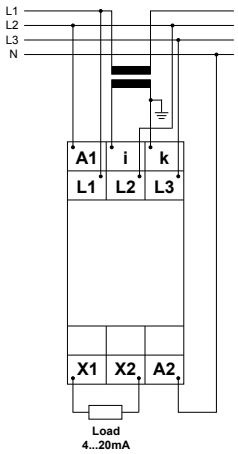
Artikelnr. (VE1)	2390704
Artikelnr. (VE10)	-
EAN13-Code	9008662005273
Measured variable	True power consumtion of 1- or 3-phase loads AC Sinus (10 to 400Hz)
Measuring ranges P_N	0,6kW • 1,2kW • 2,4kW • 4,8kW
Measuring voltage	1-phase main: 0 to 400VAC 3-phase mains: 3~ 0 to 415/240V
Measuring ranges Current	Measuring ranges 0,6kW and 1,2kW: 0 to 6A Measuring ranges 2,4kW and 4,8kW: 0 to 12A
Controls	Zero • Zero Fine • Span • Range
Indicators (LEDs)	U • 8 x Analogue Level
Function	Active power transducer
Output circuit	4 to 20mA (Burden max. 500Ω)
Isolation	3kV DC
Setting time	< 300 ms
Supply	24 to 240V DC / 48 to 240V AC terminals A1-A2
Width	22,5mm
Certificates	CE • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque max. 1Nm
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end
Ambient conditions	Ambient temperature: -25 to 55°C (in accordance with IEC 60068-1); -25 to 40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 3 (in accordance with IEC 60664-1) • Vibration resistance: 10 to 55Hz 0,35mm (in accordance with IEC 60068-2-6) • Shock resistance: 15g 11ms (in accordance with IEC 60068-2-27)
Accessories	PowerModules TR2 (12 - 400V AC) • sealable intervention protection shield FA-G2

Zero	setting of zero point (0%, 25%, 50%, 75% of nominal value)
Zero Fine	fine setting of zero point (0% ... 25% of nominal value)
Span	span (100%, 75%, 50%, 25% of nominal value)
Range	measuring range reversible between 0.6kW, 1.2kW, 2.4kW, 4.8kW

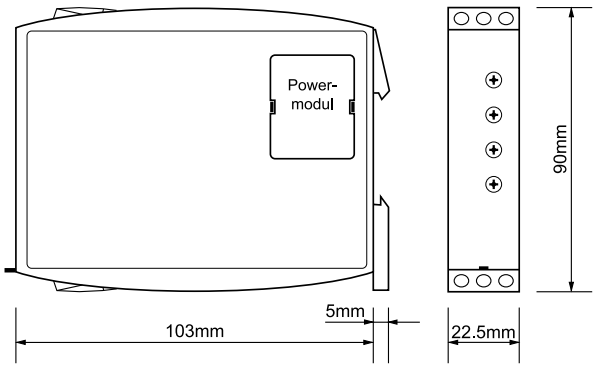
G2BA400V12A 4...20mA in 3-phase mains



G2BA400V12A 4...20mA in 3-phase mains with current transformer



Width 22,5mm



Sensing & Monitoring Relays **Series GAMMA**

Voltage monitoring in 3-phase mains

- Multifunction
- Monitoring of phase sequence and phase failure
- Asymmetry detection switchable
- Connection of neutral wire optional
- Detection of loss of neutral wire
- Fault latch (G4PM)
- Supply voltage selectable via PowerModules or by zoom voltage 24 to 240V AC/DC
- 1 CO contact; 2 CO contacts
- Width 22,5mm or 45mm; Industrial design

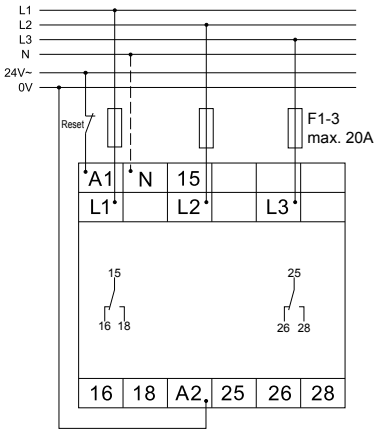
types	G4PM690VSYL20	G4PM500VSYL20	G2PM400VSY20 24-240V	G2PM400VSY20	G2PM400VSY10
					
Art.No. (PQ1)	2394500	2394501	2390505	2390504	2390500
Art.No. (PQ10)	-	-	-	-	-
EAN13-Code	900866200296	900866200297	900866200284	900866200281	900866200276
Measured variable	3(N)~ AC Sinus (48 to 63Hz)	3(N)~ AC Sinus (48 to 63Hz)	3(N)~ AC Sinus (48 to 63Hz)	3(N)~ AC Sinus (48 to 63Hz)	3(N)~ AC Sinus (48 to 63Hz)
Measured range	U_N = 690/400V terminals (N)-L1-L2-L3	U_N = 500V terminals (N)-L1-L2-L3	U_N = 400/230V terminals (N)-L1-L2-L3	U_N = 400/230V terminals (N)-L1-L2-L3	U_N = 400/230V terminals (N)-L1-L2-L3
Controls	ASYM • max • min • Delay • Function	ASYM • max • min • Delay • Function	ASYM • max • min • Delay • Function	ASYM • max • min • Delay • Function	ASYM • max • min • Delay • Function
Indicators (LEDs)	ASYM • max • min • SEQ • R	ASYM • max • min • SEQ • R	ASYM • max • min • SEQ • R	ASYM • max • min • SEQ • R	ASYM • max • min • SEQ • R
Functions	UNDER UNDER+SEQ WIN WIN+SEQ UNDER+LATCH UNDER+SEQ+LATCH WIN+LATCH WIN+SEQ+LATCH	UNDER UNDER+SEQ WIN WIN+SEQ UNDER+LATCH UNDER+SEQ+LATCH WIN+LATCH WIN+SEQ+LATCH	UNDER UNDER+SEQ WIN WIN+SEQ	UNDER UNDER+SEQ WIN WIN+SEQ	UNDER UNDER+SEQ WIN WIN+SEQ
Asymmetry	5% to 25% • Off	5% to 25% • Off	5% to 25% • Off	5% to 25% • Off	5% to 25% • Off
Switching threshold max.	-20% to 30% from U_N	-20% to 30% from U_N	-20% to 30% from U_N	-20% to 30% from U_N	-20% to 30% from U_N
Switching threshold min.	-30% to 20% from U_N	-30% to 20% from U_N	-30% to 20% from U_N	-30% to 20% from U_N	-30% to 20% from U_N
Tripping delay	0,1s to 10s	0,1s to 10s	0,1s to 10s	0,1s to 10s	0,1s to 10s
Start-up suppression time	-	-	-	-	-
Fault latch	selectable	selectable	-	-	-
Supply	PowerModule TR3 terminals A1-A2	PowerModule TR3 terminals A1-A2	24 to 240V AC/DC terminals A1-A2	PowerModule TR2 terminals A1-A2	PowerModule TR2 terminals A1-A2
Output	2 CO contacts; 250V, 5A AC	2 CO contacts; 250V, 5A AC	2 CO contacts; 250V, 5A AC	2 CO contacts; 250V, 5A AC	1 CO contact; 250V, 5A AC
Width	45mm	45mm	22,5mm	22,5mm	22,5mm
Certificates	CE • UL • cUL • GOST	CE • UL • cUL • GOST	CE • UL • cUL • GOST	CE • UL • cUL • GOST	CE • UL • cUL • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque max. 1Nm				
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end				
Ambient conditions	Ambient temperature: -25 to 55°C (in accordance with IEC 60068-1); -25 to 40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 3 (in accordance with IEC 60664-1) • Vibration resistance: 10 to 55Hz 0,35mm (in accordance with IEC 60068-2-6) • Shock resistance: 15g 11ms (in accordance with IEC 60068-2-27)				
Accessories	PowerModules TR2 (12 - 400V AC) and TR3 (12 - 500V AC) • sealable intervention protection shield FA-G2 • DC power supply SNT2 24VDC				

Functions

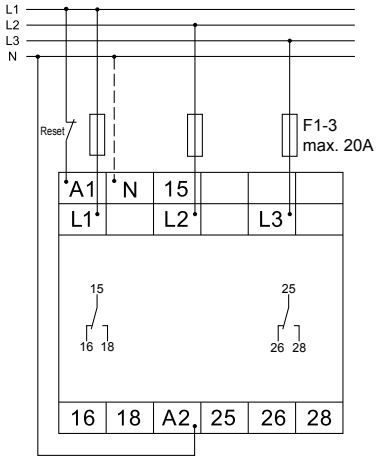
UNDER	Undervoltage monitoring
UNDER+SEQ	Undervoltage monitoring and monitoring of phase sequence
WIN	Monitoring the window between Min and Max
WIN+SEQ	Monitoring the window between Min and Max and monitoring of phase sequence
UNDER+Latch	Undervoltage monitoring with fault latch
UNDER+SEQ+Latch	Undervoltage monitoring and monitoring of phase sequence with fault latch
WIN+Latch	WIN with fault latch
WIN+SEQ+Latch	Monitoring the window between Min and Max and monitoring of phase sequence with fault latch

Connections

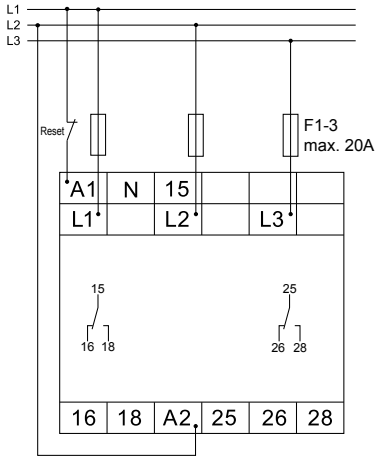
G4PM690VSYL20 with PowerModul 24V AC



G4PM690VSYL20 with PowerModul 400V AC

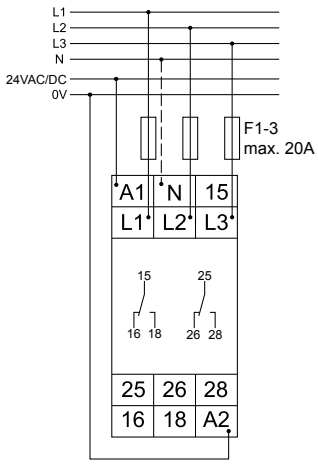


G4PM500VSYL20 with PowerModul 500V AC

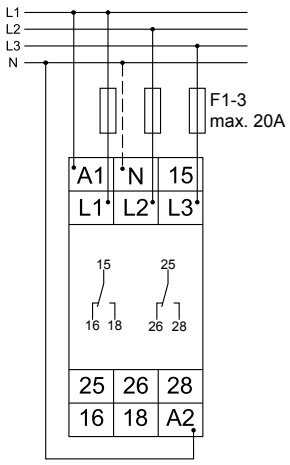


Connections

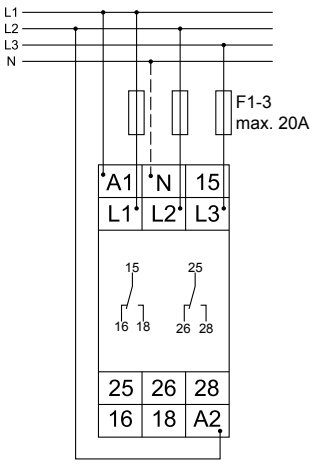
G2PM400VSY20 24V to 240V AC/DC



G2PM400VSY20 with PowerModul 230V AC

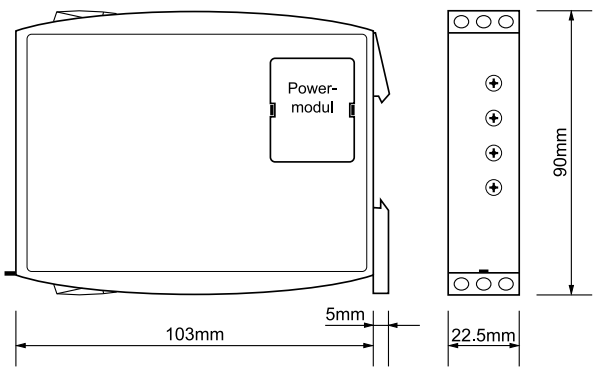


G2PM400VSY20 with PowerModul 400V AC

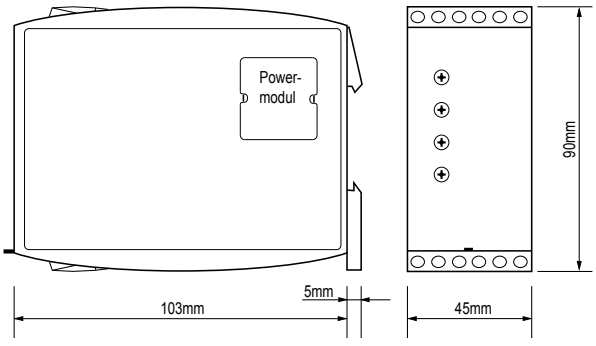


Dimensions

Width 22,5mm



Width 45mm



Sensing & Monitoring Relays **Series GAMMA**

Voltage monitoring in 3-phase mains

- Multifunction (G2PM); Windowfunction (G2PW)
- Monitoring of phase sequence and phase failure (G2PM)
- Asymmetry detection switchable (G2PM)
- Connection of neutral wire optional (G2PM)
- Detection of loss of neutral wire (G2PM)
- Supply voltage selectable via PowerModules or by zoom voltage 24-240V
- 1 CO contact; 2 CO contacts
- Width 22,5mm
- Industrial design

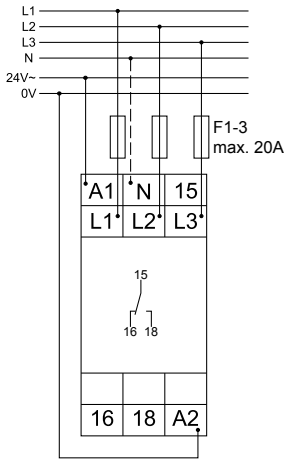
types	G2PM230VSY20 24-240V	G2PM230VSY10	G2PM115VSY20 24-240V	G2PM115VSY10	G2PW400V10
					
Art.No. (PQ1)	2390512	2390503	2390506	2390502	2390501
Art.No. (PQ10)	-	-	-	-	-
EAN13-Code	900866200287	900866200280	900866200516	900866200279	900866200277
Measured variable	3(N)~ AC Sinus (48 to 63Hz)	3(N)~ AC Sinus (48 to 63Hz)	3(N)~ AC Sinus (48 to 63Hz)	3(N)~ AC Sinus (48 to 63Hz)	3~ AC Sinus (48 to 63Hz)
Measured range	U_N = 230/132V terminals (N)-L1-L2-L3	U_N = 230/132V terminals (N)-L1-L2-L3	U_N = 115/66V terminals (N)-L1-L2-L3	U_N = 115/66V terminals (N)-L1-L2-L3	U_N = 400/230V terminals L1-L2-L3
Controls	ASYM • max • min • Delay • Function	ASYM • max • min • Delay • Function	ASYM • max • min • Delay • Function	ASYM • max • min • Delay • Function	max • min • Delay
Indicators (LEDs)	ASYM • max • min • SEQ • R	ASYM • max • min • SEQ • R	ASYM • max • min • SEQ • R	ASYM • max • min • SEQ • R	U • max • min • R
Functions	UNDER UNDER+SEQ WIN WIN+SEQ	UNDER UNDER+SEQ WIN WIN+SEQ	UNDER UNDER+SEQ WIN WIN+SEQ	UNDER UNDER+SEQ WIN WIN+SEQ	WIN
Asymmetry	5% to 25% • Off	5% to 25% • Off	5% to 25%	5% to 25% • Off	-
Switching threshold max.	-20% to 30% from U_N	-20% to 30% from U_N	-20% to 30% from U_N	-20% to 30% from U_N	-20% to 30% from U_N
Switching threshold min.	-30% to 20% from U_N	-30% to 20% from U_N	-30% to 20% from U_N	-30% to 20% from U_N	-30% to 20% from U_N
Tripping delay	0,1s to 10s	0,1s to 10s	0,1s bis 10s	0,1s to 10s	0,2s to 10s
Start-up suppression time	-	-	-	-	-
Fault latch	-	-	-	-	-
Supply	24 to 240V AC/DC terminals A1-A2	PowerModule TR2 or SNT2 terminals A1-A2	24 to 240V AC/DC terminals A1-A2	PowerModule TR2 or SNT2 terminals A1-A2	PowerModule TR2 or SNT2 terminals A1-A2
Output	2 CO contacts 250V, 5A AC	1 CO contact 250V, 5A AC	2 CO contacts 250V, 5A AC	1 CO contact 250V, 5A AC	1 CO contact 250V, 5A AC
Width	22,5mm	22,5mm	22,5mm	22,5mm	22,5mm
Certificates	CE • UL • cUL • GOST	CE • UL • cUL • GOST	CE • UL • cUL • GOST	CE • UL • cUL • GOST	CE • UL • cUL • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required) • IP rating IP20 • Tightening torque max. 1Nm.				
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end				
Ambient conditions	Ambient temperature: -25 to 55°C (in accordance with IEC 60068-1); -25 to 40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 3 (in accordance with IEC 60664-1) • Vibration resistance: 10 to 55Hz 0,35mm (in accordance with IEC 60068-2-6) • Shock resistance: 15g 11ms (in accordance with IEC 60068-2-27)				
Accessories	PowerModule TR2 (12 - 400V AC) • sealable intervention protection shield FA-G2 • DC power supply SNT2 24VDC				

Functions

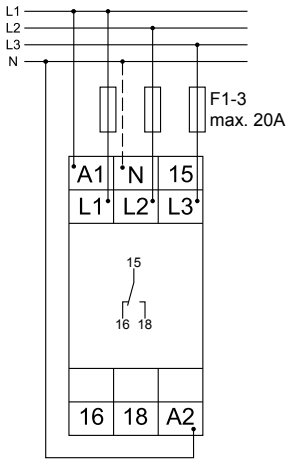
UNDER	Undervoltage monitoring
UNDER+SEQ	Undervoltage monitoring and monitoring of phase sequence
WIN	Monitoring the window between Min and Max
WIN+SEQ	Monitoring the window between Min and Max and monitoring of phase sequence

Connections

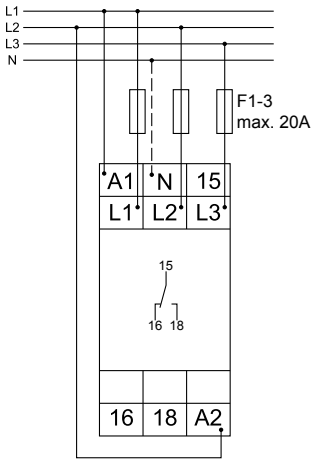
G2PM with PowerModule 24V AC



G2PM with PowerModule 230VAC

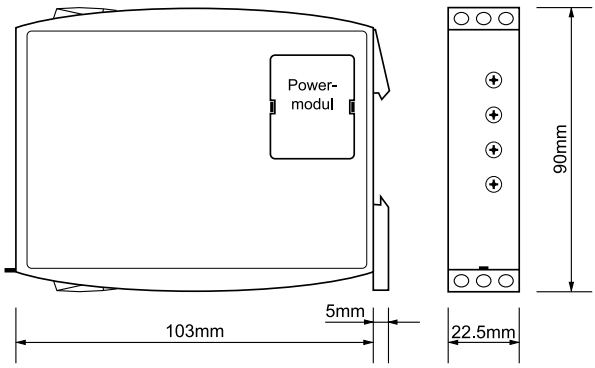


G2PM with PowerModule 400VAC



Dimensions

Width 22,5mm



Sensing & Monitoring Relays **Series GAMMA**

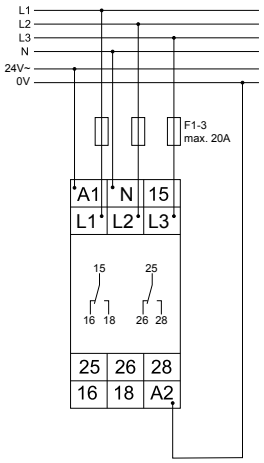
Voltage monitoring in 3-phase mains

- Multifunction
- Monitors phase to neutral voltages
- Connection of neutral wire necessary
- Fault latch
- Supply voltage selectable via PowerModules
- 2 CO contacts
- Width 22,5mm
- Industrial design

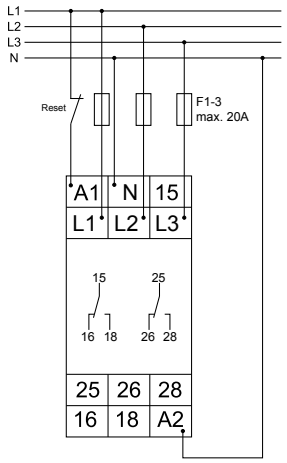
types	G2YM400VL20
	
Art.No. (PQ1)	2390508
Art.No. (PQ10)	-
EAN13-Code	900866200285
Measured variable	3N~ AC Sinus (48 to 63Hz)
Measured range	U_N = 400/230V terminals N-L1-L2-L3
Controls	max • min • Delay • Function
Indicators (LEDs)	U • max • min • R
Functions	OVER OVER+LATCH UNDER UNDER+LATCH WIN WIN+LATCH
Asymmetry	-
Switching threshold max.	-20% to 30% from U_N
Switching threshold min.	-30% to 20% from U_N
Tripping delay	0,1s to 10s
Start-up suppression time	-
Fault latch	selectable
Supply	PowerModule TR2 or SNT2 terminals A1-A2
Output	2 CO contacts 250V, 5A AC
Width	22,5mm
Certificates	CE • UL • cUL • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required) • IP rating IP20 • Tightening torque max. 1Nm.
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end
Ambient conditions	Ambient temperature: -25 to 55°C (in accordance with IEC 60068-1); -25 to 40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 3 (in accordance with IEC 60664-1) • Vibration resistance: 10 to 55Hz 0,35mm (in accordance with IEC 60068-2-6) • Shock resistance: 15g 11ms (in accordance with IEC 60068-2-27)
Accessories	PowerModule TR2 (12 to 400V AC) • sealable intervention protection shield FA-G2 • DC power supply SNT2 24VDC

OVER	Overvoltage monitoring
OVER+Latch	Overvoltage monitoring with fault latch
UNDER	Undervoltage monitoring
UNDER+Latch	Undervoltage monitoring with fault latch
WIN	Monitoring the window between Min and Max
WIN+Latch	Monitoring the window between Min and Max with fault latch

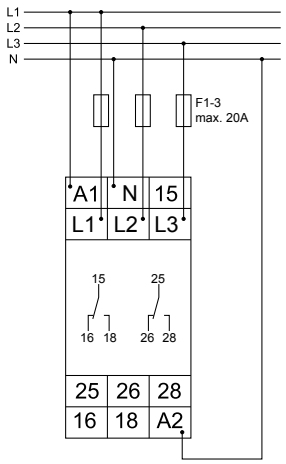
G2YM400VL20 with PowerModule 24V AC without fault latch



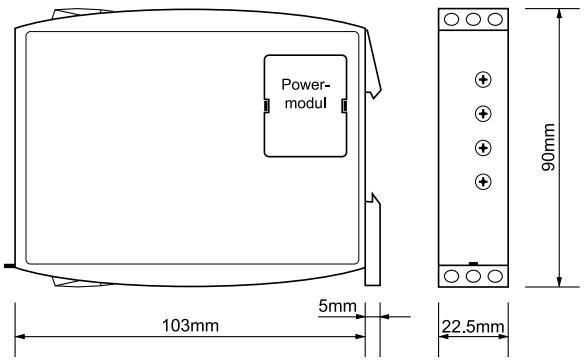
G2YM400VL20 with PowerModule 230V AC with fault latch



G2YM400VL20 with PowerModule 230V AC without fault latch



Width 22,5mm



Sensing & Monitoring Relays **Series GAMMA**

Voltage monitoring in 3-phase mains

- Monitoring of phase sequence and phase failure
- Detection of reverse voltage
- Connection of neutral wire optional
- Supply voltage = measuring voltage
- 2 CO contacts
- Width 22,5mm
- Industrial design

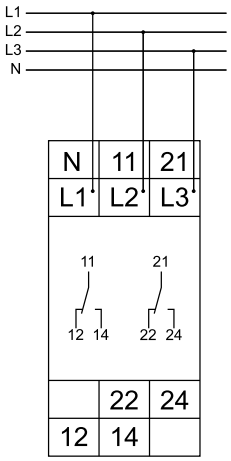
types	G2PF400VS02	G2PF230VS02	G2PF115VS02
			
Art.No. (PQ1)	2390000	2390001	2390002
Art.No. (PQ10)	2390000B	-	-
EAN13-Code	900866200229	900866200232	900866200234
Measured variable	3(N)~ AC Sinus (48 to 63Hz)	3(N)~ AC Sinus (48 to 63Hz)	3(N)~ AC Sinus (48 to 63Hz)
Measured range	U_N = 400/230V terminals (N)-L1-L2-L3	U_N = 230/132V terminals (N)-L1-L2-L3	U_N = 115/66V terminals (N)-L1-L2-L3
Controls	-	-	-
Indicators (LEDs)	U • R	U • R	U • R
Functions	Monitoring of phase sequence a. phase failure	Monitoring of phase sequence a. phase failure	Monitoring of phase sequence a. phase failure
Asymmetry	fix, typ. 30%	fix, typ. 30%	fix, typ. 30%
Switching threshold max.	-	-	-
Switching threshold min.	-	-	-
Tripping delay	fix, max. 350ms	fix, max. 350ms	fix, max. 350ms
Start-up suppression time	fix, max. 500ms	fix, max. 500ms	fix, max. 500ms
Fault latch	-	-	-
Supply	= measuring voltage; 3(N)~ 342 to 457V terminals (N)-L1-L2-L3	= measuring voltage; 3(N)~ 198 to 264V terminals (N)-L1-L2-L3	= measuring voltage; 3(N)~ 99 to 132V terminals (N)-L1-L2-L3
Output	2 CO contacts 250V, 5A AC	2 CO contacts 250V, 5A AC	2 CO contacts 250V, 5A AC
Width	22,5mm	22,5mm	22,5mm
Certificates	CE • UL • cUL • GOST	CE • UL • cUL • GOST	CE • UL • cUL • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required) • IP rating IP20 • Tightening torque max. 1Nm.		
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end		
Ambient conditions	Ambient temperature: -25 to 55°C (in accordance with IEC 60068-1); -25 to 40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 3 (in accordance with IEC 60664-1) • Vibration resistance: 10 to 55Hz 0,35mm (in accordance with IEC 60068-2-6) • Shock resistance: 15g 11ms (in accordance with IEC 60068-2-27)		
Accessories	-		

Monitoring of phase sequence, phase failure with detection of return voltage

Functions

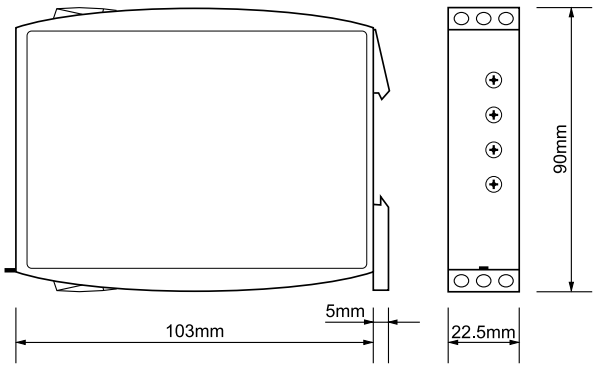
G2PF...S02

Connections



Width 22,5mm

Dimensions



Sensing & Monitoring Relays **Series GAMMA**

Mains monitoring according to VDE 0126-1-1

- Voltage monitoring in 3-phase mains
- Frequency- and voltage monitoring in 3-phase mains in accordance with VDE 0126-1-1 (G2FW)
- Recognition of isolated operation in accordance with VDE 0126-1-1, 4.5 (G2PW)
- Quick net error recognition
- Supply voltage selectable via power modules or switching power supply
- 2 CO contacts
- Width 22,5mm
- Industrial design

types	G2PW400VF02	G2FW50HzYFA02
		
Art.No. (PQ1)	2390515	2390910
Art.No. (PQ10)	-	-
EAN13-Code	9008662005891	9008662005907
Measured variable	3(N)~ AC Sinus (48 to 63Hz)	3N~ AC Sinus (48 to 63Hz)
Measured range	U_N = 400/230V terminals (N)-L1-L2-L3	Voltage: 230V AC; terminals N-L1, N-L2, N-L3 Frequency: 50Hz; terminals N-L1
Controls	-	Average
Indicators (LEDs)	Loss of mains • R	$U_{Average}$ • >f • <f • $U_{Failure}$ • R
Functions	WIN	WIN_F • WIN_U
Switching threshold max.	fix, +15% of U_N	Voltage: fix, +15% von U_N Frequency: 50,2Hz
Switching threshold min.	fix, -20% of U_N	Voltage: fix, -20% of U_N Frequenz: 47,5Hz
10 minutes average	-	+10% to +15% of U_N
Tripping delay	U ≤ = 80% von U_N <200ms U ≥ = 115% von U_N <200ms	U ≤ = 80% of U_N <200ms U ≥ = 115% of U_N <200ms
Start-up suppression time	fix 30s	fix 30s
Fault latch	-	-
Supply	PowerModule TR2 or SNT2 Terminals A1-A2	PowerModule TR2 or SNT2 Terminals A1-A2
Output	2 CO contacs 250V, 5A AC	2 2 CO contacts 250V, 5A AC
Width	22,5mm	22,5mm
Certificates	CE	CE
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required) • IP rating IP20 • Tightening torque max. 1Nm.	
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end	
Ambient conditions	Ambient temperature: -25 to 55°C (in accordance with IEC 60068-1); -25 to 40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 3 (in accordance with IEC 60664-1) • Vibration resistance: 10 to 55Hz 0,35mm (in accordance with IEC 60068-2-6) • Shock resistance: 15g 11ms (in accordance with IEC 60068-2-27)	
Accessories	PowerModule TR2 (12 to 400V AC) • sealable intervention protection shield FA-G2 • DC power supply SNT2 24VDC	

Functions

G2PW400VF02:
Voltage monitoring in 3-phase mains with fixed ON-Delay, fixed thresholds and recognition of isolated operation in accordance with VDE 0126-1-1 (see 4.5).
WIN: Monitoring the fixed range

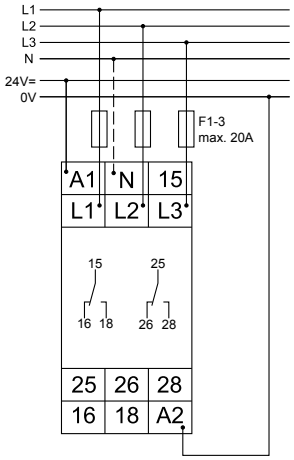
G2FW50HzYFA02:
Frequency monitoring in Phase L1 in accordance with VDE 0126-1-1 with fixed ON-Delay and fixed thresholds.

WIN$_F$ (Frequency): Monitoring the window between Min and Max
Voltage monitoring in 3-phase mains in accordance with VDE 0126-1-1 with fixed ON-Delay, fixed thresholds and adjustable 10-minutes-average.

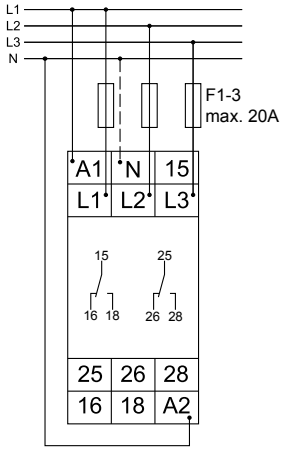
WIN$_V$ (Voltage): Monitoring the window between Min and Max

Connections G2PW400VF02

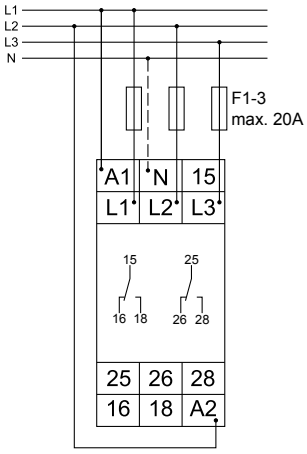
G2PW400VF02 with switching power supply SNT2 24V DC



G2PW400VF02 with power module TR2 230V AC

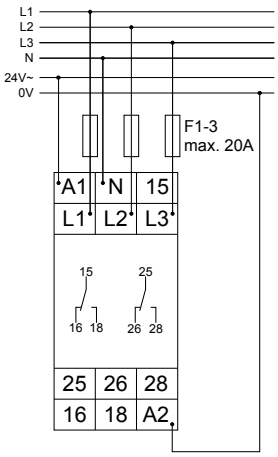


G2PW400VF02 with power module TR2 400V AC

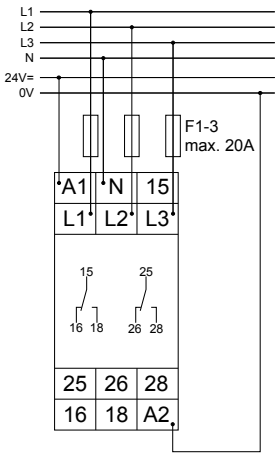


Connections G2FW50HzYFA02

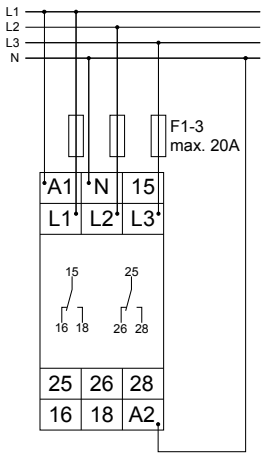
G2FW50HzYFA02 with power module TR2 24V AC



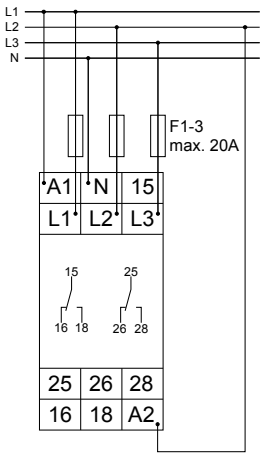
G2FW50HzYFA02 with switching power supply SNT2 24V DC



G2FW50HzYFA02 with power module TR2 230V AC

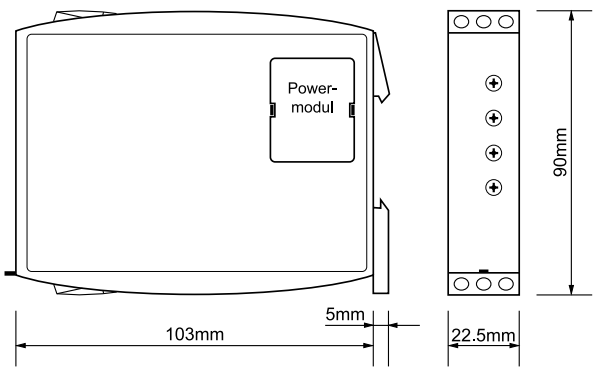


G2FW50HzYFA02 with power module TR2 400V AC



Dimensions

Width 22,5mm



Sensing & Monitoring Relays **Series GAMMA**

Voltage monitoring in 1-phase mains

- Multifunction (G2UM); Windowfunction (G2UW)
- Frequency range 16,6 to 400Hz (G2UM)
- Fault latch (G2UM)
- Supply voltage selectable via PowerModules or by zoom voltage 24 to 240V AC/DC
- 1 CO contact; 2 CO contacts
- Width 22,5mm
- Industrial design

types	G2UW300V10	G2UM300VL10	G2UM300VL20	G2UM500VL10 230V	G2UM300VL20 24-240V
					
Art.No. (PQ1)	2390301	2390300	2390303	-	2390304
Art.No. (PQ10)	-	-	2390305B	2390306B	-
EAN13-Code	900866200257	900866200256	900866200259	900866200262	900866200260
Measured variable	Voltage AC/DC AC Sinus (48 to 63Hz)	Voltage AC/DC AC Sinus (16,6 to 400Hz)	Voltage AC/DC AC Sinus (16,6 to 400Hz)	Voltage AC/DC AC Sinus (16,6 to 400Hz)	Voltage AC/DC AC Sinus (16,6 to 400Hz)
Measuring ranges	30V; terminals E-F1(+) 60V; terminals E-F2(+) 300V; terminals E-F3(+)	30V; terminals E-F1(+) 60V; terminals E-F2(+) 300V; terminals E-F3(+)	30V; terminals E-F1(+) 60V; terminals E-F2(+) 300V; terminals E-F3(+)	150V; terminals E-F1(+) 300V; terminals E-F2(+) 500V; terminals E-F3(+)	30V; terminals E-F1(+) 60V; terminals E-F2(+) 300V; terminals E-F3(+)
Controls	max • min • Delay	Start • max • min • Delay • Function	Start • max • min • Delay • Function	Start • max • min • Delay • Function	Start • max • min • Delay • Function
Indicators (LEDs)	U • max • min • R	U/t • max • min • R	U/t • max • min • R	U/t • max • min • R	U/t • max • min • R
Functions	WIN	OVER OVER+LATCH UNDER UNDER+LATCH WIN WIN+LATCH	OVER OVER+LATCH UNDER UNDER+LATCH WIN WIN+LATCH	OVER OVER+LATCH UNDER UNDER+LATCH WIN WIN+LATCH	OVER OVER+LATCH UNDER UNDER+LATCH WIN WIN+LATCH
Switching threshold max.	10% to 100% from U_N	10% to 100% from U_N	10% to 100% from U_N	10% to 100% from U_N	10% to 100% from U_N
Switching threshold min.	5% to 95% from U_N	5% to 95% from U_N	5% to 95% from U_N	5% to 95% from U_N	5% to 95% from U_N
Tripping delay	0,2s to 10s	0,1s to 10s	0,1s to 10s	0,1s to 10s	0,1s to 10s
Start-up suppression time	-	0s to 10s	0s to 10s	0s to 10s	0s to 10s
Fault latch	-	wire link Y1-Y2	selectable	selectable	selectable
Supply	PowerModule TR2 or SNT2 terminals A1-A2	PowerModule TR2 or SNT2 terminals A1-A2	PowerModule TR2 or SNT2 terminals A1-A2	230V AC terminals A1-A2	24 to 240V AC/DC terminals A1-A2
Output	1 CO contact 250V, 5A AC	1 CO contact 250V, 5A AC	2 CO contacts 250V, 5A AC	1 CO contacts 250V, 5A AC	2 CO contacts 250V, 5A AC
Width	22,5mm	22,5mm	22,5mm	22,5mm	22,5mm
Certificates	CE • UL • cUL • GOST	CE • UL • cUL • GOST	CE • UL • cUL • GOST	CE • UL • cUL • GOST	CE • UL • cUL • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque max. 1Nm				
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end				
Ambient conditions	Ambient temperature: -25 to 55°C (in accordance with IEC 60068-1); -25 to 40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 3 (in accordance with IEC 60664-1) • Vibration resistance: 10 to 55Hz 0,35mm (in accordance with IEC 60068-2-6) • Shock resistance: 15g 11ms (in accordance with IEC 60068-2-27)				
Accessories	PowerModule TR2 (12 to 400V AC) • sealable intervention protection shield FA-G2 • DC power supply SNT2 24VDC				

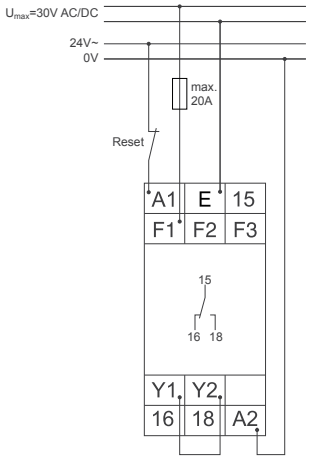
OVER	Overvoltage monitoring
UNDER	Undervoltage monitoring
WIN	Monitoring the window between Min and Max

G2UM

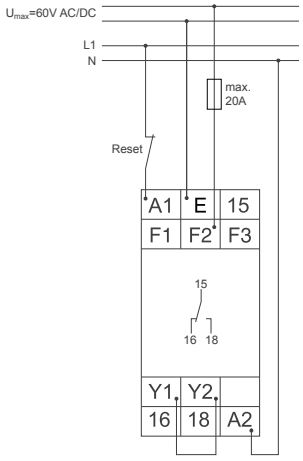
Fault latch via wire link or switch (G2UM) Y1-Y2 selectable

OVER+Latch	Overvoltage monitoring with fault latch
UNDER+Latch	Undervoltage monitoring with fault latch
WIN+Latch	Monitoring the window between Min and Max with fault latch

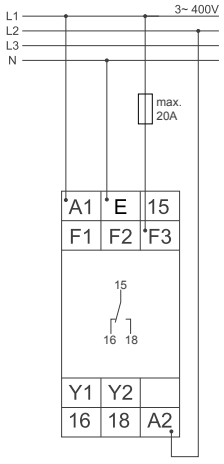
Measured range 30V with PowerModule 24V AC with fault latch



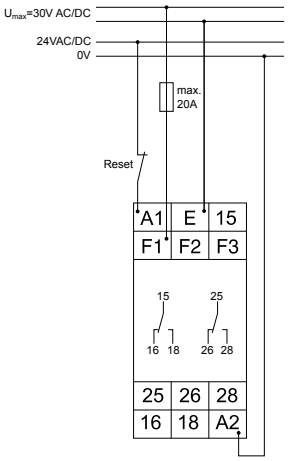
Measured range 60V with PowerModule 230V AC with fault latch



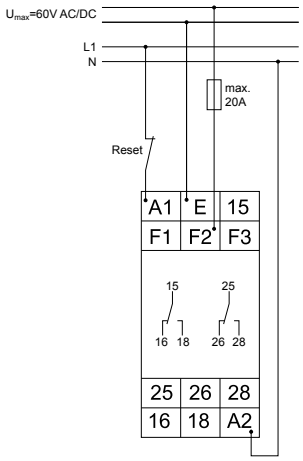
Measured range 300V with PowerModule 400V AC without fault latch



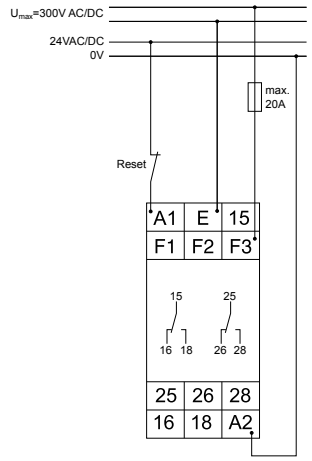
Measured range 30V, Supply 24V AC/DC with fault latch



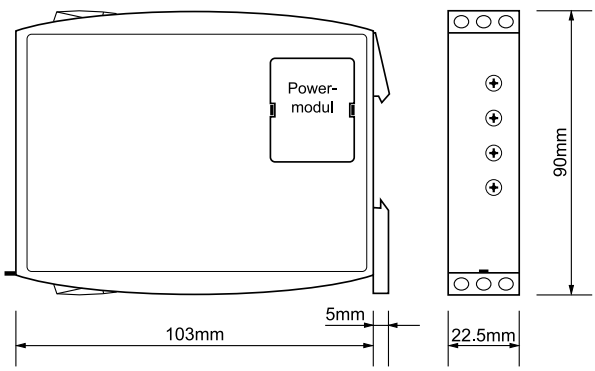
Measured range 60V, Supply 230V AC with fault latch



Measured range 300V, Supply 24V AC/DC with fault latch



Width 22,5mm



Sensing & Monitoring Relays **Series GAMMA**

Current monitoring in 1-phase mains

- Multifunction (G2IM); Windowfunction (G2IW)
- Frequency range 16,6 to 400Hz
- Fault latch (G2IM)
- Supply voltage selectable via PowerModules
- 1 CO contact
- Width 22,5mm
- Industrial design

types	G2IM5AL10	G2IM10AL10	G2IW5A10
			
Art.No. (PQ1)	2390401	2390400	2390402
Art.No. (PQ10)	-	-	-
EAN13-Code	900866200264	900866200263	900866200265
Measured variable	Current AC/DC AC Sinus (16,6 to 400Hz)	Current AC/DC AC Sinus (16,6 to 400Hz)	Current AC/DC AC Sinus (48 to 63Hz)
Measuring ranges	20mA AC/DC; terminals K-I1(+) 1A AC/DC; terminals K-I2(+) 5A AC/DC; terminals K-I3(+)	100mA AC/DC; terminals K-I1(+) 1A AC/DC; terminals K-I2(+) 10A AC/DC; terminals K-I3(+)	20mA AC/DC; terminals K-I1(+) 1A AC/DC; terminals K-I2(+) 5A AC/DC; terminals K-I3(+)
Controls	Start • max • min • Delay • Function	Start • max • min • Delay • Function	max • min • Delay
Indicators (LEDs)	U/t • max • min • R	U/t • max • min • R	U • max • min • R
Functions	OVER OVER+Latch UNDER UNDER + Latch WIN WIN+Latch	OVER OVER+Latch UNDER UNDER + Latch WIN WIN+Latch	WIN
Switching threshold max.	10% to 100% from I_N	10% to 100% from I_N	10% to 100% from I_N
Switching threshold min.	5% to 95% from I_N	5% to 95% from I_N	5% to 95% from I_N
Tripping delay	0,1s to 10s	0,1s to 10s	0,2s to 10s
Start-up suppression time	0s to 10s	0s to 10s	-
Fault latch	selectable	selectable	-
Supply	PowerModule TR2 or SNT2 terminals A1-A2	PowerModule TR2 or SNT2 terminals A1-A2	PowerModule TR2 or SNT2 terminals A1-A2
Output	1 CO contact 250V, 5A AC	1 CO contact 250V, 5A AC	1 CO contact 250V, 5A AC
Width	22,5mm	22,5mm	22,5mm
Certificates	CE • UL • cUL • GOST	CE • UL • cUL • GOST	CE • UL • cUL • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required) • IP rating IP20 • Tightening torque max. 1Nm.		
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end		
Ambient conditions	Ambient temperature: -25 to 55°C (in accordance with IEC 60068-1); -25 to 40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 3 (in accordance with IEC 60664-1) • Vibration resistance: 10 to 55Hz 0,35mm (in accordance with IEC 60068-2-6) • Shock resistance: 15g 11ms (in accordance with IEC 60068-2-27)		
Accessories	PowerModule TR2 (12 to 400V AC) • Current Transformers Series DSW and WSW • sealable intervention protection shield FA-G2 • DC power supply SNT2 24VDC		

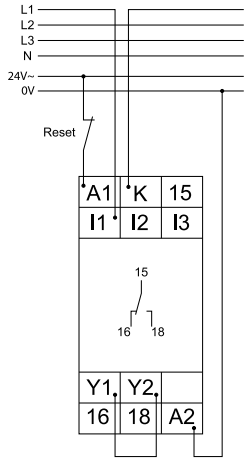
OVER	Overcurrent monitoring
UNDER	Undercurrent monitoring
WIN	Monitoring the window between Min and Max

G2IM...L10

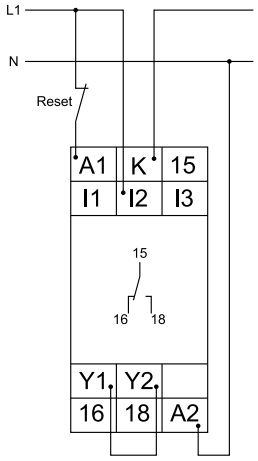
Fault latch via wire link Y1-Y2 selectable

OVER+Latch	Overcurrent monitoring with fault latch
UNDER+Latch	Undercurrent monitoring with fault latch
WIN+Latch	Monitoring the window between Min and Max with fault latch

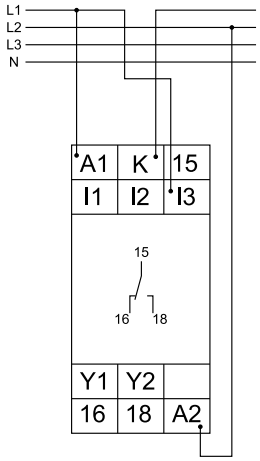
Measured range 100mA with PowerModule 24V AC and fault latch (G2IM10AL10)



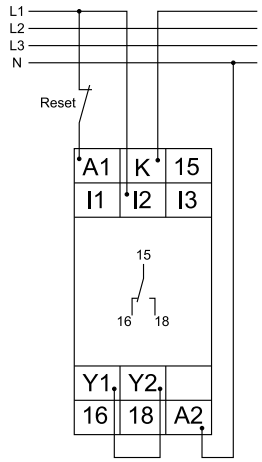
Measured range 1A with PowerModule 230V AC and fault latch (G2IM10AL10)



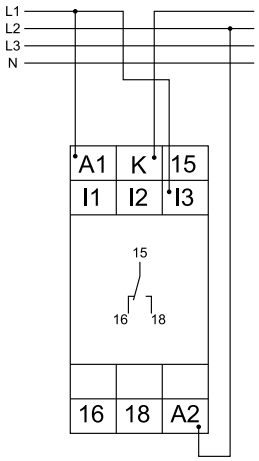
Measured range 10A with PowerModule 400V AC without fault latch (G2IM10AL10)



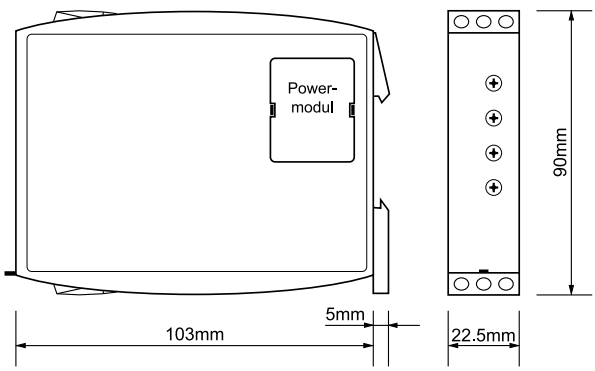
Measured range 1A with PowerModule 230V AC and fault latch (G2IM5AL10)



Measured range 5A with PowerModule 400V AC (G2IW5A10)



Width 22,5mm

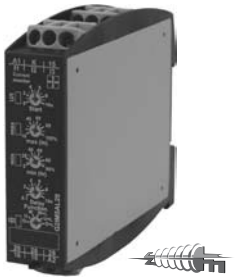
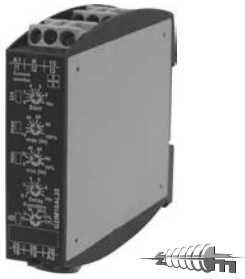


Sensing & Monitoring Relays **Series GAMMA**

Current monitoring in 1-phase mains

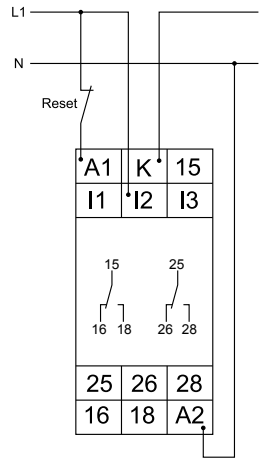
WatchDog

- Multifunction
- Frequency range 16,6 to 400Hz
- Fault latch
- Supply voltage selectable via PowerModules or by zoom voltage 24 to 240V AC/DC
- 2 CO contacts
- Width 22,5mm
- Industrial design

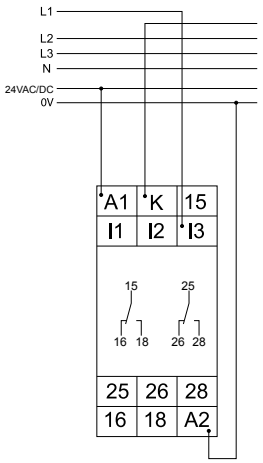
types	G2IM5AL20	G2IM5AL20 24-240V	G2IM10AL20	G2IM10AL20 24-240V
				
Art.No. (PQ1)	2390405	2390411	2390406	2390410
Art.No. (PQ10)	-	-	-	-
EAN13-Code	900866200268	900866200274	900866200269	900866200273
Measured variable	Current AC/DC AC Sinus (16,6 to 400Hz)	Current AC/DC AC Sinus (16,6 to 400Hz)	Current AC/DC AC Sinus (16,6 to 400Hz)	Current AC/DC AC Sinus (16,6 to 400Hz)
Measuring ranges	20mA AC/DC; terminals K-I1(+) 1A AC/DC; terminals K-I2(+) 5A AC/DC; terminals K-I3(+)	20mA AC/DC; terminals K-I1(+) 1A AC/DC; terminals K-I2(+) 5A AC/DC; terminals K-I3(+)	100mA AC/DC; terminals K-I1(+) 1A AC/DC; terminals K-I2(+) 10A AC/DC; terminals K-I3(+)	100mA AC/DC; terminals K-I1(+) 1A AC/DC; terminals K-I2(+) 10A AC/DC; terminals K-I3(+)
Controls	Start • max • min • Delay • Function	Start • max • min • Delay • Function	Start • max • min • Delay • Function	Start • max • min • Delay • Function
Indicators (LEDs)	U/t • max • min • R	U/t • max • min • R	U/t • max • min • R	U/t • max • min • R
Functions	OVER OVER+LATCH UNDER UNDER+LATCH WIN WIN+LATCH	OVER OVER+LATCH UNDER UNDER+LATCH WIN WIN+LATCH	OVER OVER+LATCH UNDER UNDER+LATCH WIN WIN+LATCH	OVER OVER+LATCH UNDER UNDER+LATCH WIN WIN+LATCH
Switching threshold max.	10% to 100% from I_N	10% to 100% from I_N	10% to 100% from I_N	10% to 100% from I_N
Switching threshold min.	5% to 95% from I_N	5% to 95% from I_N	5% to 95% from I_N	5% to 95% from I_N
Tripping delay	0,1s to 10s	0,1s to 10s	0,1s to 10s	0,1s to 10s
Start-up suppression time	0s to 10s	0s to 10s	0s to 10s	0s to 10s
Fault latch	selectable	selectable	selectable	selectable
Supply	PowerModule TR2 or SNT2 terminals A1-A2	24 to 240V terminals A1-A2	PowerModule TR2 or SNT2 terminals A1-A2	24 to 240V terminals A1-A2
Output	2 CO contacts 250V, 5A AC	2 CO contacts 250V, 5A AC	2 CO contacts 250V, 5A AC	2 CO contacts 250V, 5A AC
Width	22,5mm	22,5mm	22,5mm	22,5mm
Certificates	CE • UL • cUL • GOST	CE • UL • cUL • GOST	CE • UL • cUL • GOST	CE • UL • cUL • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required) • IP rating IP20 • Tightening torque max. 1Nm.			
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end			
Ambient conditions	Ambient temperature: -25 to 55°C (in accordance with IEC 60068-1); -25 to 40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 3 (in accordance with IEC 60664-1) • Vibration resistance: 10 to 55Hz 0,35mm (in accordance with IEC 60068-2-6) • Shock resistance: 15g 11ms (in accordance with IEC 60068-2-27)			
Accessories	PowerModule TR2 (12 to 400V AC) • Current Transformers Series DSW and WSW • sealable intervention protection shield FA-G2 • DC power supply SNT2 24VDC			

OVER	Overcurrent monitoring
OVER+LATCH	Overcurrent monitoring with fault latch
UNDER	Undercurrent monitoring
UNDER+LATCH	Undercurrent monitoring with fault latch
WIN	Monitoring the window between Min and Max
WIN+LATCH	Monitoring the window between Min and Max with fault latch

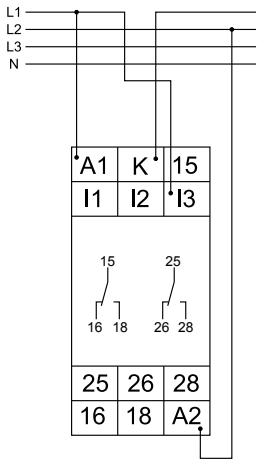
Measured range 1A, Supply 230VAC and fault latch (G2IM10AL20 24-240V)



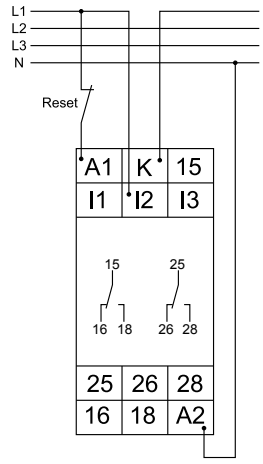
Measured range 10A, Supply 24VAC/DC without fault latch (G2IM10AL20 24-240V)



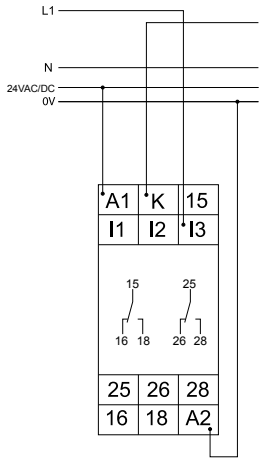
Measured range 10A with PowerModule 400V AC without fault latch (G2IM10AL20)



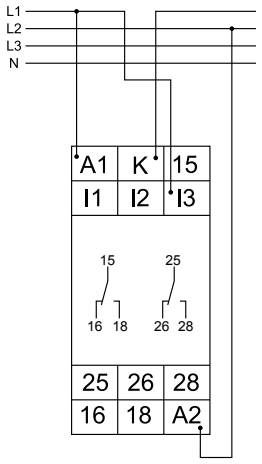
Measured range 1A, Supply 230V AC and fault latch (G2IM5AL20 24-240V)



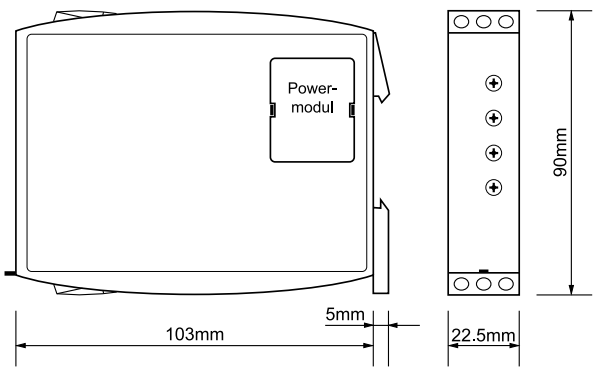
Measured range 5A, Supply 24V AC/DC without fault latch (G2IM5AL20 24-240V)



Measured range 5A with PowerModule 400V AC without fault latch (G2IM5AL20)



Width 22,5mm



Sensing & Monitoring Relays **Series GAMMA**

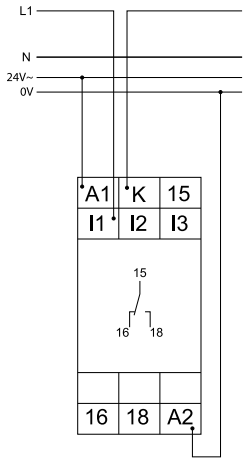
Current monitoring in 1-phase mains

- Overcurrent monitoring (G2IO)
- Undercurrent monitoring (G2IU)
- Supply voltage via PowerModules or DC power supply
- 1 CO contact
- Width 22,5mm
- Industrial design

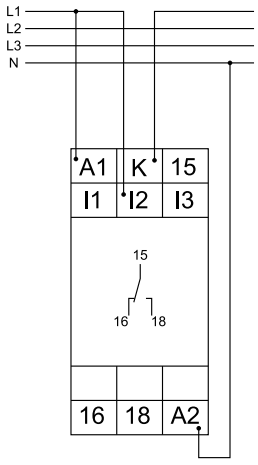
types	G2IO5A10	G2IO10A10	G2IU5A10	G2IU10A10
				
Art.No. (PQ1)	2390403	2390408	2390404	2390409
Art.No. (PQ10)	-	-	-	-
EAN13-Code	900866200266	900866200271	900866200267	900866200272
Measured variable	Current AC/DC AC Sinus (48 to 63Hz)	Current AC/DC AC Sinus (48 to 63Hz)	Current AC/DC AC Sinus (48 to 63Hz)	Current AC/DC AC Sinus (48 to 63Hz)
Measuring ranges	20mA AC/DC; terminals K-I1(+) 1A AC/DC; terminals K-I2(+) 5A AC/DC; terminals K-I3(+)	100mA AC/DC; terminals K-I1(+) 1A AC/DC; terminals K-I2(+) 10A AC/DC; terminals K-I3(+)	20mA AC/DC; terminals K-I1(+) 1A AC/DC; terminals K-I2(+) 5A AC/DC; terminals K-I3(+)	100mA AC/DC; terminals K-I1(+) 1A AC/DC; terminals K-I2(+) 10A AC/DC; terminals K-I3(+)
Controls	max • min • Delay	max • min • Delay	max • min • Delay	max • min • Delay
Indicators (LEDs)	U • max • min • R	U • max • min • R	U • max • min • R	U • max • min • R
Functions	OVER	OVER	UNDER	UNDER
Switching threshold max.	10% to 100% from I_N	10% to 100% from I_N	10% to 100% from I_N	10% to 100% from I_N
Switching threshold min.	5% to 95% from I_N	5% to 95% from I_N	5% to 95% from I_N	5% to 95% from I_N
Tripping delay	0,2s to 10s	0,2s to 10s	0,2s to 10s	0,2s to 10s
Start-up suppression time	-	-	-	-
Fault latch	-	-	-	-
Supply	PowerModule TR2 or SNT2 terminals A1-A2	PowerModule TR2 or SNT2 terminals A1-A2	PowerModule TR2 or SNT2 terminals A1-A2	PowerModule TR2 or SNT2 terminals A1-A2
Output	1 CO contact 250V, 5A AC	1 CO contact 250V, 5A AC	1 CO contact 250V, 5A AC	1 CO contact 250V, 5A AC
Width	22,5mm	22,5mm	22,5mm	22,5mm
Certificates	CE • UL • cUL • GOST	CE • UL • cUL • GOST	CE • UL • cUL • GOST	CE • UL • cUL • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required) • IP rating IP20 • Tightening torque max. 1Nm.			
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end			
Ambient conditions	Ambient temperature: -25 to 55°C (in accordance with IEC 60068-1); -25 to 40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 3 (in accordance with IEC 60664-1) • Vibration resistance: 10 to 55Hz 0,35mm (in accordance with IEC 60068-2-6) • Shock resistance: 15g 11ms (in accordance with IEC 60068-2-27)			
Accessories	PowerModules TR2 (12 to 400V AC) • Current Transformers Series DSW and WSW • sealable intervention protection shield FA-G2 • DC power supply SNT2 24VDC			

OVER	Overcurrent monitoring
UNDER	Undercurrent monitoring

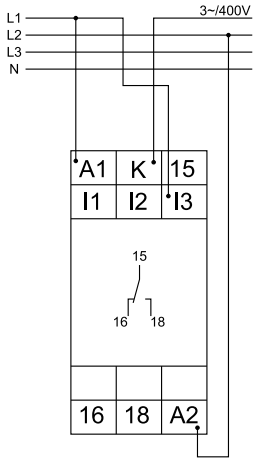
Measured range 20mA with PowerModule 24V AC



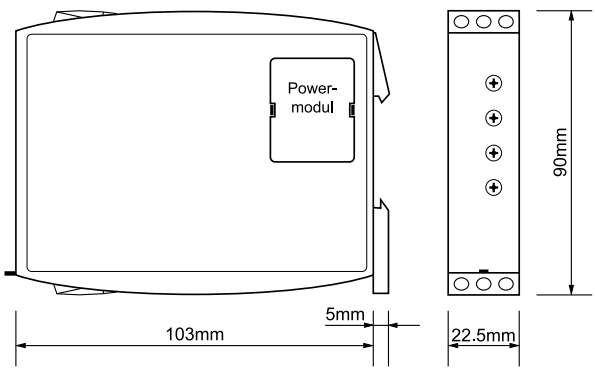
Measured range 1A with PowerModule 230V AC



Measured range 5A with PowerModule 400V AC



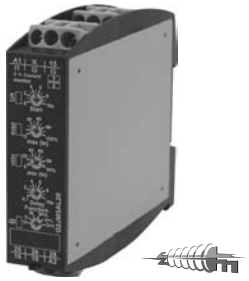
Width 22,5mm



Sensing & Monitoring Relays **Series GAMMA**

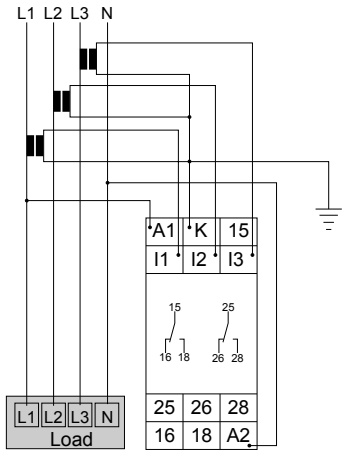
Current monitoring in 3-phase mains

- Multifunction
- Fault latch
- Supply voltage selectable via PowerModules or by zoom voltage 24 to 240V AC/DC
- 2 CO contacts
- Width 22,5mm
- Industrial design

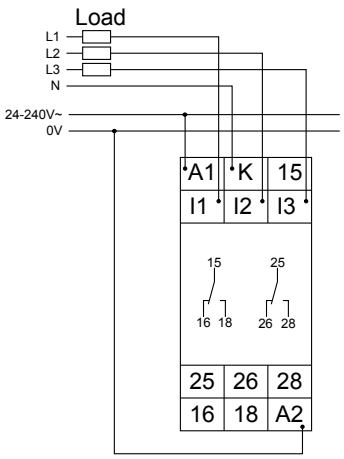
types	G2JM5AL20	G2JM5AL20 24-240V
		
Art.No. (PQ1)	2390800	2390801
Art.No. (PQ10)	-	-
EAN13-Code	900866200293	900866200294
Measured variable	Current 3~ AC Sinus (48 to 63Hz)	Current 3~ AC Sinus (48 to 63Hz)
Measured range	5A AC terminals K-I1, K-I2, K-I3	5A AC terminals K-I1, K-I2, K-I3
Controls	Start • max • min • Delay • Function	Start • max • min • Delay • Function
Indicators (LEDs)	U/t • max • min • R	U/t • max • min • R
Functions	OVER OVER+LATCH UNDER UNDER+LATCH WIN WIN+LATCH	OVER OVER+LATCH UNDER UNDER+LATCH WIN WIN+LATCH
Switching threshold max.	10% to 100% from I_N	10% to 100% from I_N
Switching threshold min.	5% to 95% from I_N	5% to 95% from I_N
Tripping delay	0,1s to 10s	0,1s to 10s
Start-up suppression time	0s to 10s	0s to 10s
Fault latch	selectable	selectable
Supply	PowerModule TR2 or SNT2 terminals A1-A2	24 to 240V AC/DC terminals A1-A2
Output	2 CO contacts 250V, 5A AC	2 CO contacts 250V, 5A AC
Width	22,5mm	22,5mm
Certificates	CE • UL • cUL • GOST	CE • UL • cUL • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required) • IP rating IP20 • Tightening torque max. 1Nm.	
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end	
Ambient conditions	Ambient temperature: -25 to 55°C (in accordance with IEC 60068-1); -25 to 40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 3 (in accordance with IEC 60664-1) • Vibration resistance: 10 to 55Hz 0,35mm (in accordance with IEC 60068-2-6) • Shock resistance: 15g 11ms (in accordance with IEC 60068-2-27)	
Accessories	PowerModules TR2 (12 to 400V AC) • Current Transformers Series DSW and WSW • sealable intervention protection shield FA-G2 • DC power supply SNT2 24VDC	

OVER	Overcurrent monitoring
OVER+LATCH	Overcurrent monitoring with fault latch
UNDER	Undercurrent monitoring
UNDER+LATCH	Undercurrent monitoring with fault latch
WIN	Monitoring the window between Min and Max
WIN+LATCH	Monitoring the window between Min and Max with fault latch

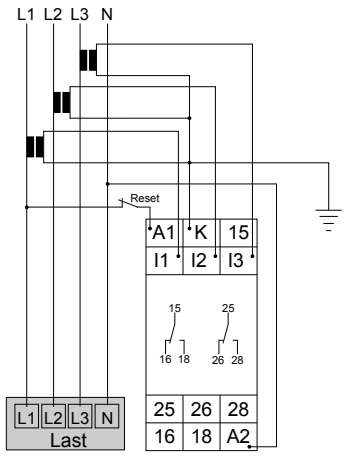
G2JM5AL20, Supply 230V AC and Current Transformers



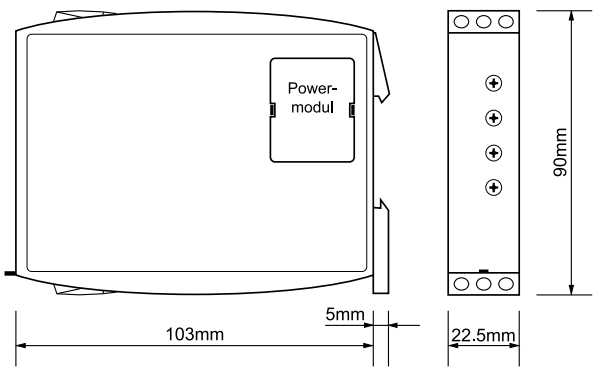
G2JM5AL20, Supply 24-240V AC/DC without fault latch



G2JM5AL20, Supply 230V AC and fault latch



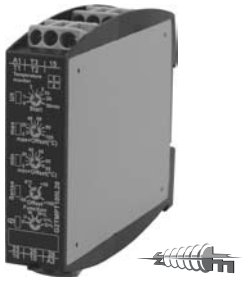
Width 22,5mm



Sensing & Monitoring Relays **Series GAMMA**

Temperature monitoring

- Temperature monitoring by PT100 probes (2- and 3-wire connection)
- Multifunction
- Monitoring of short circuit or line break of sensor line
- Fault latch
- Supply voltage by zoom voltage 24 to 240V AC/DC
- 2 CO contacts
- Width 22,5mm
- Industrial design

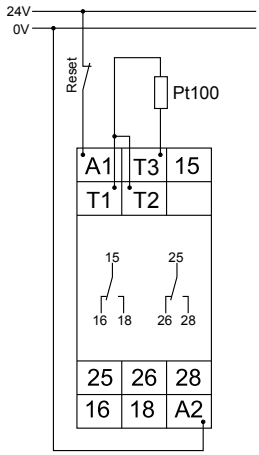
types	G2TMPT100L20 24-240V
	
Art.No. (PQ1)	2390904
Art.No. (PQ10)	-
EAN13-Code	900866200295
Measured variable	Temperature monitoring PT100 2- and 3-wire connection
Measured range	-50°C to +200°C terminals T1-T2-T3
Controls	Start • max • min • Offset • Function
Indicators (LEDs)	U/t • max • min • Sense • R
Functions	OVER OVER+LATCH UNDER UNDER+LATCH WIN WIN+LATCH
Switching threshold max.	-45°C to +200°C
Switching threshold min.	-50°C to 195°C
Tripping delay	-
Start-up suppression time	0min to 30min
Fault latch	selectable
Supply	24 to 240V AC/DC terminals A1-A2
Output	2 CO contacts 250V, 5A AC
Width	22,5mm
Certificates	CE • UL • cUL • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque max. 1Nm
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end
Ambient conditions	Ambient temperature: -25 to 55°C (in accordance with IEC 60068-1); -25 to 40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 3 (in accordance with IEC 60664-1) • Vibration resistance: 10 to 55Hz 0,35mm (in accordance with IEC 60068-2-6) • Shock resistance: 15g 11ms (in accordance with IEC 60068-2-27)
Accessories	Sealable intervention protection shield FA-G2

Functions

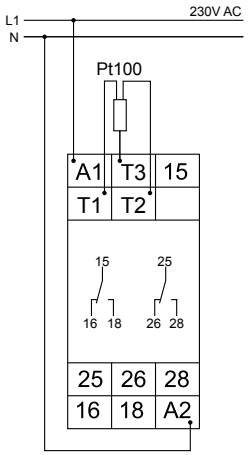
OVER	Monitoring of overtemperature
OVER+LATCH	Monitoring of overtemperature with fault latch
UNDER	Monitoring of undertemperature
UNDER+LATCH	Monitoring of undertemperature with fault latch
WIN	Monitoring the window between Min and Max
WIN+LATCH	Monitoring the window between Min and Max with fault latch

Connections

2-wire conncetion, Supply 24V AC/DC and fault latch

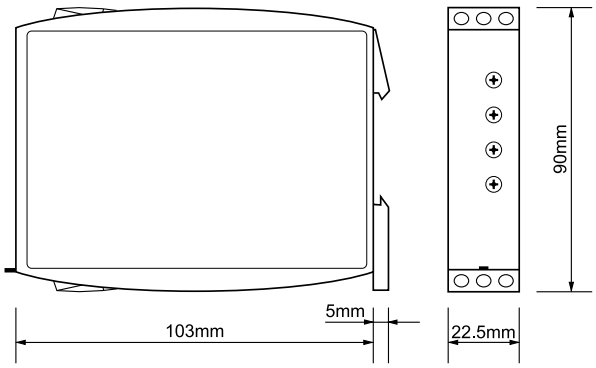


3-wire conncetion, Supply 230V AC without fault latch



Dimensions

Width 22,5mm



Sensing & Monitoring Relays **Series GAMMA**

Temperature monitoring

WatchDog

- Temperature monitoring of the motor winding in accordance with DIN 44081
- Maximal 6 PTC probes
- with fault latch
- Short circuit monitoring of the PTC Input (G2TFKN02)
- Testfunction with integrated Test/Reset button; possibility for external reset
- Supply voltage fix or selectable via PowerModules by zoom voltage 24 to 240VAC/DC
- 1 CO contact; 2 CO contacts
- Width 22,5mm
- Industrial design

types	G2TF01	G2TF01 230VAC	G2TFKN02	G2TFKN02 24-240V
				
Art.No. (PQ1)	2390103	2390102	2390101	2390110
Art.No. (PQ10)	-	2390102A	-	-
EAN13-Code	900866200240	900866200238	900866200237	900866200251
Measured variable	PTC (motortemperature) max. 6 PTC probes	PTC (motortemperature) max. 6 PTC probes	PTC (motortemperature) max. 6 PTC probes	PTC (motortemperature) max. 6 PTC probes
Measured range	total resistance cold <1,8kΩ terminals T1-T2	total resistance cold <1,8kΩ terminals T1-T2	total resistance cold <1,5kΩ terminals T1-T2	total resistance cold <1,5kΩ terminals T1-T2
Measuring voltage	≤2,5V DC at R ≤4,0kΩ (DINVDE 0660 Part 302)	≤2,5V DC at R ≤4,0kΩ (DINVDE 0660 Part 302)	≤2,5V DC at R ≤4,0kΩ (DINVDE 0660 part 302)	≤2,5V DC at R ≤4.0kΩ (DINVDE 0660 part 302)
Controls	Test/Reset button	Test/Reset button	Test/Reset button • Function	Test/Reset button • Function
Indicators (LEDs)	U • Failure	U • Failure	U • Failure • R	U • Failure • R
Functions	Overtemperature	Overtemperature	Overtemperature selectable functions: +K (short circuit monitoring) +N (remanent latch function) +K+N (short circuit monitoring and remanent latch function)	Overtemperature selectable functions: +K (short circuit monitoring) +N (remanent latch function) +K+N (short circuit monitoring and remanent latch function)
Response value	3,6kΩ	3,6kΩ	3,6kΩ	3,6kΩ
Release value	1,8kΩ	1,8kΩ	1,8kΩ	1,8kΩ
Short circuit monitoring	-	-	<20Ω	<20Ω
Fault latch	yes (auto)	yes (auto)	yes (auto)	yes (auto)
Reset	internal or external terminals R-T2	internal or external terminals R-T2	internal or external terminals R-T2	internal or external terminals R-T2
Supply	PowerModule TR2 or SNT2 terminals A1-A2	230VAC terminals A1-A2	PowerModule TR2 or SNT2 terminals A1-A2	24 to 240V AC/DC terminals A1-A2
Output	1 CO contact 250V, 5A AC	1 CO contact 250V, 5A AC	2 CO contacts 250V, 5A AC	2 CO contacts 250V, 5A AC
Width	22,5mm	22,5mm	22,5mm	22,5mm
Certificates	CE • UL • cUL • GOST	CE • UL • cUL • GOST	CE • UL • cUL • GOST	CE • UL • cUL • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required) • IP rating IP20 • Tightening torque max. 1Nm			
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end			
Ambient conditions	Ambient temperature: -25 to 55°C (in accordance with IEC 60068-1); -25 to 40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 3 (in accordance with IEC 60664-1) • Vibration resistance: 10 to 55Hz 0,35mm (in accordance with IEC 60068-2-6) • Shock resistance: 15g 11ms (in accordance with IEC 60068-2-27)			
Accessories	PowerModules TR2 (12 to 400V AC) • sealable intervention protection shield FA-G2 • DC power supply SNT2 24VDC			

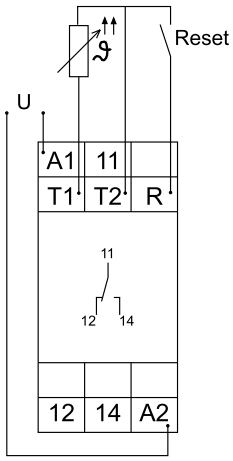
Functions

Temperature monitoring of the motor winding (max. 6 PTC) with fault latch, for temperature probes in accordance with DIN 44081, test function with integrated test/reset key and the following additional functions (G2TFKN02):

Off	Basic function
+K	Short circuit monitoring of thermistor line
+N	Zero-voltage latch
+K+N	Short circuit monitoring and zero-voltage latch

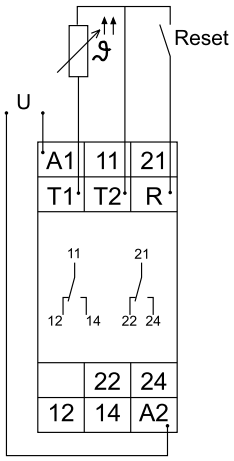
Connections

G2TF01



automatic reset by wire link R-T2

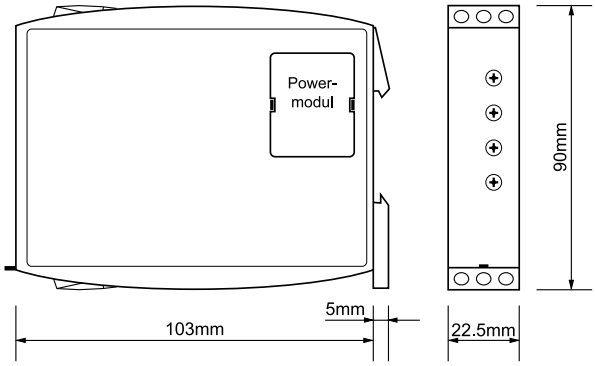
G2TFKN02



automatic reset by wire link R-T2

Dimensions

Width 22,5mm

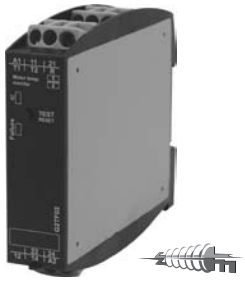


Sensing & Monitoring Relays **Series GAMMA**

Temperature monitoring

WatchDog

- Temperature monitoring of the motor winding in accordance with DIN 44081
- Maximal 6 PTC probes
- with fault latch
- Testfunction with integrated Test/Reset button
- Possibility for external reset
- Supply voltage fix or selectable via PowerModules by zoom voltage 24 to 240VAC/DC
- 2 CO contacts
- Width 22,5mm
- Industrial design

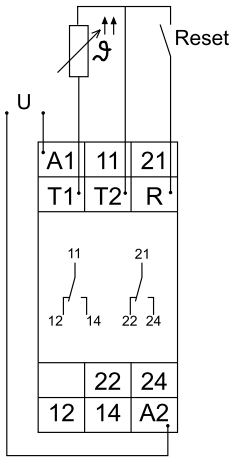
types	G2TF02	G2TF02 110VAC	G2TF02 230VAC	G2TF02 24-240V
				
Art.No. (PQ1)	2390100	2390109	2390104	2390111
Art.No. (PQ10)	-	-	-	-
EAN13-Code	900866200236	900866200249	900866200241	900866200252
Measured variable	PTC (motortemperature) max. 6 PTC probes	PTC (motortemperature) max. 6 PTC probes	PTC (motortemperature) max. 6 PTC probes	PTC (motortemperature) max. 6 PTC probes
Measured range	total resistance cold <1,8kΩ terminals T1-T2	total resistance cold <1,8kΩ terminals T1-T2	total resistance cold <1,8kΩ terminals T1-T2	total resistance cold <1,8kΩ terminals T1-T2
Measuring voltage	≤2,5V DC at R ≤4,0kΩ (DINVDE 0660 part 302)	≤2,5V DC at R ≤4,0kΩ (DINVDE 0660 part 302)	≤2,5V DC at R ≤4,0kΩ (DINVDE 0660 part 302)	≤2,5V DC at R ≤4,0kΩ (DINVDE 0660 part 302)
Controls	Test/Reset button	Test/Reset button	Test/Reset button	Test/Reset button
Indicators (LEDs)	U • Failure	U • Failure	U • Failure	U • Failure
Functions	Overtemperature	Overtemperature	Overtemperature	Overtemperature
Response value	3,6kΩ	3.6kΩ	3,6kΩ	3,6kΩ
Release value	1,8kΩ	1.8kΩ	1,8kΩ	1,8kΩ
Short circuit monitoring	-	-	-	-
Fault latch	yes (auto)	yes (auto)	yes (auto)	yes (auto)
Reset	internal or external terminals R-T2	internal or external terminals R-T2	internal or external terminals R-T2	internal or external terminals R-T2
Supply	PowerModule TR2 or SNT2 terminals A1-A2	110VAC terminals A1-A2	230VAC terminals A1-A2	24-240V AC/DC terminals A1-A2
Output	2 CO contacts 250V, 5A AC	2 CO contacts 250V, 5A AC	2 CO contacts 250V, 5A AC	2 CO contacts 250V, 5A AC
Width	22,5mm	22,5mm	22,5mm	22,5mm
Certificates	CE • UL • cUL • GOST	CE • UL • cUL • GOST	CE • UL • cUL • GOST	CE • UL • cUL • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque max. 1Nm			
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end			
Ambient conditions	Ambient temperature: -25 to 55°C (in accordance with IEC 60068-1); -25 to 40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 3 (in accordance with IEC 60664-1) • Vibration resistance: 10 to 55Hz 0,35mm (in accordance with IEC 60068-2-6) • Shock resistance: 15g 11ms (in accordance with IEC 60068-2-27)			
Accessories	PowerModules TR2 (12 to 400V AC) • sealable intervention protection shield FA-G2 • DC power supply SNT2 24VDC			

Functions

Temperature monitoring of motor winding (max. 6 PTC) with fault latch for probes in accordance with DIN 44081, testfunction with integrated Test/Reset button.

Connections

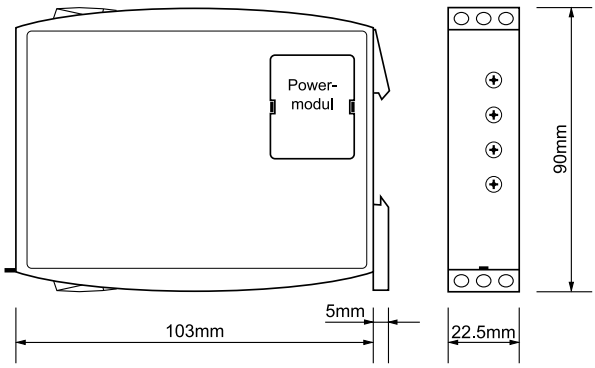
G2TF02



automatic reset by wire link R-T2

Dimensions

Width 22,5mm



Sensing & Monitoring Relays **Series GAMMA**

Level monitoring

- Level monitoring of conductive substances
- Pump up or minimum monitoring
- Pump down or maximum monitoring
- Secure galvanic separation of measuring circuit
- 2 CO contacts
- Width 22,5mm
- Industrial design

types	G2LM20 24VAC	G2LM20 110VAC	G2LM20 230VAC
			
Art.No. (PQ1)	2390201	2390202	2390200
Art.No. (PQ10)	-	-	-
EAN13-Code	900866200254	900866200255	900866200253
Measured variable	level with conductiv probe	level with conductiv probe	level with conductiv probe
Measured range	0,25 to 100kΩ	0,25 to 100kΩ	0,25 to 100kΩ
Probe voltage	max. 16VAC	max. 16VAC	max. 16VAC
Probe current	max. 7mA	max. 7mA	max. 7mA
Wiring distance	max. 1000m (adjustment <50%) max. 100m (adjustment <100%) capacity of cable 100nF/km	max. 1000m (adjustment <50%) max. 100m (adjustment <100%) capacity of cable 100nF/km	max. 1000m (adjustment <50%) max. 100m (adjustment <100%) capacity of cable 100nF/km
Control	Delay on • Delay off • Sensitivity • Function	Delay on • Delay off • Sensitivity • Function	Delay on • Delay off • Sensitivity • Function
Indicators (LEDs)	U • R	U • R	U • R
Functions	Pump up Pump down	Pump up Pump down	Pump up Pump down
Trigger level	0,25 to 100 kΩ (Sensitivity)	0,25 to 100 kΩ (Sensitivity)	0,25 to 100 kΩ (Sensitivity)
Tripping delay	0,5s to 10s	0,5s to 10s	0,5s to 10s
Turn-off delay	0,5s to 10s	0,5s to 10s	0,5s to 10s
Supply	24VAC terminals A1-A2	110VAC terminals A1-A2	230VAC terminals A1-A2
Output	2 CO contacts 250V, 5A AC	2 CO contacts 250V, 5A AC	2 CO contacts 250V, 5A AC
Width	22.5mm	22.5mm	22.5mm
Certificates	CE • UL • cUL • GOST	CE • UL • cUL • GOST	CE • UL • cUL • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required) • IP rating IP20 • Tightening torque max. 1Nm.		
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end		
Ambient conditions	Ambient temperature: -25 to 55°C (in accordance with IEC 60068-1); -25 to 40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 3 (in accordance with IEC 60664-1) • Vibration resistance: 10 to 55Hz 0,35mm (in accordance with IEC 60068-2-6) • Shock resistance: 15g 11ms (in accordance with IEC 60068-2-27)		
Accessories	conductive probes (types SK1, SK2, SK3) • sealable intervention protection shield FA-G2		

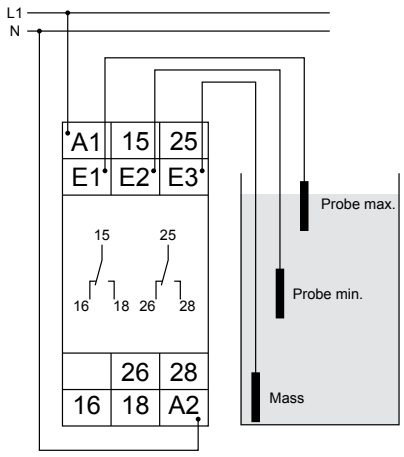
Functions

Level monitoring of conductive substances, timing for tripping delay and turn-off delay separately adjustable and the following functions:

Pump up	Pump up or minimum monitoring
Pump down	Pump down or maximum monitoring

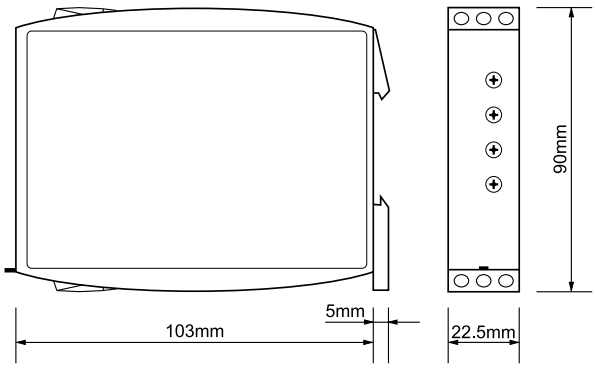
Connections

G2LM20



Dimensions

Width 22,5mm



Sensing & Monitoring Relays **Series ENYA**

Voltage monitoring in 3- and 1-phase mains

- Undervoltage monitoring
- Integrated testswitch (E1YF400VT01 0.85; E3YF400VT02 0.85)
- Start-up delay time in accordance with VDE 0108-100 and VDE 0100-718 (E3YF400VE20 0.85)
- Supply voltage = measuring voltage
- 1 CO contact; 2 CO contacts
- Width 17,5mm; 35mm
- Installation design

types	E3YF400V02 0.85	E1YF400V01 0.85	E3YF400VT02 0.85	E1YF400VT01 0.85	E3YF400VE20 0.85
					
Art.No. (PQ1)	1341401	1340402	1341402	1340406	1341404
Art.No. (PQ10)	-	1340402A	-	-	-
EAN13-Code	9008662005303	900866200057	9008662005297	900866200487	9008662005785
Measured variable	3N~ AC Sinus (48 to 63Hz)	3N~ AC Sinus (48 to 63Hz)	3N~ AC Sinus (48 to 63Hz)	3N~ AC Sinus (48 to 63Hz)	3N~ AC Sinus (48 to 63Hz)
Measured range	U_N = 400/230V terminals N-L1-L2-L3	U_N = 400/230V terminals N-L1-L2-L3	U_N = 400/230V terminals N-L1-L2-L3	U_N = 400/230V terminals N-L1-L2-L3	U_N = 400/230V terminals N-L1-L2-L3
Control	-	-	Testfunction	Testfunction	-
Indicators (LEDs)	R	R	L1 • L2 • L3 • R	L1 • L2 • L3 • R	L1 • L2 • L3 • R
Functions	UNDER	UNDER	UNDER TEST (R=OFF)	UNDER TEST (R=OFF)	UNDER
Asymmetry	-	-	-	-	-
	-	-	-	-	-
Switching threshold min.	fix 195,5V (L-N) in accordance with VDE 0100-718 VDE 0108-100 0,85 x U_N	fix 195,5V (L-N) in accordance with VDE 0100-718 VDE 0108-100 0,85 x U_N	fix 195,5V (L-N) in accordance with VDE 0100-718 VDE 0108-100 0,85 x U_N	fix 195,5V (L-N) in accordance with VDE 0100-718 VDE 0108-100 0,85 x U_N	fix 195,5V (L-N) in accordance with VDE 0100-718 VDE 0108-100 0,85 x U_N
Hysteresis	approx. 5%	approx. 5%	approx. 5%	approx. 5%	approx. 5%
Tripping delay	fixed, approx. 200ms	fixed, approx. 200ms	fixed, approx. 200ms	fixed, approx. 200ms	fixed, < 500ms
Start-up delay time	-	-	-	-	60 sec
Fault latch	-	-	-	-	-
Supply	= measuring voltage 3N~400/230V -30% to +10% terminals N-L1-L2-L3	= measuring voltage 3N~400/230V -30% to +10% terminals N-L1-L2-L3	= measuring voltage 3N~400/230V -30% to +10% terminals N-L1-L2-L3	= measuring voltage 3N~400/230V -30% to +10% terminals N-L1-L2-L3	= measuring voltage 3N~400/230V -30% to +10% terminals N-L1-L2-L3
Output	2 CO contacts 250V, 5A AC	1 CO contacts 250V, 5A AC	2 CO contacts 250V, 5A AC	1 CO contacts 250V, 5A AC	2 CO contacts 250V, 5A AC
Width	35mm	17,5mm	35mm	17,5mm	35mm
Certificates	CE • UL • cUL • GOST	CE • UL • cUL • GOST	CE • UL • cUL • GOST	CE • UL • cUL • GOST	CE • UL • cUL • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque max. 1Nm				
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end				
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 2, if built in 3 (in accordance with IEC 60664-1)				
Accessories	-				

Functions

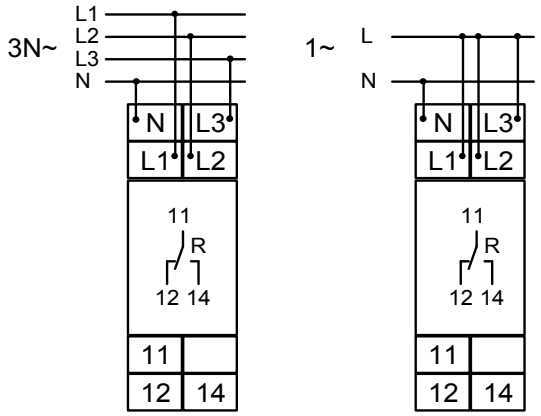
E1YF400V01 0.85; E3YF400V02 0.85
Voltage monitoring in 1-phase and 3-phase mains
UNDER Undervoltage monitoring

E1YF400VT01 0.85; E3YF400VT02 0.85
Voltage monitoring in 1-phase and 3-phase mains
UNDER Undervoltage monitoring
T Integrated testswitch

E3YF400VE20 0.85
Voltage monitoring in 1-phase and 3-phase mains
UNDER Undervoltage monitoring
Start-up delay time in accordance with VDE 0100-718

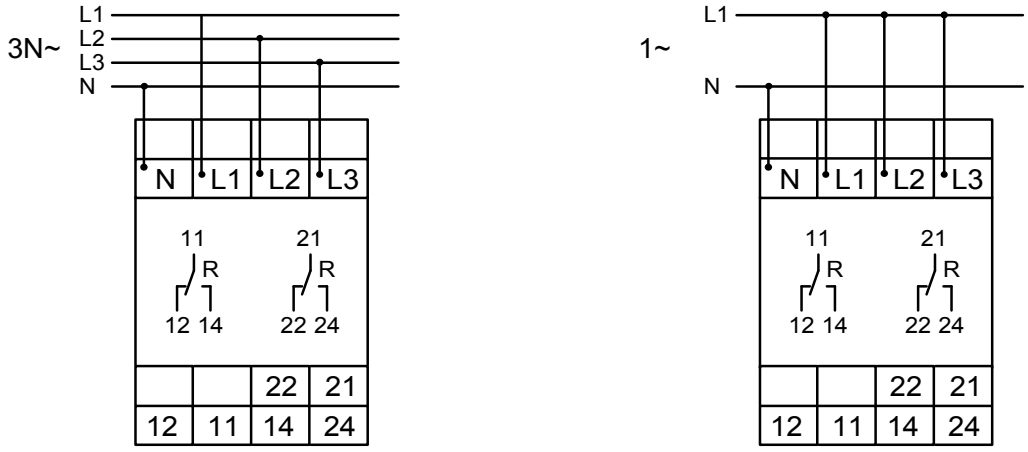
Connections

E1YF



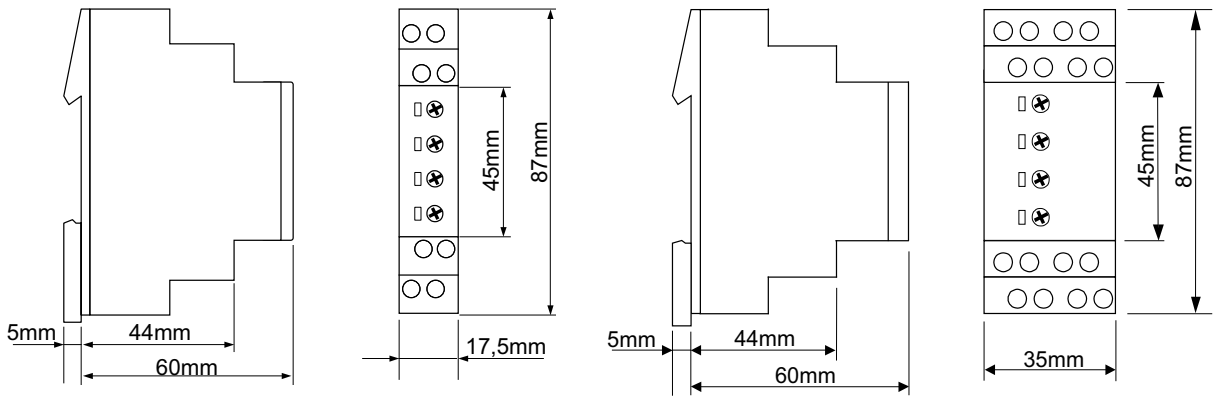
Connections

E3YF



Dimensions

Width 17,5mm



Sensing & Monitoring Relays **Series ENYA**

Voltage monitoring in 3- and 1-phase mains

- Undervoltage monitoring (E1YU; E3YU); Multifunction (E1YM)
- Monitoring of phase failure
- Monitoring of phase sequence selectable (E1YM)
- Connection of neutral wire optional (E1YM)
- Supply voltage = measuring voltage
- 1 CO contact; 2 CO contacts
- Width 17,5mm; 35mm
- Installation design

types	E3YU400V02	E1YU400V01	E1YM400VS10
			
Art.No. (PQ1)	1341403	1340403	1340405
Art.No. (PQ10)	-	-	-
EAN13-Code	9008662005617	900866200059	900866200484
Measured variable	3N~ AC Sinus (48 to 63Hz)	3N~ AC Sinus (48 to 63Hz)	3N~ AC Sinus (48 to 63Hz)
Measured range	U_N = 400/230V terminals N-L1-L2-L3	U_N = 400/230V terminals N-L1-L2-L3	U_N = 400/230V terminals N-L1-L2-L3
Control	U_S	U_S	Delay • Max • Min • Function
Indicators (LEDs)	L1 • L2 • L3 • R	L1 • L2 • L3 • R	SEQ • Max • Min • R
Functions	UNDER	UNDER	UNDER UNDER+SEQ WIN WIN+SEQ
Asymmetry	-	-	-
	-	-	80% to 130% of U_N
Switching threshold min.	160-240V (L-N)	160-240V (L-N)	70% to 120% of U_N
Hysteresis	approx. 5%	approx. 5%	-
Tripping delay	fixed approx. 200ms	fixed, approx. 200ms	0,1s to 10s
Start-up suppression time	-	-	-
Fault latch	-	-	-
Supply	= measuring voltage 3N~400/230V -30% to +10% terminals N-L1-L2-L3	= measuring voltage 3N~400/230V -30% to +10% terminals N-L1-L2-L3	= measuring voltage 3N~400/230V -30% to +30% terminals N-L1-L2-L3
Output	2 CO contacts; 250V, 5A AC	1 CO contact; 250V, 5A AC	1 CO contact; 250V, 5A AC
Width	35mm	17,5mm	17,5mm
Certificates	CE • UL • cUL • GOST	CE • UL • cUL • GOST	CE • UL • cUL • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque max. 1Nm		
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end		
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 2, if built in 3 (in accordance with IEC 60664-1)		
Accessories	-		

Functions

E1YU, E3YU

Undervoltage monitoring in 4-wire systems (each phase against neutral), with adjustable setpoint (E1YU) and with fixed hysteresis.

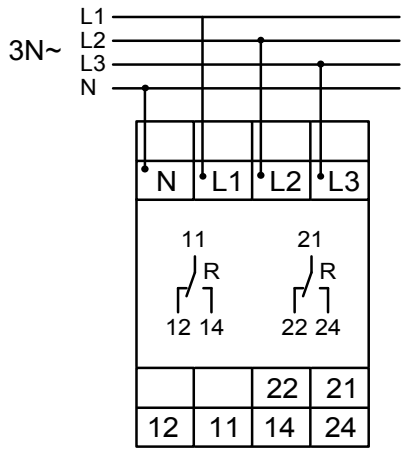
E1YM

Voltage monitoring in 1-phase and 3-phase mains with adjustable thresholdes, adjustable tripping delay, monitoring of phase failure and monitoring of phase sequence selectable.

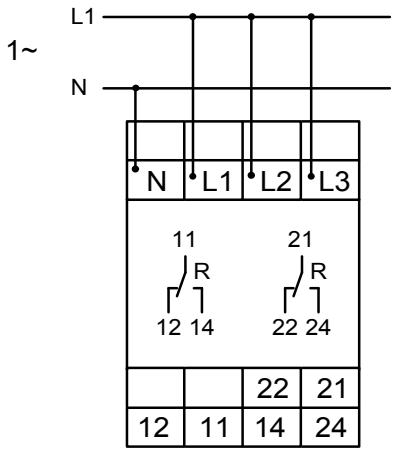
UNDER	Undervoltage monitoring
UNDER+SEQ	Undervoltage monitoring and monitoring of phase sequence
WIN	Monitoring the window between Min and Max
WIN+SEQ	Monitoring the window between Min and Max and monitoring of phase sequence

Connections

E3YU

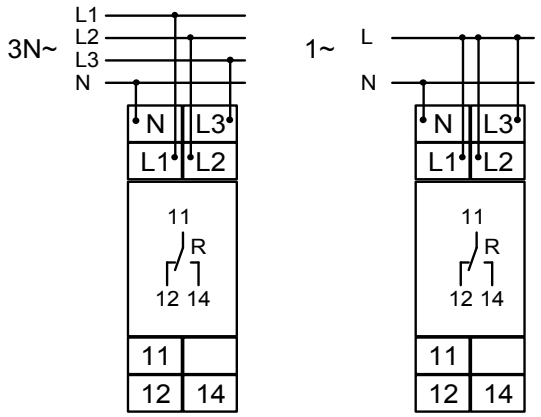


E3YU

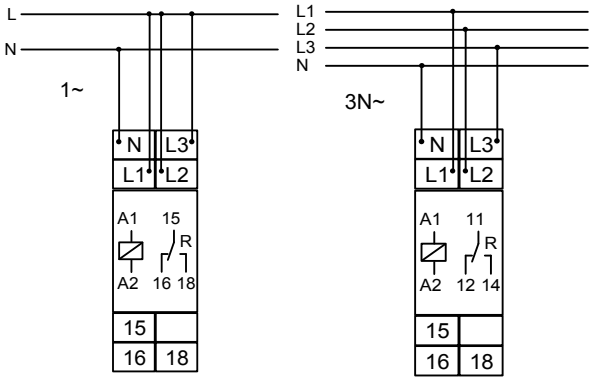


Connections

E1YU

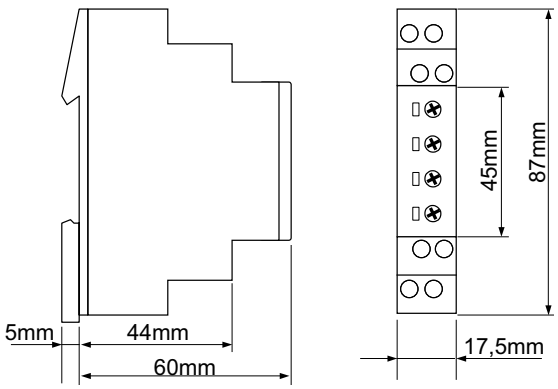


E1YM

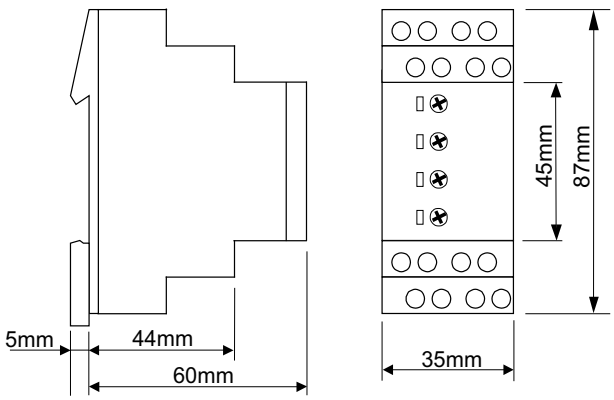


Dimensions

Width 17,5mm



Width 35mm



Sensing & Monitoring Relays **Series ENYA**

Voltage monitoring in 3- and 1-phase mains

- Voltage monitoring in accordance with VDE 0126-1-1
- Quick net error recognition
- Supply voltage = measuring voltage
- 2 CO contacts
- Width 35mm
- Installation design

types	E3YF400VFAL02
	
Art.No. (PQ1)	1341400
Art.No. (PQ10)	-
EAN13-Code	9008662005198
Measured variable	3(N)~ AC Sinus (48 to 63Hz)
Measured range	U_N = 400/230V terminals (N)-L1-L2-L3
Control	Latch • Average
Indicators (LEDs)	U/t • R
Functions	WIN WIN+LATCH
Asymmetry	-
	fixed 1,15 U_N (264V) 1,1 U_N to 1,15 U_N (10-minute-average = 253V to 264V)
Switching threshold min.	fixed 0,8 U_N (184V)
Hysteresis	
Tripping delay	U ≤ 80% U_N <200ms U 115% from U_N <200ms phase failure <20ms
Start-up suppression time	fixed 30s
Fault latch	selectable
Supply	= measuring voltage 3(N)~400/230V; terminals (N)-L1-L2-L3
Output	2 CO contacts; 250V, 5A AC
Width	35mm
Certificates	CE • UL • cUL • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque max. 1Nm
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 2, if built in 3 (in accordance with IEC 60664-1)
Accessories	-

Functions

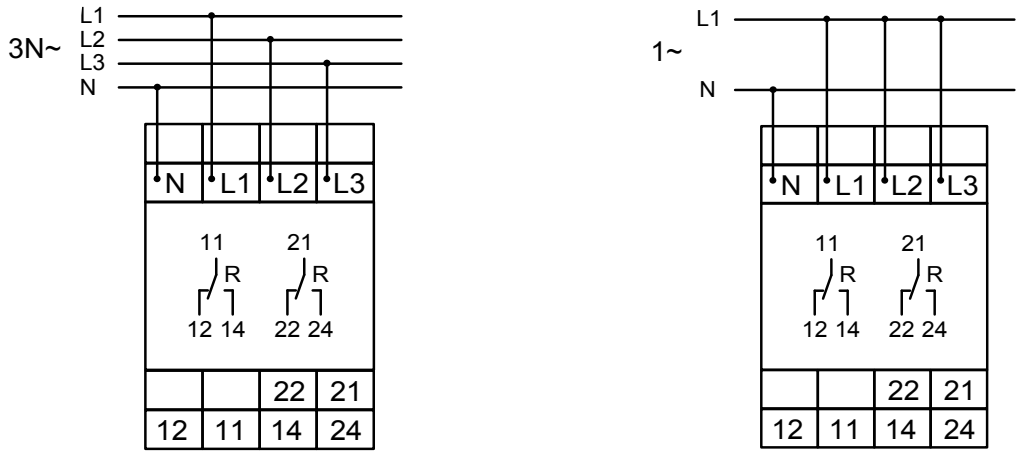
E3YF400VFAL02

Voltage monitoring in 3-phase mains in accordance with VDE 0126-1-1 with fixed tripping delay, fixed threshold, adjustable 10-minute-average and selectable fault latch by means of rotary switch.

WIN	Monitoring the fixed adjusted range
WIN+Latch	Monitoring the fixed adjusted range with fault latch

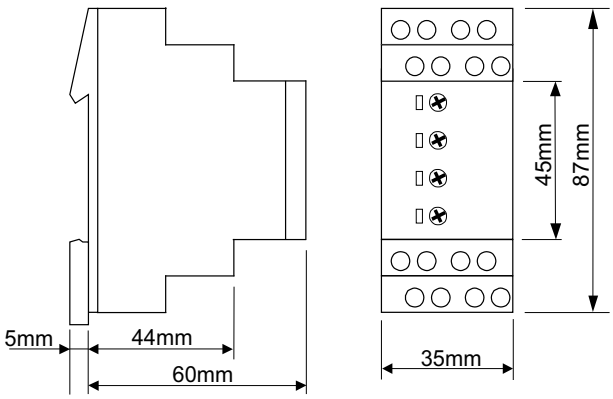
Connections

E3YF400VFAL02



Dimensions

Width 35mm



Sensing & Monitoring Relays **Series ENYA**

Voltage monitoring in 3- and 1-phase mains

- Monitoring of phase sequence, phase failure and asymmetry
- Connection of neutral wire optional
- Supply voltage = measuring voltage
- 1 CO contact; 2 CO contacts
- Width 17,5mm or 35mm
- Installation design

types	E1PF400VSY01	E3PF400VSY02
		
Art.No. (PQ1)	1340300	1341300
Art.No. (PQ10)	-	-
EAN13-Code	900866200486	900866200513
Measured variable	3(N)~ AC Sinus (48 to 63Hz)	3(N)~ AC Sinus (48 to 63Hz)
Measured range	U_N = 400/230V terminals (N)-L1-L2-L3	U_N = 400/230V terminals (N)-L1-L2-L3
Control	ASYM	ASYM
Indicators (LEDs)	U • R	U • R
Functions	Monitoring of phase sequence, phase failure and asymmetry	Monitoring of phase sequence, phase failure and asymmetry
Asymmetry	5% to 25%	5% to 25%
Switching threshold max.	-	-
Switching threshold min.	-	-
Hysteresis	-	-
Tripping delay	fix, approx. 100ms	fix, approx. 100ms
Start-up suppression time	-	-
Fault latch	-	-
Supply	= measuring voltage 3(N)~400/230V -30% to +30% terminals (N)-L1-L2-L3	= measuring voltage 3(N)~400/230V -30% to +30% terminals (N)-L1-L2-L3
Output	1 CO contact; 250V, 5A AC	2 CO contacts; 250V, 5A AC
Width	17,5mm	35mm
Certificates	CE • UL • cUL • GOST	CE • UL • cUL • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque max. 1Nm	
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end	
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 2, if built in 3 (in accordance with IEC 60664-1)	
Accessories	-	

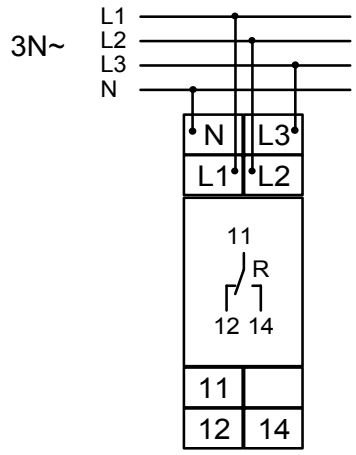
E1PF; E3PF

Monitoring of phase sequence, phase failure and asymmetry with adjustable asymmetrie, connection of neutral wire optional.

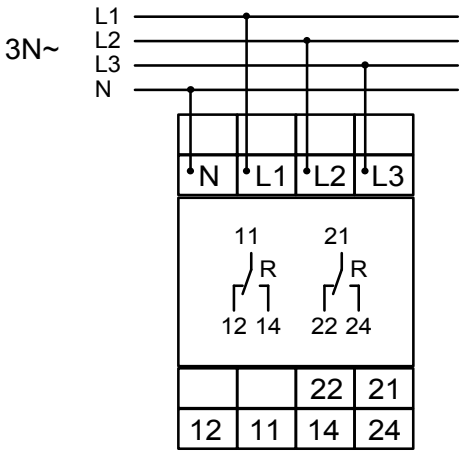
Functions

Connections

E1PF

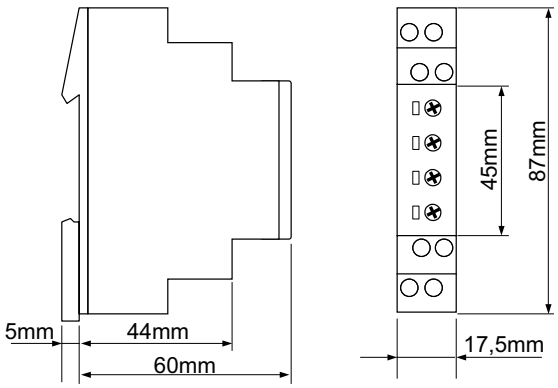


E3PF

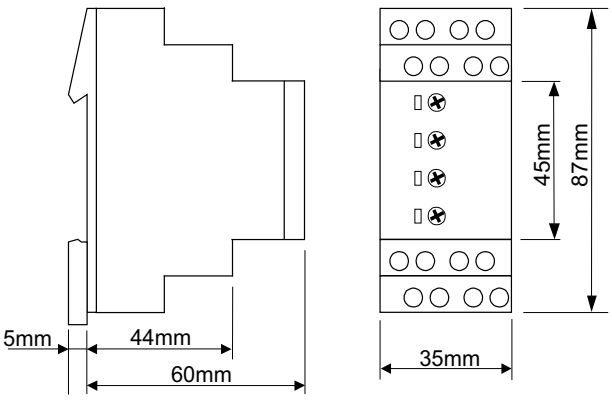


Dimensions

Width 17,5mm



Width 35mm



Sensing & Monitoring Relays **Series ENYA**

Voltage monitoring in 1-phase mains

- AC/DC voltage monitoring in 1-phase mains
- Multifunction (E1UM)
- Undervoltage monitoring (E1UU)
- Supply voltage = measuring voltage
- 1 CO contact
- Width 17,5mm
- Installation design

types	E1UM230V01	E1UU230V01
		
Art.No. (PQ1)	1340101	1340102
Art.No. (PQ10)	-	-
EAN13-Code	900866200510	900866200505
Measured variable	Voltage AC/DC AC Sinus (48 to 63Hz)	Voltage AC/DC AC Sinus (48 to 63Hz)
Measuring ranges	24V DC; terminals E-F1(+) 24V AC; terminals E-F2 230V AC; terminals E-F3	24V DC; terminals E-F1(+) 24V AC; terminals E-F2 230V AC; terminals E-F3
Controls	Max • Min • Function	Min
Indicators (LEDs)	U • Max • Min • R	U • R
Functions	UNDER WIN	UNDER
Switching threshold max.	80% to 120% from U_N	-
Switching threshold min.	75% to 115% from U_N	75% to 115% from U_N
Hysteresis	adjustable	fix 5%
Tripping delay	-	-
Start-up suppression time	-	-
Fault latch	-	-
Supply	= measuring voltage 24V DC; terminals E-F1(+) 24V AC; terminals E-F2 230V AC; terminals E-F3 -25% to +20%	= measuring voltage 24V DC; terminals E-F1(+) 24V AC; terminals E-F2 230V AC; terminals E-F3 -25% to +20%
Output	1 CO contact 250V, 5A AC	1 CO contact 250V, 5A AC
Width	17,5mm	17,5mm
Certificates	CE • UL • cUL • GOST	CE • UL • cUL • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque max. 1Nm	
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end	
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 2, if built in 3 (in accordance with IEC 60664-1)	
Accessories	-	

Functions

E1UM

AC/DC voltage monitoring in 1-phase mains with adjustable thresholds and hysteresis.

UNDER	Undervoltage monitoring
WIN	Monitoring the window between Min and Max

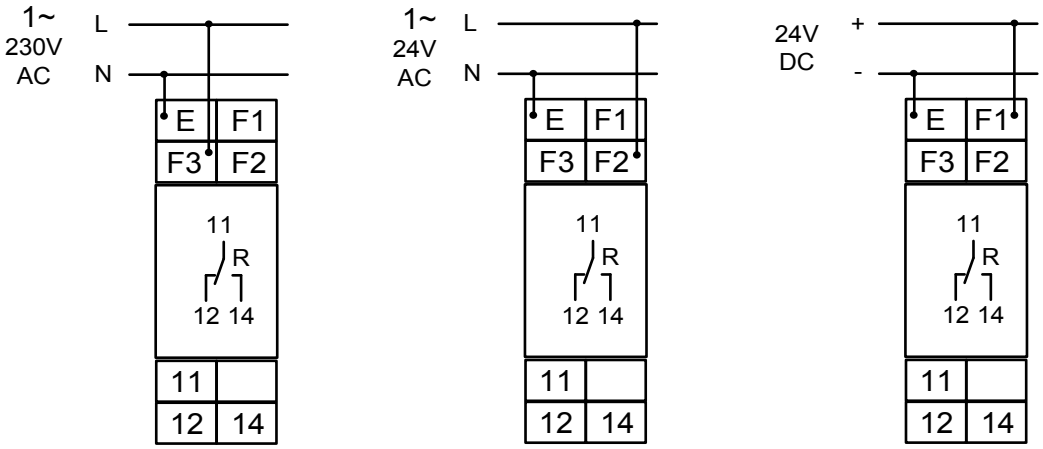
E1UU

AC/DC undervoltage monitoring in 1-phase mains with adjustable threshold and fixed hysteresis.

UNDER	Undervoltage monitoring

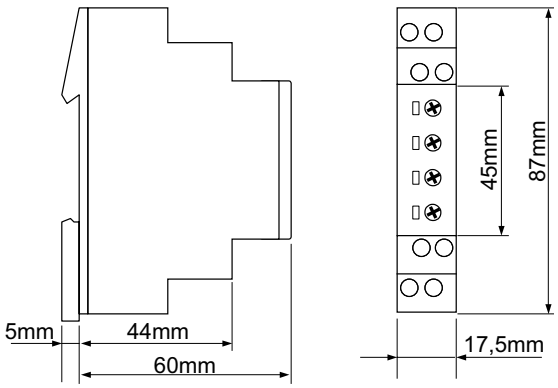
Connections

E1UM; E1UU



Dimensions

Width 17,5mm



Sensing & Monitoring Relays **Series ENYA**

Current monitoring

- AC/DC current monitoring (E3IM)
- AC current monitoring (E1IM; E1IU)
- Multifunction (E1IM; E3IM)
- Undercurrent monitoring (E1IU)
- Supply voltage 230V (E3IM - galvanically separated)
- 1 CO contact; 2 CO contacts
- Width 17,5mm; 35mm
- Installation design

types	E1IM10AACL10	E3IM10AL20	E1IU5AAC01	E1IU500mAAC01
				
Art.No. (PQ1)	1340200	1341200	1340201	1340204
Art.No. (PQ10)	-	-	-	-
EAN13-Code	900866200486	900866200594	900866200504	9008662005341
Measured variable	Current AC Sinus (48 to 63Hz)	Current AC Sinus (48 to 63Hz)	Current AC Sinus (48 to 63Hz)	Current AC Sinus (48 to 63Hz)
Measuring ranges	10A AC; terminals Li-Lk	100mA AC/DC; terminals k-I1 1A AC/DC; terminals k-I2 10A AC/DC; terminals k-I3	5A AC; terminals Li-Lk	500mA AC; terminals Li-Lk
Controls	Delay • Max • Min • Function	Start • Max • Min • Function • Delay	min	min
Indicators (LEDs)	U/t • Max • Min • R	U/t • Max • Min • R	U • R	U • R
Functions	OVER OVER+LATCH UNDER UNDER+LATCH WIN WIN+LATCH	OVER OVER+LATCH UNDER UNDER+LATCH WIN WIN+LATCH	UNDER	UNDER
Switching threshold max.	10% to 100% of I_N	10% to 100% of I_N	-	-
Switching threshold min.	5% to 95% of I_N	5% to 95% of I_N	10% to 100% of I_N	10% to 100% of I_N
Hysteresis	adjustable	adjustable	fixed, 10%	fixed, 10%
Tripping delay	0,1s to 10s	0,1s to 10s	-	-
Start-up suppression time	-	0s to 10s	-	-
Fault latch	selectable	selectable	-	-
Supply	230V AC terminals Li-N -15% to +15%	230V AC terminals A1-A2 -15% to +15%	230V AC terminals Li-N -15% to +15%	230V AC terminals Li-N -15% to +15%
Output	1 CO contact 250V, 5A AC	2 CO contacts 250V, 5A AC	1 CO contact 250V, 5A AC	1 CO contact 250V, 5A AC
Width	17,5mm	35mm	17,5mm	17,5mm
Certificates	CE • UL • cUL • GOST	CE	CE • UL • cUL • GOST	CE • UL • cUL • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque max. 1Nm			
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end			
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 2, if built in 3 (in accordance with IEC 60664-1)			
Accessories	Mounting plate MP; Current transformer Series DSW and WSW			

E1IM: DC current monitoring with adjustable thresholds, hysteresis and tripping delay.
E3IM: AC/DC current monitoring with adjustable thresholds, hysteresis and tripping delay.

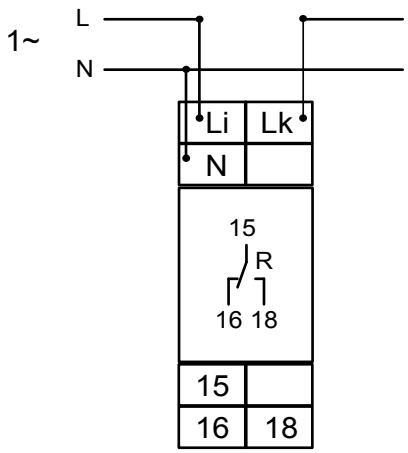
OVER	Overcurrent monitoring
UNDER	Undercurrent monitoring
WIN	Monitoring the window between Min and Max
OVER+Latch	Overcurrent monitoring with fault latch
UNDER+Latch	Undercurrent monitoring with fault latch
WIN+Latch	Monitoring the window between Min and Max with fault latch

E1IU

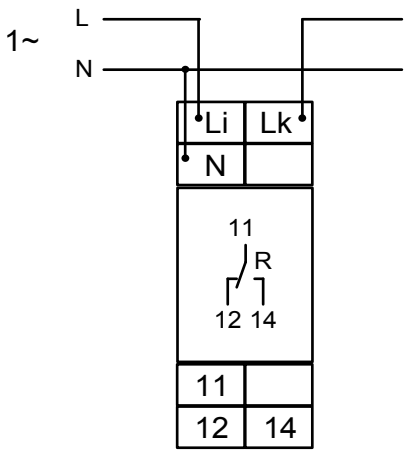
AC current monitoring with adjustable threshold and fixed hysteresis.

UNDER	Undercurrent monitoring

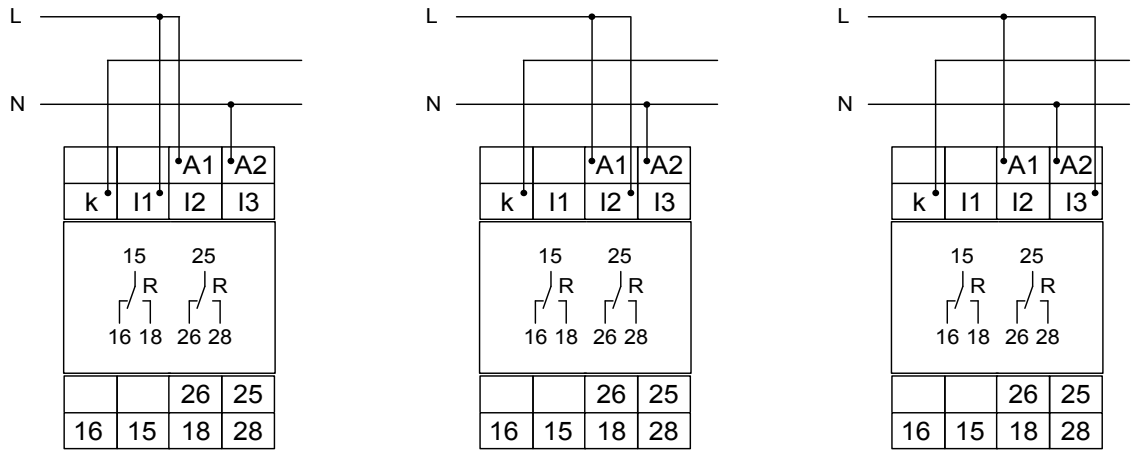
E1IM



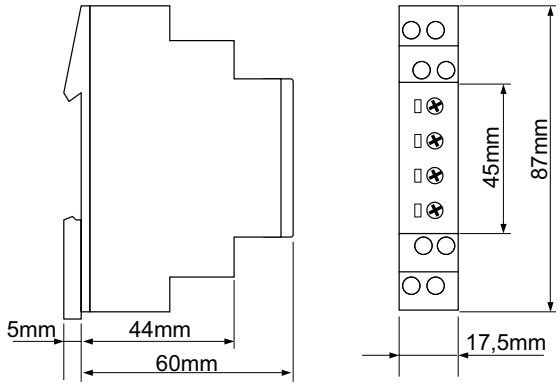
E1IU



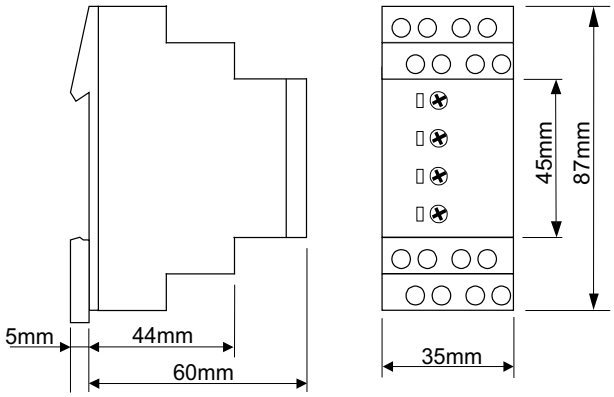
E3IM measuring range 100mA; 1A; 10A



Width 17,5mm



Width 35mm



Sensing & Monitoring Relays **Series ENYA**

Temperature monitoring

- Temperature monitoring of the motor winding for temperture sensors in accordance with DIN 44081
- Maximum 6 PTC sensors
- Short circuit monitoring of the thermistor line (selectable by means of terminals)
- Optional evaluation of one thermal contact
- Test function with integrated reset key
- Rated isolated voltage on the sensor circuit up to 690V
- 1 CO contact
- Width 35mm
- Installation design

types	E3TF01
	
Art.No. (PQ1)	1341600
Art.No. (PQ10)	-
EAN13-Code	900866200512
Measured variable	PTC (motortemperature) max. 6 PTC probes
Measured range	total resistance cold <1,5kΩ terminals T1-T2 or T1-T3
Measuring voltage	≤7,5V DC by R ≤4,0kΩ (in accordance with EN 60947-8)
Controls	Test/Reset button
Indicators (LEDs)	U • Failure
Functions	Overtemperature
Response value	≥3,6kΩ
Release value	≤1,8kΩ
Short circuit monitoring	<20Ω
Fault latch	yes
Reset	internal or external terminals R1-R2
Supply	230VAC terminals A1-A2
Output	1 CO contacts 250V, 5A AC
Width	35mm
Certificates	CE • UL • cUL • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque max. 1Nm
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 2, if built in 3 (in accordance with IEC 60664-1)
Accessories	-

E3TF01

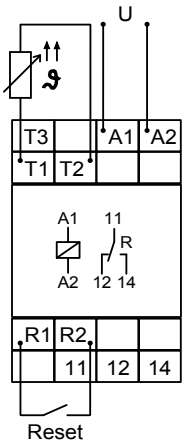
Functions

Temperature monitoring of the motor winding (max. 6 PTC) with fault latch for temperature sensors in accordance with DIN 44081, short circuit monitoring of the thermistor line (selectable by means of terminals), integrated test/reset key.

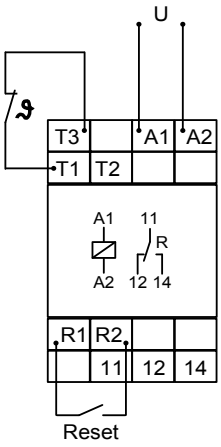
Note:
Only one of this circuit versions (either monitoring of the temperature sensor or monitoring of the thermal contact) can be executed.

Connections

Monitoring Temperature sensor

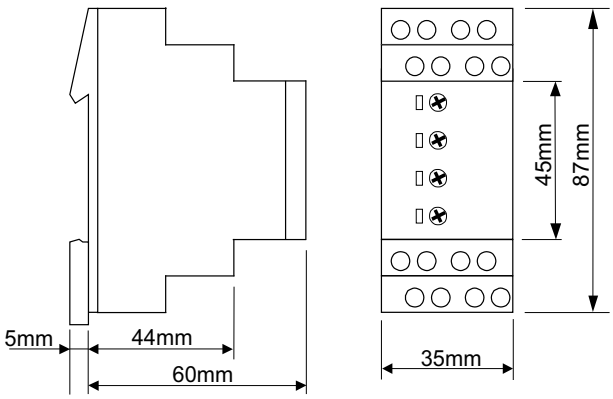


Monitoring Thermal contact



Dimensions

Width 35mm



Sensing & Monitoring Relays **Series ENYA**

Level monitoring

- Level monitoring of conductive liquids
- Multifunction
- Reinforced insulation of the measuring circuit
- 1 CO contact
- Width 35mm
- Installation design

types	E3LM10
	
Art.No. (PQ1)	1341500
Art.No. (PQ10)	-
EAN13-Code	900866200509
Measured variable	level with conductiv probe
Measured range	0,25 to 100kΩ
Probe voltage	12V AC
Probe current	max. 7mA
Wiring distance	max. 1000m (adjustment <50%) max. 100m (adjustment <100%) capacity of cable 100nF/km
Control	Delay ON • Delay OFF • Sensitivity • Function
Indicators (LEDs)	U • R
Functions	Pump up Pump down
trigger level	0,25 to 100 kΩ (Sensitivity)
Tripping delay	0,5s to 10s
Turn-off delay	0,5s to 10s
Supply	230VAC terminals A1-A2
Output	1 CO contact 250V, 5A AC
Width	35mm
Certificates	CE • UL • cUL • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque max. 1Nm
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 2, if built in 3 (in accordance with IEC 60664-1)
Accessories	Conductive probes (types SK1, SK2, SK3)

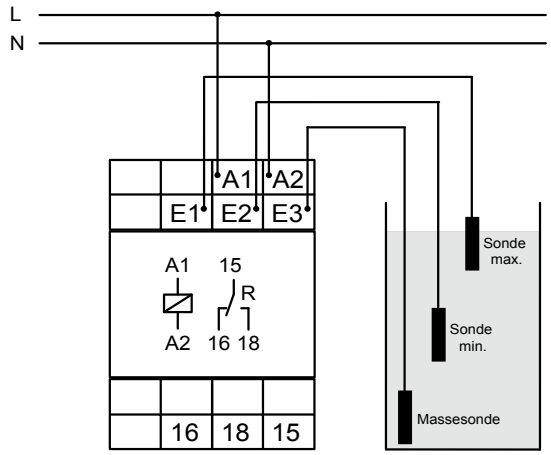
E3LM10

Level monitoring of conductive liquid, timing for tripping delay and turn-off delay seperatly adjustable and the following functions (selectable by means of rotary switch):

Pump up	pump up or minimum monitoring
Pump down	pump down or maximum monitoring

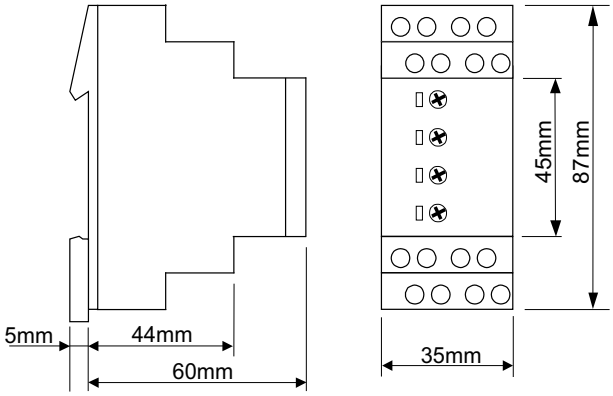
Functions

Connections



Dimensions

With 35mm



Sensing & Monitoring Relays **Series KAPPA**

Voltage and current monitoring of mains

- AC voltage monitoring in 1- and 3-phase mains (K3YM)
- AC/DC voltage monitoring in 1-phase mains (K3UM)
- AC current monitoring in 1-phase mains (K3IM)
- Monitoring of phase sequence, phase failure and asymmetry (K3PF)
- Monitoring of phase failure; monitoring of phase sequence selectable (K3YM)
- Multifunction (K3YM; K3IM; K3UM)
- Supply voltage = measuring voltage (K3PF; K3YM; K3UM)
- Supply voltage = 230V (K3IM)
- 2 CO contacts; Width 38mm; Plug-in mounting

types	K3UM24VDC02	K3UM230VAC02	K3IM5AACL20 230V	K3PF400VSY02	K3YM400VSY20
					
Art.No. (PQ1)	1380106	1380107	1380202	1380301	1380402
Art.No. (PQ10)	-	-	-	-	-
EAN13-Code	9008662005402	9008662005396	9008662005433	9008662005426	9008662005419
Measured variable	Voltage DC	Voltage AC AC Sinus (48 to 63Hz)	Current AC AC Sinus (48 to 63Hz)	3(N)~ AC Sinus (48 to 63Hz)	3(N)~ AC Sinus (48 to 63Hz)
Measured range	24V DC pins S5-S7	230V AC pins S5-S7	5A AC pins S5-S7	U_N = 400/230V pins (S10)-S5-S6-S7	U_N = 400/230V pins (S10)-S5-S6-S7
Control	Max • Min • Function	Max • Min • Function	Start • Max • Min • Function • Delay	ASYM	ASYM • Max • Min • Function / Delay
Indicators (LEDs)	U • Max • Min • R	U • Max • Min • R	U/t • Max • Min • R	U • R	ASYM • SEQ • Max • Min • R
Functions	UNDER • WIN	UNDER • WIN	OVER • OVER+Latch • UNDER • UNDER+Latch • WIN • WIN+Latch	Monitoring of phase sequence, phase failure and asymmetry	UNDER • UNDER+SEQ • WIN • WIN+SEQ
Asymmetry	-	-	-	5% to 30%; Off	5% to 30%; Off
Switching threshold max.	80% to 130% of I_N	80% to 120% of I_N	10% to 100% of I_N	-	80% to 130% of U_N
Switching threshold min.	75% to 125% of I_N	70% to 110% of I_N	5% to 95% of I_N	-	70% to 120% of U_N
Hysteresis	adjustable	adjustable	adjustable	-	adjustable
Tripping delay	-	-	0,1s to 10s	-	0,1s to 10s
Start-up suppression time	-	-	0s to 10s	-	-
Fault latch	-	-	selectable	-	-
Supply	= measuring voltage 3(N)~400/230V -30% to +30% pins (S10)-S5-S6-S7	= measuring voltage 3(N)~400/230V -30% to +30% pins (S10)-S5-S6-S7	230V AC -15% to +10% pins S2-S10	= measuring voltage 3(N)~400/230V -30% to +30% pins (S10)-S5-S6-S7	= measuring voltage 3(N)~400/230V -30% to +30% pins (S10)-S5-S6-S7
Output	2 CO contacts 250V, 5A AC	2 CO contacts 250V, 5A AC	2 CO contacts 250V, 5A AC	2 CO contacts 250V, 5A AC	2 CO contacts 250V, 5A AC
Width	38mm	38mm	38mm	38mm	38mm
Certificates	CE • GOST	CE • GOST	CE • GOST	CE • GOST	CE • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on 11-pole screw terminal socket in accordance with IEC 60067-1-18a • Mounting position any				
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 2, if built in 3 (in accordance with IEC 60664-1)				
Accessories	-				

Functions

K3YM: Voltage monitoring in 1-phase- and 3-phase mains with adjustable thresholds, adjustable tripping delay, monitoring of phase failure and monitoring of phase sequence selectable.

K3IM: AC current monitoring in 1-phase mains with adjustable thresholds, adjustable hysteresis and tripping delay.

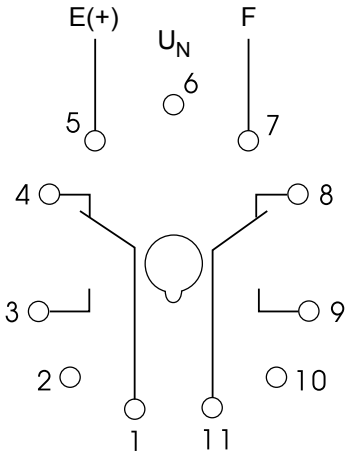
K3UM: AC/DC voltage monitoring in 1-phase mains with adjustable thresholds and adjustable hysteresis.

K3PF: Monitoring of phase sequence, phase failure and asymmetry with adjustable asymmetry, connection of neutral wire optional.

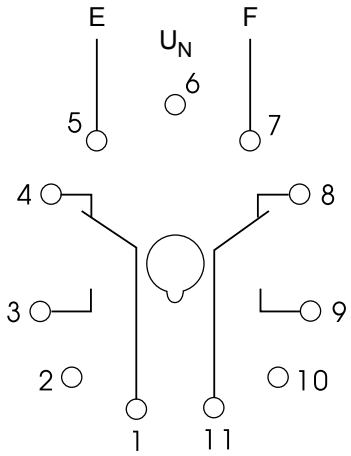
OVER	Overcurrent monitoring
UNDER	Undercurrent or undervoltage monitoring
WIN	Monitoring the window between Min and Max
OVER+Latch	Overcurrent monitoring with fault latch
UNDER+Latch	Undercurrent monitoring with fault latch
WIN+Latch	Monitoring the window between Min and Max with fault latch
UNDER+SEQ	Undervoltage monitoring and monitoring of phase sequence
WIN+SEQ	Monitoring the window between Min and Max and monitoring of phase sequence

Connections

K3UM24VDC02

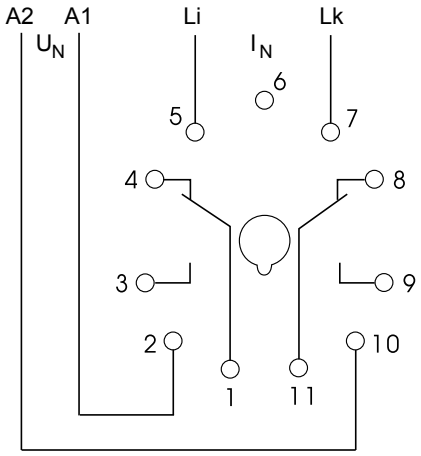


K3UM230VAC02

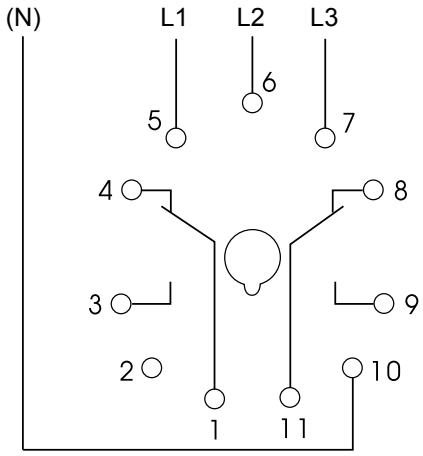


Connections

K3IM5AACL20 230V

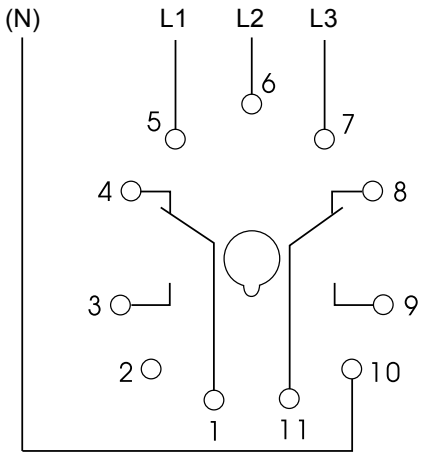


K3PF400VSY02



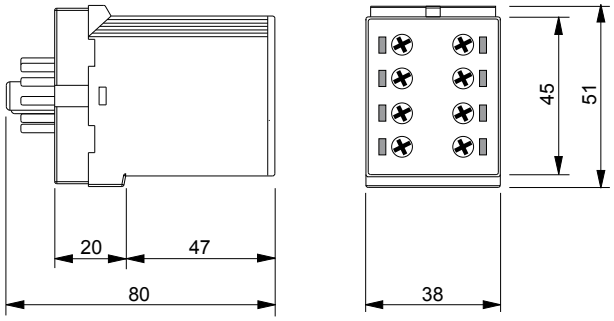
Connections

K3YM400VSY20



Width 38mm

Dimensions



Sensing & Monitoring Relays **Series TREND**

Voltage monitoring in 3-phase mains

- Windowfunction (TPW400VN4X)
- Windowfunction with integrated phase sequence monitoring (TPW..VSN4X)
- Connection of neutral wire optional
- Supply voltage selectable via PowerModules, DC power supply
- 1 CO contact
- Width 45mm
- Industrial design

types	TPW400VN4X	TPW115VSN4X	TPW230VSN4X	TPW400VSN4X
				
Art.No. (PQ1)	2401410	2401210	2401310	2400008
Art.No. (PQ10)	-	-	-	-
EAN13-Code	900866200305	900866200303	900866200304	900866200298
Measured variable	3(N)~ AC Sinus (48 to 63Hz)	3(N)~ AC Sinus (48 to 63Hz)	3(N)~ AC Sinus (48 to 63Hz)	3(N)~ AC Sinus (48 to 63Hz)
Measured range	U_N = 400/230V terminals (N)-L1-L2-L3	U_N = 115/66V terminals (N)-L1-L2-L3	U_N = 230/133V terminals (N)-L1-L2-L3	U_N = 400/230V terminals (N)-L1-L2-L3
Controls	max • min • Delay (t_1)	max • min • Delay (t_1)	max • min • Delay (t_1)	max • min • Delay (t_1)
Indicators (LEDs)	max • R • min	max • R • min	max • R • min	max • R • min
Functions	WIN	WIN+SEQ	WIN+SEQ	WIN+SEQ
Asymmetry	crabwise by U_{min}/U_{max}	crabwise by U_{min}/U_{max}	crabwise by U_{min}/U_{max}	crabwise by U_{min}/U_{max}
Switching threshold max.	-20% to 30% from U_N	-20% to 30% from U_N	-20% to 30% from U_N	-20% to 30% from U_N
Switching threshold min.	-30% to 20% from U_N	-30% to 20% from U_N	-30% to 20% from U_N	-30% to 20% from U_N
Tripping delay	0,1s to 10s	0,1s to 10s	0,1s to 10s	0,1s to 10s
Start-up suppression time	-	-	-	-
Fault latch	-	-	-	-
Supply	PowerModule TR2 or SNT2 terminals A1-A2	PowerModule TR2 or SNT2 terminals A1-A2	PowerModule TR2 or SNT2 terminals A1-A2	PowerModule TR2 or SNT2 terminals A1-A2
Output	1 CO contact 250V, 5A AC	1 CO contact 250V, 5A AC	1 CO contact 250V, 5A AC	1 CO contact 250V, 5A AC
Width	45mm	45mm	45mm	45mm
Certificates	CE	CE	CE	CE
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required) • IP rating IP20 • Tightening torque max. 1Nm			
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end			
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 3 (in accordance with IEC 60664-1)			
Accessories	PowerModules TR2 (12 to 440V AC) • DC power supply SNT2 24VDC			

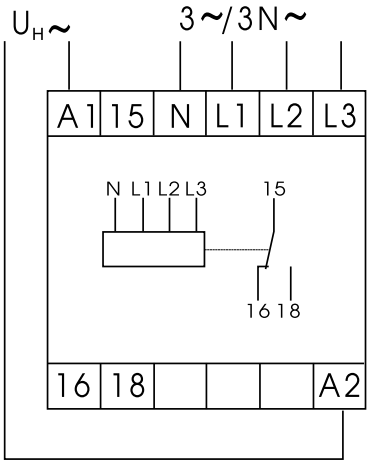
Functions

Voltage monitoring in 3-phase mains with adjustable setpoints, adjustable tripping delay and phase sequence monitoring.

WIN	Monitoring the window between Min and Max
WIN+SEQ	Monitoring the window between Min and Max and phase sequence monitoring

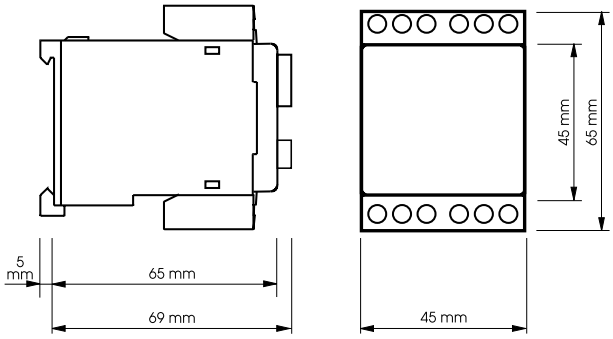
Connections

TPW...N4X; TPW...SN4X



Dimensions

Width 45mm



Sensing & Monitoring Relays **Series TREND**

Voltage monitoring in 3-phase mains

- Phase sequence, phase loss and asymmetry monitoring with fixed asymmetry
- No connection of neutral wire required
- 1 CO contact
- Width 45mm
- Industrial design

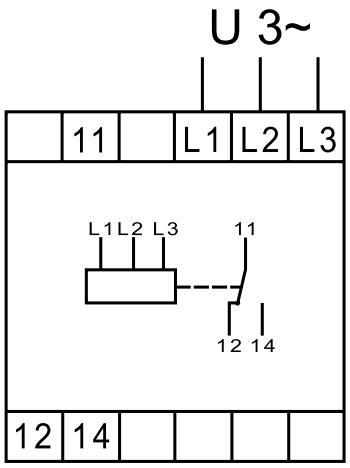
types	TPF230VS4X	TPF400VS4X
		
Art.No. (PQ1)	2442153	2402058
Art.No. (PQ10)	-	-
EAN13-Code	900866200315	900866200306
Measured variable	3N~ AC Sinus (48 to 63Hz)	3N~ AC Sinus (48 to 63Hz)
Measured range	U_N = 230V/132V terminals L1-L2-L3	U_N = 400V/230V terminals L1-L2-L3
Controls	-	-
Indicators (LEDs)	R	R
Functions	Monitoring of phase sequence and phase failure	Monitoring of phase sequence and phase failure
Asymmetry	fixed, approx. 10%	fixed, approx. 10%
Switching threshold max.	-	-
	-	-
Tripping delay	-	-
Start-up suppression time	-	-
Fault latch	-	-
Supply	= measuring voltage; 3~ 230V ±15% terminals L1-L2-L3	= measuring voltage; 3~ 400V ±15% terminals L1-L2-L3
Output	1 CO contact 250V, 5A AC	1 CO contact 250V, 5A AC
Width	45mm	45mm
Certificates	CE	CE
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required) • IP rating IP20 • Tightening torque max. 1Nm	
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end	
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 3 (in accordance with IEC 60664-1)	
Accessories	-	

Functions

Phase sequence, phase loss and asymmetry monitoring with fixed asymmetry, no connection of neutral wire necessary.

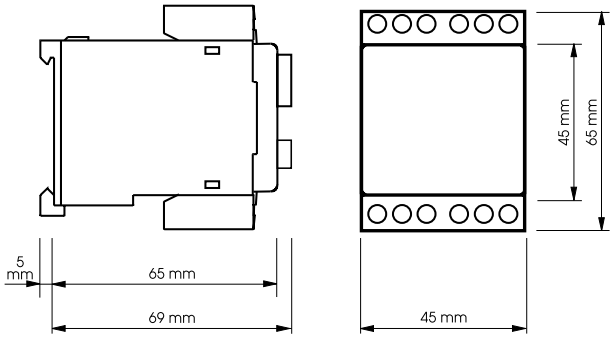
Connections

TPF...S4X



Dimensions

Width 45mm



Sensing & Monitoring Relays **Series TREND**

Voltage monitoring in 1-phase mains

- Windowfunction or reverse Windowfunction (TUW4X)
- 1 trigger level with adjustable hysteresis OVER/UNDER (TUH4X)
- Position of output relay selectable
- DIP-Switch for adjusting to AC/DC monitoring and relay position
- Fault latch
- Supply voltage selectable via PowerModules, DC power supply
- 1 CO contact
- Width 45mm
- Industrial design

types	TUW4X	TUH4X
		
Art.No. (PQ1)	2420510	2422510
Art.No. (PQ10)	-	-
EAN13-Code	900866200308	900866200309
Measured variable	Voltage AC/DC AC Sinus (48 to 63Hz)	Voltage AC/DC AC Sinus (48 to 63Hz)
Measuring ranges (U_N)	24V AC/DC; terminals E1-F1(+) 115V AC/DC; terminals E1-F2(+) 230V AC/DC; terminals E1-F3(+) 440V AC/DC; terminals E2-F3(+)	30V AC/DC; terminals E1-F1(+) 60V AC/DC; terminals E1-F2(+) 300V AC/DC; terminals E1-F3(+) 600V AC/DC; terminals E2-F3(+)
Controls	max • min • Delay (t_1) • Start (t_2) • AC/DC • REL/$\overline{\text{REL}}$ • Start On/Off	U_S • Hyst • Delay (t_1) • Start (t_2) • AC/DC • REL/$\overline{\text{REL}}$ • Start On/Off
Indicators (LEDs)	max • R • min	U • R
Functions	WIN • reverse WIN	1 trigger level with hysteresis (OVER/UNDER)
Switching threshold max.	-20% to 30% from U_N	trigger level U_S: 10% to 100% from U_N
	-30% to 20% from U_N	Hysteresis: 5% to 50% from U_S
Tripping delay	t_1 = 0,1s to 10s	t_1 = 0,1s to 10s
Start-up suppression time	t_2 = 0,1s to 10s	t_2 = 0,1s to 10s
Fault latch	selectable	selectable
Supply	PowerModule TR2 or SNT2 terminals A1-A2	PowerModule TR2 or SNT2 terminals A1-A2
Output	1 CO contact 250V, 5A AC	1 CO contact 250V, 5A AC
Width	45mm	45mm
Certificates	CE	CE
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required) • IP rating IP20 • Tightening torque max. 1Nm	
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end	
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 3 (in accordance with IEC 60664-1)	
Accessories	PowerModules TR2 (12 to 440V AC) • DC power supply SNT2 24VDC	

Functions

TUW:
AC/DC voltage monitoring in 1-phase mains with adjustable thresholds, timing for start-up suppression and tripping delay separately adjustable and the following functions (selectable by means of DIP switch)

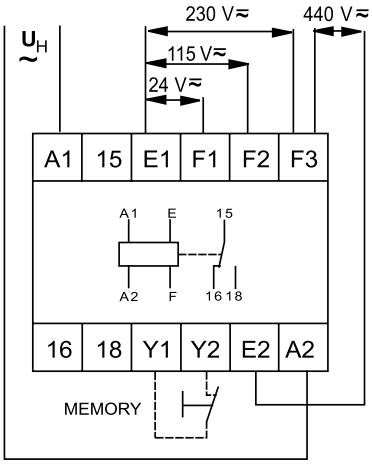
DIP-Switch 1: AC/DC preselection
DIP-Switch 2: Monitoring inside (W) or outside (R) the window between U_{min} and U_{max}
DIP-Switch 3: ON Relay picks up during the start-up suppression time (t2)
OFF Relay remains in off position during the start-up suppression time (t2)

TUH:
AC/DC overvoltage monitoring in 1-phase mains with adjustable threshold, timing for start-up suppression and tripping delay separately adjustable and adjustable hysteresis and the following functions (selectable by means of DIP-switch)

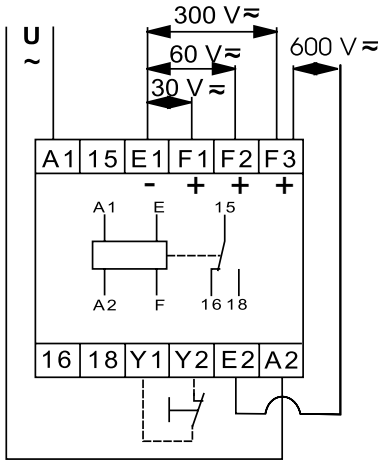
DIP-Switch 1: AC/DC preselection
DIP-Switch 2: REL relay in on-position if error occurs $\overline{\text{REL}}$ relais in off-position if error occurs
DIP-Switch 3: ON Relay pics up during the start-up suppression time (t2)
OFF Relay remains in off position during the start-up suppression time (t2)

Connections

TUW

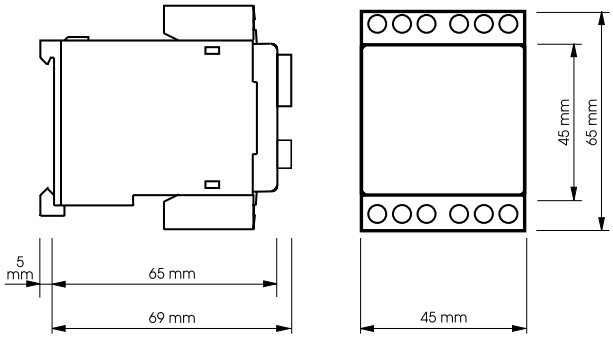


TUH



Dimensions

Width 45mm



Sensing & Monitoring Relays **Series TREND**

Current monitoring in 1-phase mains

- Windowfunction (TIW4X)
- 2 trigger level (TIF)
- Hysteresis OVER/UNDER (TIH4X)
- Position of output relay selectable (TIW4X; TIH4X)
- DIP-Switch for adjusting to AC/DC monitoring and relay position (TIW4X; TIH4X)
- Fault latch (TIW4X; TIH4X)
- Permessible continous load on measuring input 15A(TIF)
- Supply voltage selectable via PowerModules, DC power supply (TIW4X; TIH4X)
- 1 CO contact; 2 CO contacts; Width 45mm; Industrial design

types	TIW4X	TIH4X	TIF30-300mAAC4X
			
Art.No. (PQ1)	2430890	2432610	2432894
Art.No. (PQ10)	-	-	-
EAN13-Code	900866200311	900866200312	900866200313
Measured variable	Current AC/DC AC Sinus (48 to 63Hz)	Current AC/DC AC Sinus (48 to 63Hz)	Current AC AC Sinus (48 to 63Hz)
Measuring ranges	100mA AC/DC; terminals K-I3(+) 1A AC/DC; terminals K-I2(+) 10A AC/DC; terminals K-I1(+)	100mA AC/DC; terminals K-I3(+) 1A AC/DC; terminals K-I2(+) 10A AC/DC; terminals K-I1(+)	15A AC; terminals K-I
Controls	max • min • Delay (t_1) • Start (t_2) • AC/DC • REL/$\overline{\text{REL}}$ • Start On/Off	I_S • Hyst • Delay (t_1) • Start (t_2) • AC/DC • REL/$\overline{\text{REL}}$ • Start On/Off	-
Indicators (LEDs)	max • R • min	U • R	U • R
Functions	WIN	1 trigger level with hysteresis (OVER/UNDER)	trigger level with hysteresis (OVER/UNDER)
Switching threshold max.	10% to 100% from I_N	trigger level I_S: 10% to 100% from I_N	fix, 30mA fix, 300mA
	5% to 50% from I_N	Hysteresis: 5% to 50% from I_S	Hysteresis: fixed, approx. 5%
Tripping delay	t_1 = 0,1s to 10s	t_1 = 0,1s to 10s	-
Start-up suppression time	t_2 = 0,1s to 10s	t_2 = 0,1s to 10s	-
Fault latch	selectable	selectable	-
Supply	PowerModule TR2 or SNT2 terminals A1-A2	PowerModule TR2 or SNT2 terminals A1-A2	230V AC terminals A1-A2
Output	1 CO contact 250V, 5A AC	1 CO contact 250V, 5A AC	2 CO contacts 250V, 5A AC
Width	45mm	45mm	45mm
Certificates	CE	CE	CE
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required) • IP rating IP20 • Tightening torque max. 1Nm		
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end		
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 3 (in accordance with IEC 60664-1)		
Accessories	PowerModules TR2 (12 to 440V AC) • Current Transformers DWS and WSW • DC power supply SNT2 24VDC		

Functions

TIW: AC/DC current monitoring in 1-phase mains with adjustable thresholds, timing for start-up suppression and tripping delay separately adjustable and the following functions (selectable by means of DIP-switch)

DIP-Switch 1:	AC/DC preselection	
DIP-Switch 2:	W	Monitoring inside (W) the window between I_{min} and I_{max}
	R	Monitoringoutside (R) the window between I_{min} and I_{max}
DIP-Switch 3:	ON	Relay pics up during the start-up suppression time (t2)
	OFF	Relay remains in off position during the start-up suppression time (t2)

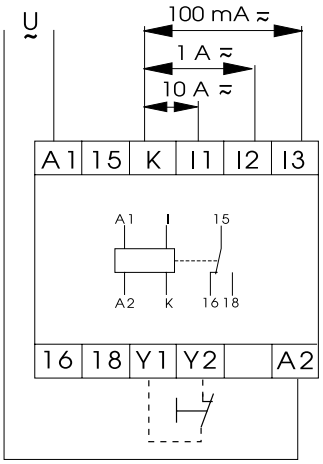
TIH: AC/DC overcurrent monitoring in 1-phase mains with adjustable threshold, timing for start-up suppression and tripping delay separately adjustable and adjustable hysteresis and the following functions (selectable by means of DIP-switch)

DIP-Switch 1:	AC/DC preselection	
DIP-Switch 2:	REL relay in on-position if error occurs. $\overline{\text{REL}}$ relais in off-position if error occurs	
DIP-Switch 3:	ON	Relay pics up during the start-up suppression time (t2)
	OFF	Relay remains in off position during the start-up suppression time (t2)

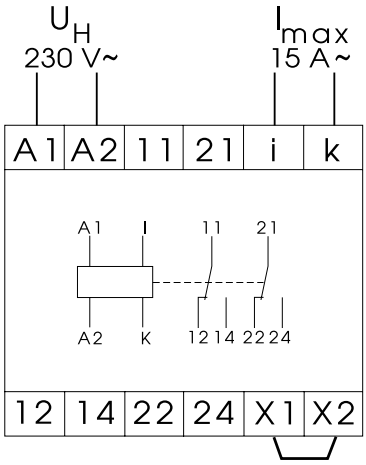
TIF: Consumer failure detection for AC-current in 1-phase mains with 2 fixed thresholds (selectable via bridge X1-X2)

Connections

TIW4x; TIH4X

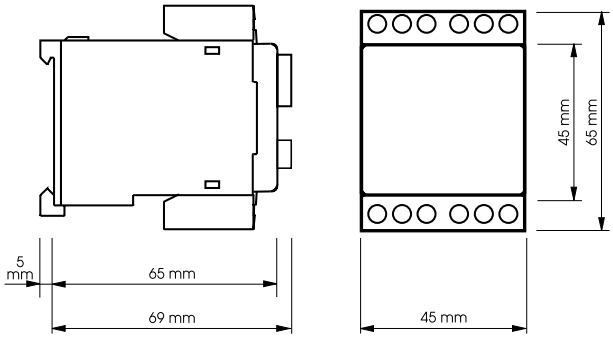


TIF30-300mAAC4X



Dimensions

Width 45mm



Sensing & Monitoring Relays **Series TREND**

Temperature monitoring

- Temperature monitoring of motor winding
- Maximum of 6 PTC probes per measuring ciurcit
- 2 measuring circuits (TDT4X)
- Fault latch for measuring circuit 2 (TDT4X)
- Short circuit monitoring of PTC circuits
- Supply voltage selectable via PowerModules, DC power supply (TDT4X)
- 1 NO contact; 1 CO contact per measuring circuit (TDT4X)
- Width 22,5mm or 45mm
- Industrial design

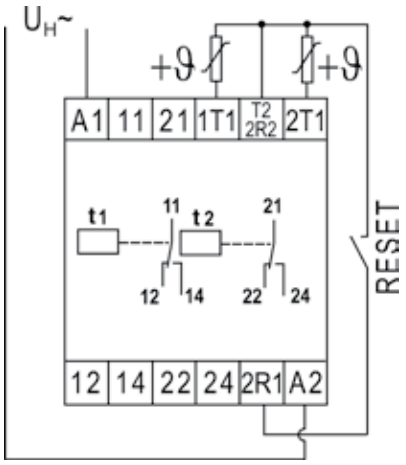
types	TDT4X	TT2X 24VAC	TT2X 230VAC
			
Art.No. (PQ1)	2480090	2480052	2480054
Art.No. (PQ10)	-	-	-
EAN13-Code	900866200328	900866200325	900866200327
Measured variable	2 x PTC (motortemperature) max. 2 x 6 PTC probes	PTC (motortemperature) max. 6 PTC probes	PTC (motortemperature) max. 6 PTC probes
Measured range	total resistance cold <1.5kΩ terminals 1T1-T2 (circuit 1) terminals 2T1-T2 (circuit 2)	total resistance cold <1.5kΩ terminals T1-T2	total resistance cold <1.5kΩ terminals T1-T2
Measuring voltage	max. 12V DC	max. 12V DC	max. 12V DC
Controls	Test/Reset button	-	-
Indicators (LEDs)	U • Failure 1T1-T2 • Failure 2T1-T2	U • Failure	U • Failure
Functions	Overtemperature	Overtemperature	Overtemperature
Response value	3,3kΩ	3,3kΩ	3,3kΩ
Release value	1,8kΩ	1,8kΩ	1,8kΩ
Short circuit monitoring	<15Ω	<15Ω	<15Ω
Fault latch	yes (circuit 2)	-	-
Reset	internal or external terminals 2R1-T2/2R2	-	-
Supply	PowerModule TR2 or SNT2 terminals A1-A2	24VAC terminals A1-A2	230VAC terminals A1-A2
Output	1 CO contact each circuit 250V, 5A AC	1 NO contact 250V, 5A AC	1 NO contact 250V, 5A AC
Width	45mm	22,5mm	22,5mm
Certificates	CE	CE	CE
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required) • IP rating IP20 • Tightening torque max. 1Nm		
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end		
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 3 (in accordance with IEC 60664-1)		
Accessories	PowerModules TR2 (12 to 440V AC) • DC power supply SNT2 24VDC		

Functions

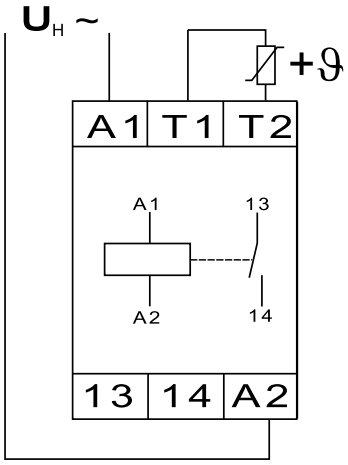
Temperature monitoring of motor winding (max. 6 PTC) with fault latch (only measuring circuit 2) for probes in accordance with DIN 44081
Short circuit monitoring of PTC circuits

Connections

TDT4X

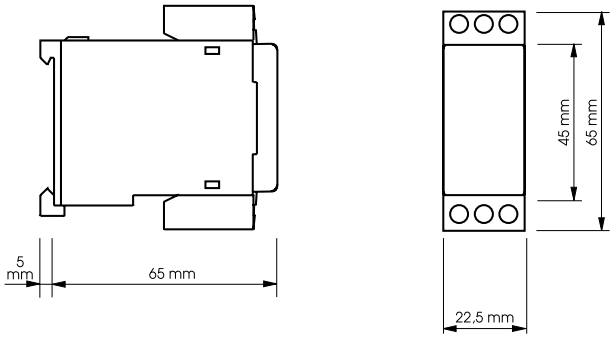


TT2X

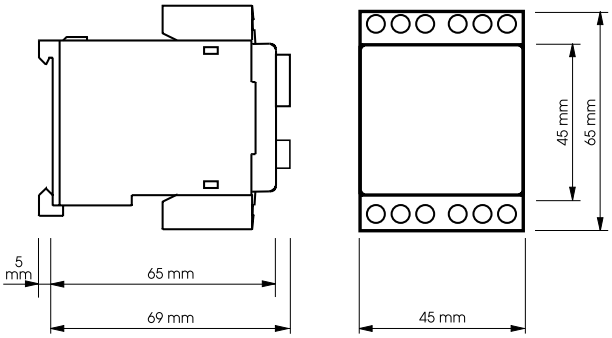


Dimensions

Width 22,5mm



Width 45mm



Sensing & Monitoring Relays **Series TREND**

Level monitoring

- Level monitoring of conductive substances
- Pump up or minimum monitoring
- Pump down or maximum monitoring
- 1 CO contact
- Width 45mm
- Industrial design

types	TLH4X 24VAC	TLH4X 230VAC	TLC4X 230VAC
			
Art.No. (PQ1)	2472012	2472014	2472114
Art.No. (PQ10)	-	-	-
EAN13-Code	900866200317	900866200318	900866200323
Measured variable	conductiv probe min. conductiv probe max. terminals E1-E2-E3	conductiv probe min. conductiv probe max. terminals E1-E2-E3	conductiv probe min. conductiv probe max. terminals E1-E2-E3
Measuring ranges	0,25 to 5kΩ / 5 to 100kΩ	0,25 to 5kΩ / 5 to 100kΩ	5 to 100kΩ
Probe voltage	max. 16VAC	max. 16VAC	max. 16VAC
Probe current	max. 7mA / max. 200µA	max. 7mA / max. 200µA	max. 200µA
Wiring distance	max. 1000m / max. 100m	max. 1000m / max. 100m	max. 100m
Control	Sensitivity • Delay on (t_1) • Delay off (t_2) • Function • Measuring ranges	Sensitivity • Delay on (t_1) • Delay off (t_2) • Function • Measuring ranges	Sensitivity • Function
Indicators (LEDs)	U • R	U • R	U • R
Functions	Pump up Pump down	Pump up Pump down	Pump up Pump down
Trigger level	0,25 to 5kΩ / 5 to 100kΩ (Sensitivity)	0,25 to 5kΩ / 5 to 100kΩ (Sensitivity)	5 to 100kΩ (Sensitivity)
Tripping delay	0,5s to 10s (t_1)	0,5s to 10s (t_1)	2s fix
Turn-off delay	0,5s to 10s (t_2)	0,5s to 10s (t_2)	2s fix
Supply	24VAC terminals A1-A2	230VAC terminals A1-A2	230VAC terminals A1-A2
Output	1 CO contact 250V, 5A AC	1 CO contact 250V, 5A AC	1 CO contact 250V, 5A AC
Width	45mm	45mm	45mm
Certificates	CE	CE	CE
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required) • IP rating IP20 • Tightening torque max. 1Nm		
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end		
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 3 (in accordance with IEC 60664-1)		
Accessories	conductive probes (types SK1, SK2, SK3)		

TLH:

Level monitoring of conductive substances, timing for tripping delay and turn-off delay separately adjustable and the following functions:

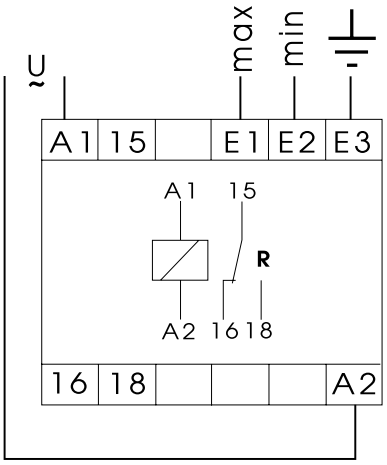
Pump down	Pump down or maximum monitoring
Pump up	Pump up or minimum monitoring

TLC:

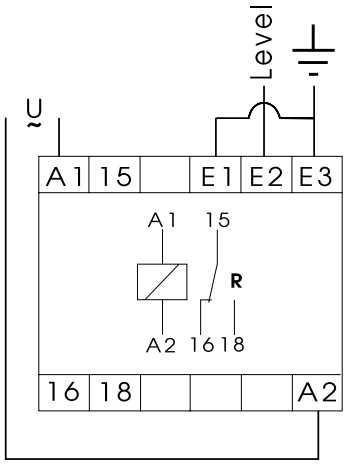
Level monitoring of conductive substances with adjustable threshold, fixed tripping delay and turn-off delay and the following functions:

Pump down	Pump down or maximum monitoring
Pump up	Pump up or minimum monitoring

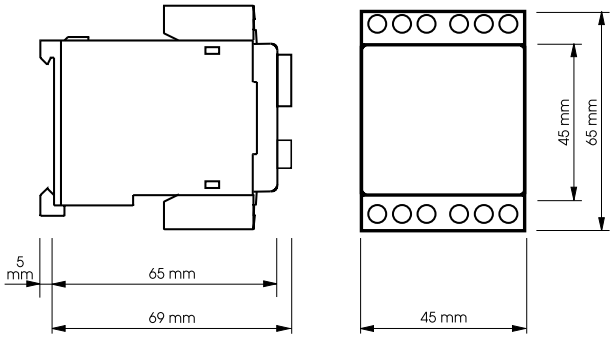
Connection of 3-probes (pump up/down)



Connection of 2-probes (Minimum-/Maximum monitoring)



Width 45mm



Sensing & Monitoring Relays **Series OCTO**

Mains decoupler

- Mains decoupler with all-pole disconnection
- Automatic operation
- Automatic off (manual on for test purpose)
- Ballast as accessory for detection of small loads available
- up to 1000W lamp load
- Minimised DC test voltage in switched off state (200 to 250mV)
- 2 NO contacts
- Width 35mm
- Installation design

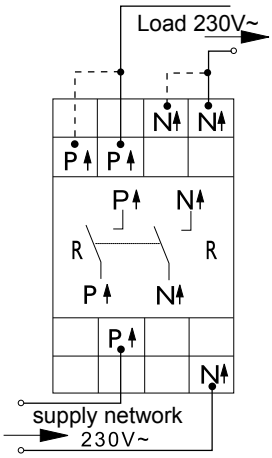
types	ONF3 230VAC
	
Art.No. (PQ1)	2330900
Art.No. (PQ10)	-
EAN13-Code	900866200126
Measured variable	Detection of no load condition
Adjustable range	5 to 200mA (Activation current I_{ON}) for adaption to charcteristic of connected loads
Release current	fixed, approx. 70% of adjusted activation current
Test voltage	200 to 250mV DC monitoring voltage at disconnected mains
Controls	I_{ON} • Function
Indicators (LEDs)	U • R
Functions	1: Automatic operation (automated disconnected mains at no load condition) 0: manual ON for test purpose
Tripping delay	fixed, approx. 6s
Rise time	fixed, approx. 0,5s
Supply	230V AC terminals L-N
Output	2 NO contacts 250V, 16A AC
Width	35mm
Certificates	CE • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque max. 1Nm
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end
Ambient conditions	Ambient temperature: -25 to 55°C (in accordance with IEC 60068-1) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 2, if built in 3 (in accordance with IEC 60664-1)
Accessories	Ballast GLE-ONF

0 Automatic ON
I Automatic OFF

Functions

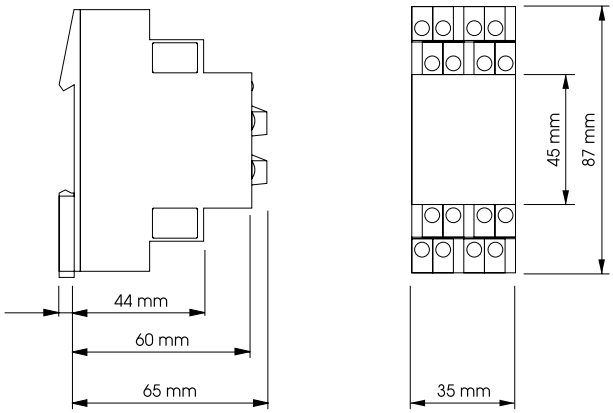
ONF3

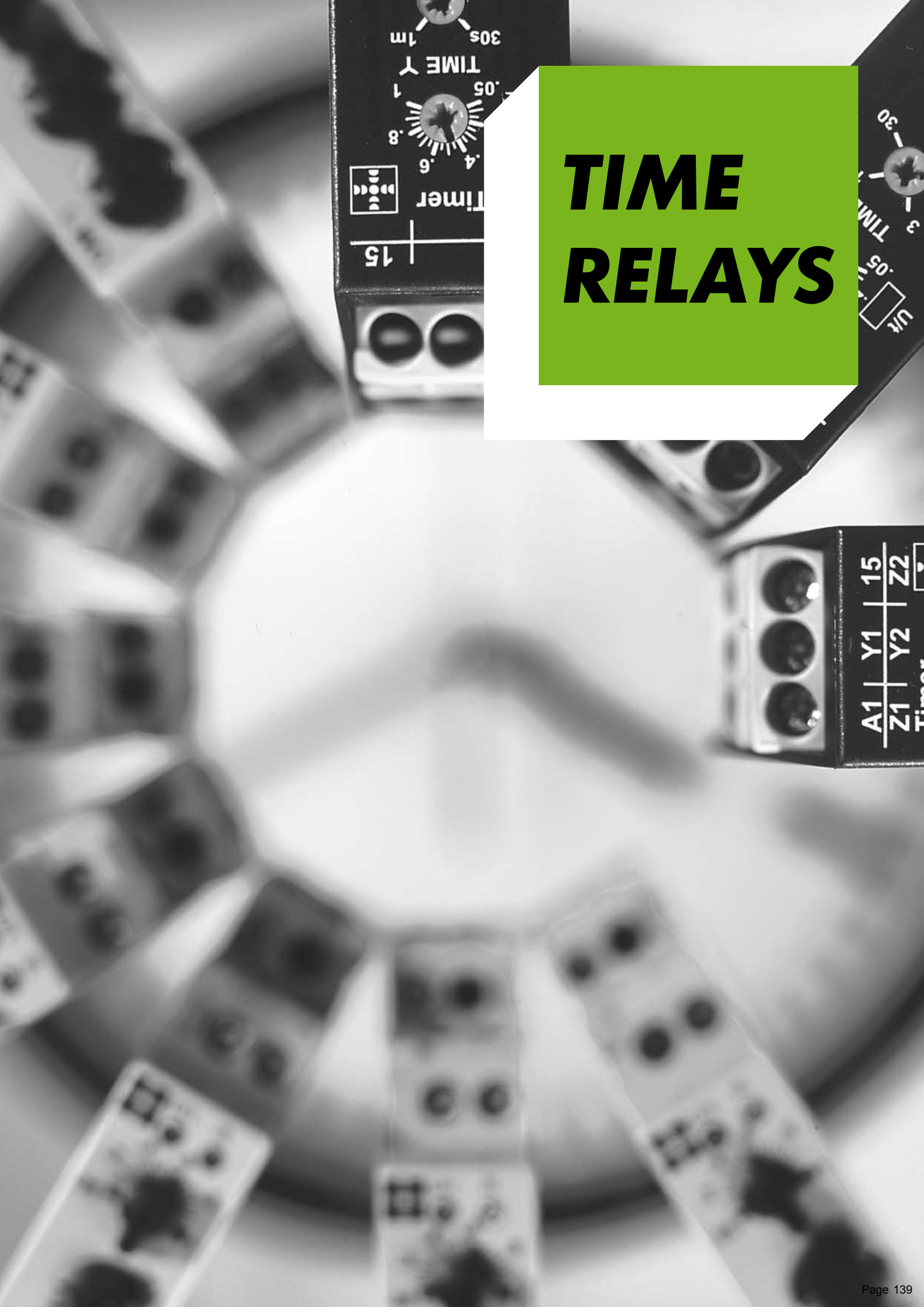
Connections



Width 35mm

Dimensions

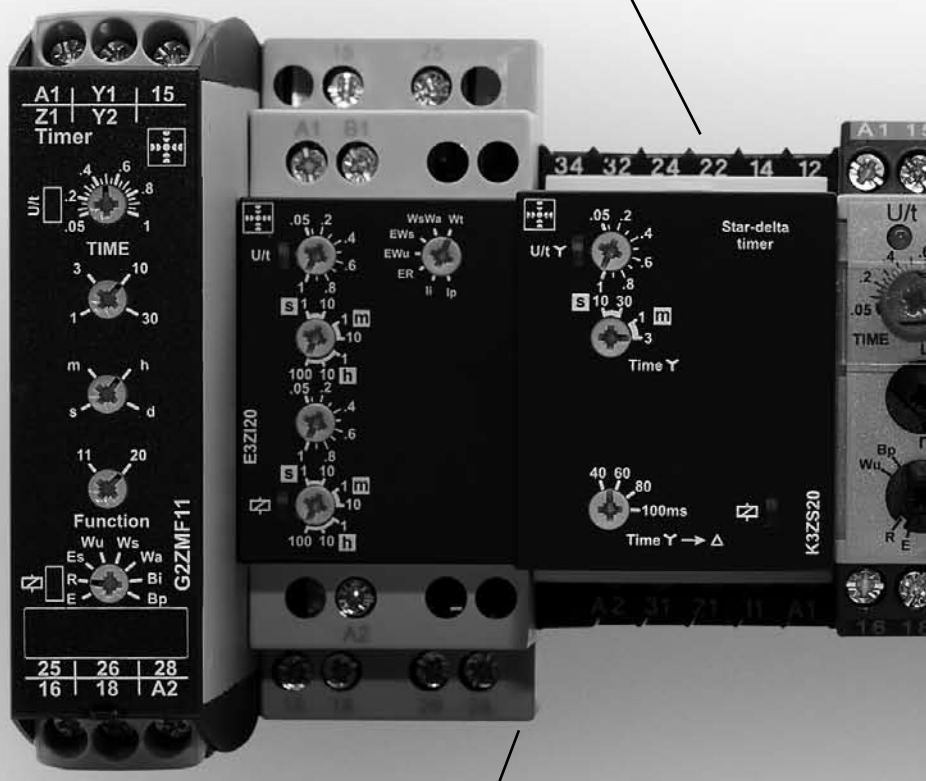



TIME
RELAYS
A1
Y1
15
Z1
Y2
Z2

TIME RELAYS

Series KAPPA and PLUS
Modern design for the traditional 11-pole socket

The use of time relays with 11-pin relay bases are still preferred in certain applications, for example prefabrication or when still live components need to be changed by untrained personnel.



Series GAMMA

The reliable solution in plant construction

With just a few different versions, this series fulfils all industrial demands at the highest of levels. Two change-over contacts, connection versions for different control contacts and power supplies and the possibility of connecting a remote potentiometer characterize this range.

Series ENYA
The modern series for building and industrial applications

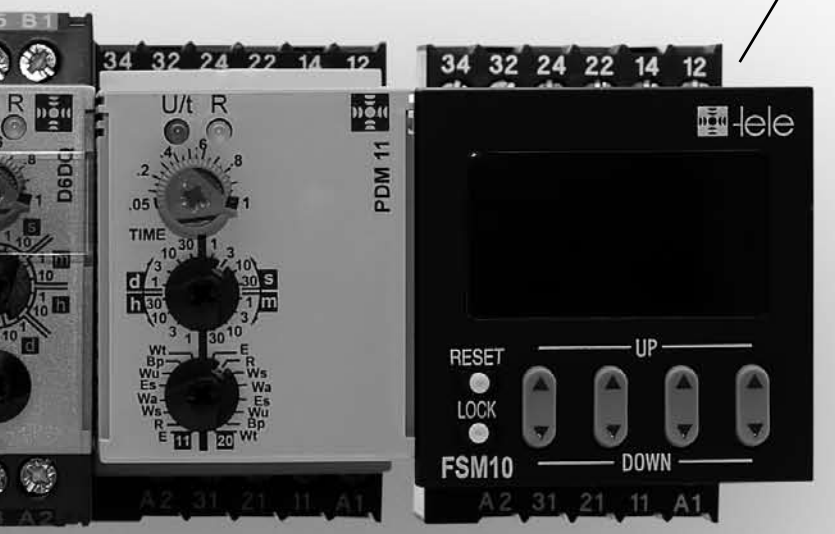
Thanks to a flat front plate, clearly visible displays and up to five tool-adjustable operating elements, these extremely compact time relays may be used to create tidy layouts in distribution boxes. The light controller may be universally employed as an impulse relay and a staircase lighting timer.

Series DELTA
Compact devices for plant and machinery with 1CO

Universal relays with several functions but also special relays for release delays without auxiliary power, two-wire controls, clocks and star-delta switch are available in this series. Particularly compact dimensions and overhead terminals simplify installation.

Series FRONT
Digital Time Relays for front panel mounting

The digital time relay with its very bright display of preset and elapsed time is the ideal solution when fast and precise delays are required. Time settings may be made with the front non-slip keys. The function settings have been positioned on the side so that they are only accessible to technicians.



Series COMBI
The universal timer module for the 11-pole industrial relay

Only a COMBI time module and a base possessing a compatible connection system is required to add time functions to conventional industrial relays. The products in this range permit time functions to be installed on relays with up to three contacts and a switching performance of 10A.

Series RONDO
Front panel mounting

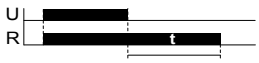
The possible applications of RONDO components with their 24V DC and transistor output are limited. However, this time relay is the first choice when manual settings and visual switching status feedback are required.

FUNCTION OVERVIEW

Von der einfachen Single-Funktion bis hin zum Multifunktions-Zeitrelais mit Display, Zeitrelais von TELE werden Branchen übergreifend eingesetzt.

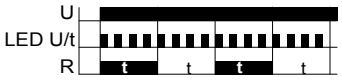
A

OFF Delay without Auxiliary Voltage



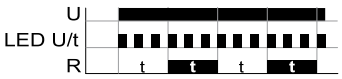
Bi

Flasher pulse first



Bp

Flasher pause first

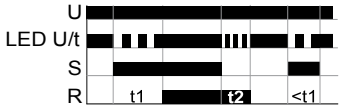


E

ON delay

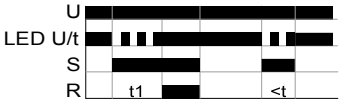
ER

ON and OFF delay with control contact



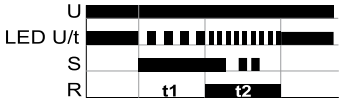
Es

ON delay with control contact



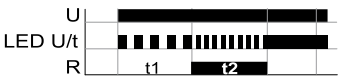
EWs

ON delay and single shot leading edge with control contact



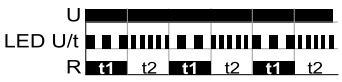
EWu

ON delay and single shot leading edge voltage controlled



Ii

Asymmetric flasher pulse first



Ip

Asymmetric flasher pause first

P

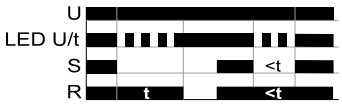
Impulse switch mode without time function

PN

Impulse switch mode power fail latch

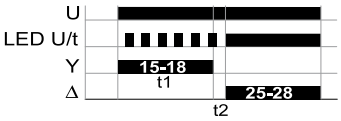
R

OFF delay



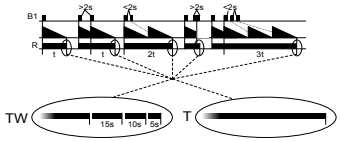
S

Star-Delta start-up



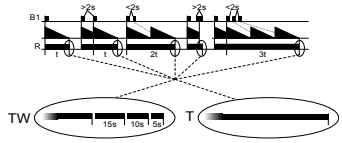
T

Automatic timer without switch-off warning



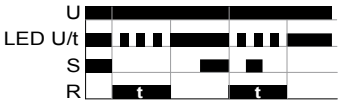
TW

Automatic timer with switch-off warning



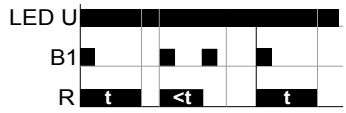
Wa

Single shot trailing edge with control contact



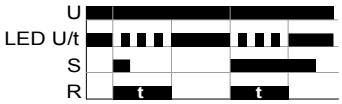
Wi

Impulse switch with OFF delay



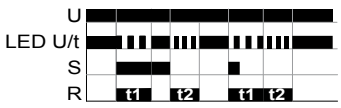
Ws

Single shot leading edge with control contact



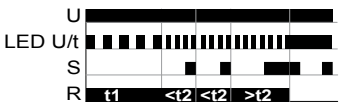
WsWa

Single shot leading and trailing edge with control contact



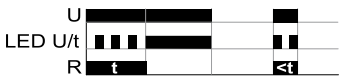
Wt

Pulse detection



Wu

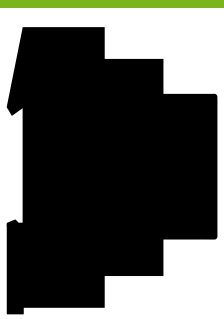
Single shot leading edge voltage controlled



SERIES GAMMA

Typ	G2ZMF11 24-240V AC/DC	G2ZMF11	G2ZM20 12-240V AC/DC	G2ZIF20 24-240V AC/DC	G2ZI20	G2ZI20 12-240V AC/DC	G2ZS20 24-240V AC/DC	G2ZS20
Supply voltage	24-240V AC/DC coolZoom	12-400V AC with TR2	12-240V AC/DC	24-240V AC/DC coolZoom	12-400V AC with TR2	12-240V AC/DC	24-240V AC/DC coolZoom	12-440V AC with TR2
A - OFF Delay without Auxiliary Voltage								
Bi - Flasher pulse first	■	■	■					
Bp - Flasher pause first	■	■	■					
E - ON delay	■	■	■					
ER - ON and OFF delay with control contact				■	■	■		
Es - ON delay with control contact	■	■	■					
EWs - ON delay and single shot leading edge with control contact				■	■	■		
EWu - ON delay and single shot leading edge voltage controlled				■	■	■		
Ii - Asymmetric flasher pulse first				■	■	■		
Ip - Asymmetric flasher pause first				■	■	■		
R - OFF delay	■	■	■					
S - Star-Delta start-up							■	■
Wa - Single shot trailing edge with control contact	■	■	■					
Ws - Single shot leading edge with control contact	■	■	■					
WsWa - Single shot leading and trailing edge with control contact				■	■	■		
Wt - Pulse detection				■	■			
Wu - Single shot leading edge voltage controlled	■	■	■					
Remote Potentiometer	■	■		■	■			
Potential free signal contact	■	■		■	■			
Instantaneous Contact	■	■						
Time Ranges	16	16	7	10/10	10/10	7/7	7/7	4/4
Kind/Number of Outputs	2CO	2CO	2CO	2CO	2CO	2CO	2CO	2CO

SERIES ENYA



Typ	E1ZM10 12-240V AC/DC	E1ZM10 24-240V AC/DC	E3ZM20 12-240V AC/DC	E1ZMQ10 24-240V AC/DC	E1ZMW10 24-240V AC/DC	E1Z1E10 24-240V AC/DC	E1ZI10 12-240V AC/DC	E3ZI20 12-240V AC/DC	E3ZS20 12-240V AC/DC
Supply voltage	12-240V AC/DC	24-240V AC/DC	12-240V AC/DC	24-240V AC/DC	24-240V AC/DC	24-240V AC/DC	12-240V AC/DC	12-240V AC/DC	12-240V AC/DC
A - OFF Delay without Auxiliary Voltage									
Bi - Flasher pulse first									
Bp - Flasher pause first	■	■	■	■					
E - ON delay	■	■	■	■	■	■			
ER - ON and OFF delay with control contact							■		
Es - ON delay with control contact	■	■	■						
EWs - ON delay and single shot leading edge with control contact							■		
EWu - ON delay and single shot leading edge voltage controlled							■		
Ii - Asymmetric flasher pulse first						■	■		
Ip - Asymmetric flasher pause first						■	■		
R - OFF delay	■	■	■	■	■				
S - Star-Delta start-up								■	■
Wa - Single shot trailing edge with control contact	■	■	■		■				
Ws - Single shot leading edge with control contact	■	■	■		■				
WsWa - Single shot leading and trailing edge with control contact					■		■		
Wt - Pulse detection					■		■		
Wu - Single shot leading edge voltage controlled	■	■	■	■	■				
Remote Potentiometer									
Potential free signal contact									
Instantaneous Contact									
Time Ranges	7	7	7	7	7	7	7/7	7/7	4/4
Kind/Number of Outputs	1CO	1CO	2CO	1CO	1CO	1CO	1CO	2CO	2CO

SERIES KAPPA

Typ	K3ZM20 12-240V AC/DC	K3ZI20 12-240V AC/DC	K3ZS20 12-240V AC/DC
Supply voltage	24-500V AC with TR3	24-500V AC with TR3	24-240V AC/DC coolZoom
A - OFF Delay without Auxiliary Voltage			
Bi - Flasher pulse first			
Bp - Flasher pause first	■		
E - ON delay	■		
ER - ON and OFF delay with control contact		■	
Es - ON delay with control contact	■		
EWs - ON delay and single shot leading edge with control contact		■	
EWu - ON delay and single shot leading edge voltage controlled		■	
Ii - Asymmetric flasher pulse first		■	
Ip - Asymmetric flasher pause first		■	
R - OFF delay	■		
S - Star-Delta start-up			■
Wa - Single shot trailing edge with control contact	■		
Ws - Single shot leading edge with control contact	■		
WsWa - Single shot leading and trailing edge with control contact		■	
Wt - Pulse detection		■	
Wu - Single shot leading edge voltage controlled	■		
Remote Potentiometer			
Potential free signal contact			
Instantaneous Contact			
Time Ranges	7	7/7	4/4
Kind/Number of Outputs	2CO	2CO	2CO

SERIES PLUS

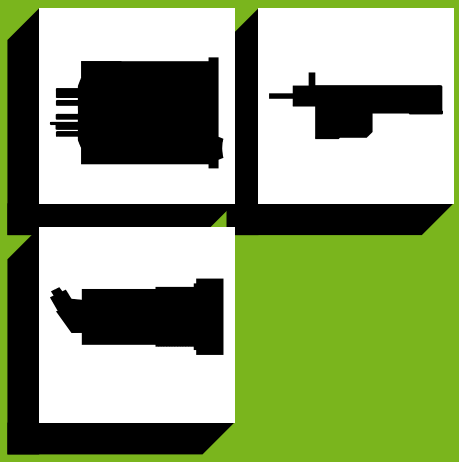
Typ	PDM20F 24V AC/DC 110-240V AC	PDM11 24V AC/DC 110-240V AC	PDA20 24V AC/DC 110-240V AC	PDI20F 24V AC/DC 110-240V AC
Supply voltage	Dualvoltage	Dualvoltage	Dualvoltage	Dualvoltage
A - OFF Delay without Auxiliary Voltage			■	
Bi - Flasher pulse first				
Bp - Flasher pause first	■	■		
E - ON delay				
ER - ON and OFF delay with control contact				■
Es - ON delay with control contact	■	■		
EWs - ON delay and single shot leading edge with control contact			■	
EWu - ON delay and single shot leading edge voltage controlled				
Ii - Asymmetric flasher pulse first				
Ip - Asymmetric flasher pause first				■
R - OFF delay	■	■		
S - Star-Delta start-up				
Wa - Single shot trailing edge with control contact	■	■		
Ws - Single shot leading edge with control contact				
WsWa - Single shot leading and trailing edge with control contact				
Wt - Pulse detection	■	■		
Wu - Single shot leading edge voltage controlled				
Remote Potentiometer				■
Potential free signal contact				
Instantaneous Contact		■		
Time Ranges	8	16	4	8/8
Kind/Number of Outputs	1CO, 1NO	2CO	2CO	1O, 1NO

SERIES DELTA

Typ	Supply voltage	Time Ranges	Kind/Number of Outputs
D6M 12-240V AC/DC	12-240V AC/DC	8	1CO
D6DM 24V AC/DC 110-240V AC	Dualvoltage	8	1CO
D6DQ 24V AC/DC 110-240V AC	Dualvoltage	8	1CO
D6DE 24V AC/DC 110V AC	Dualvoltage	8	1CO
D6DE 24V AC/DC 230V AC	Dualvoltage	8	1CO
D6DET 4min 12-240V AC/DC	selectable through wire link	4	1T
D6DET 40min 12-240V AC/DC	selectable through wire link	4	1T
D6DR 24V AC/DC 110V AC	Dualvoltage	8	1CO
D6DR 24V AC/DC 230V AC	Dualvoltage	8	1CO
D6DA 3min 110-240V AC	Dualvoltage	4	1CO
D6DA 10min 110-240V AC	Dualvoltage	4	1CO
D6DI 24V AC/DC 110-240V AC	Dualvoltage	8/8	1CO
D6DS 24V AC/DC 110-240V AC	Dualvoltage	4/4	2NO

A - OFF Delay without Auxiliary Voltage
Bi - Flasher pulse first
Bp - Flasher pause first
E - ON delay
ER - ON and OFF delay with control contact
Es - ON delay with control contact
EWs - ON delay and single shot leading edge with control contact
EWu - ON delay and single shot leading edge voltage controlled
Ii - Asymmetric flasher pulse first
Ip - Asymmetric flasher pause first
R - OFF delay
S - Star-Delta start-up
Wa - Single shot trailing edge with control contact
Ws - Single shot leading edge with control contact
WsWa - Single shot leading and trailing edge with control contact
Wt - Pulse detection
Wu - Single shot leading edge voltage controlled
Remote Potentiometer
Potential free signal contact
Instantaneous Contact

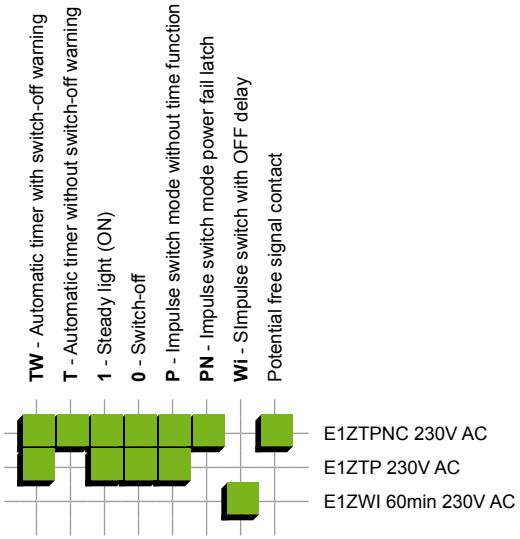
SERIES FRONT COMBI RONDO



Typ	Supply voltage	Time Ranges	Kind/Number of Outputs
Serie FRONT			
FSM10 24VAC/DC	24V AC/DC	digital	2CO
FSM10 100-240VAC	100-240V AC/DC	digital	2CO
Serie COMBI			
COM3TP 24-240VAC/DC	24-240V AC/DC	8	2/3 CO
Serie RONDO			
SRE2-PNP ... 24VDC	24V DC	1	PNP
SRW2-PNP ... 24VDC	24V DC	1	PNP

A - OFF Delay without Auxiliary Voltage
Bi - Flasher pulse first
Bp - Flasher pause first
E - ON delay
ER - ON and OFF delay with control contact
Es - ON delay with control contact
EWs - ON delay and single shot leading edge with control contact
EWu - ON delay and single shot leading edge voltage controlled
Ii - Asymmetric flasher pulse first
Ip - Asymmetric flasher pause first
R - OFF delay
S - Star-Delta start-up
Wa - Single shot trailing edge with control contact
Ws - Single shot leading edge with control contact
WsWa - Single shot leading and trailing edge with control contact
Wt - Pulse detection
Wu - Single shot leading edge voltage controlled
Remote Potentiometer
Potential free signal contact
Instantaneous Contact

LIGHT CONTROL



Staircase lighting timer and impulse switch

The Light Controller is the newest innovation from TELE. It is innovative in combining a stairwell lighting timer and impulse switch in a single device. The changeover from lighting timer to low-noise impulse switch is accomplished by a small manual adjustment. Selecting the lighting timer or impulse switch mode can even be postponed until after the devices have been installed. This simplifies project planning and stockholding. The service technician always has the right device to hand.

An additional, galvanic isolated input is optionally available, allowing the lighting timer to be also operated remotely. Using a single wire pair it is possible to switch the lighting for several floors from a central point or to link the lighting to the door-entry lock or intercom system (type E1ZTPNC).

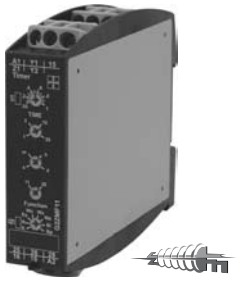
What sets the integrated TELE staircase lighting timer apart from ordinary Time Relays is its switch-off warning and energy-saving function. The time range can be set variably and lies between 0.5 and 12 min. Rapid (<2s), multiple pressing of the pushbutton adds 2, 3 or more time intervals together up to 60 minutes (time extension function). Pressing one of the pushbuttons for more than 5s terminates the remaining period (Energy saving function).

Owing to its high switching capacity (up to 80A switching transients), the Light Controller is ideally suited to handling the high inrush currents of incandescent lamps. The electronic design made it possible to reduce the switching noise. Designed for installation applications with an overall width of 17,5mm, the device is provided with an automatic 3-/4-wire detector.

Time Relays **Series GAMMA**

Multifunction Timer

- Multifunction
- 16 time ranges (G2ZMF11); 7 time ranges (G2ZM20)
- Time setting by 2 or 3 controls for the selection of range and fine tuning
- Remote potentiometer optional
- Supply voltage 12-240VAC/DC (G2ZM20)
- Supply voltage selectable via PowerModules, DC power supply or by zoom voltage
- 2 CO contacts (G2ZMF11: individual switching when instentaneous contact selected)
- Width 22,5mm
- Industrial design

types	G2ZMF11 24-240VAC/DC	G2ZMF11	G2ZM20 12-240VAC/DC
			
Art.No. (PQ1)	120103	120100	120401
Art.No. (PQ10)	-	-	-
EAN13-Code	900866200026	900866200025	900866200031
Controls	Time • 11/20 • Function	Time • 11/20 • Function	Time • Function
Indicators (LEDs)	U/t • R	U/t • R	U/t • R
Functions	E11 • E20 R11 • R20 Es11 • Es20 Wu11 • Wu20 Ws11 • Ws20 Wa11 • Wa20 Bi11 • Bi20 Bp11 • Bp20	E11 • E20 R11 • R20 Es11 • Es20 Wu11 • Wu20 Ws11 • Ws20 Wa11 • Wa20 Bi11 • Bi20 Bp11 • Bp20	E • R • Es • Wu • Ws • Wa • Bi • Bp
Inst. contact	selectable	selectable	-
2-time function	-	-	-
Time ranges	1 • 3 • 10 • 30s 1 • 3 • 10 • 30min 1 • 3 • 10 • 30h 1 • 3 • 10 • 30d	1 • 3 • 10 • 30s 1 • 3 • 10 • 30min 1 • 3 • 10 • 30h 1 • 3 • 10 • 30d	1 • 10s 1 • 10min 1 • 10 • 100h
Adjustment range	5% to 100%	5% to 100%	5% to 100%
Control input	terminals Y1-Y2 galvanic separated	terminals Y1-Y2 galvanic separated	terminals A1-B1 loadable
Remote potentiometer	1 (optional); Z1-Y2	1 (optional); Z1-Y2	-
Supply	24 to 240V AC/DC terminals A1-A2	PowerModule TR2 or SNT2 terminals A1-A2	12 to 240V AC/DC terminals A1-A2
Output	2 CO contacts 250V, 5A AC	2 CO contacts 250V, 5A AC	2 CO contacts 250V, 5A AC
Width	22,5mm	22,5mm	22,5mm
Certificates	CE • UL • cUL • GOST	CE • UL • cUL • GOST	CE • UL • cUL • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required) • IP rating IP20 • Tightening torque max. 1Nm.		
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end		
Ambient conditions	Ambient temperature: -25 to 55°C (in accordance with IEC 60068-1); -25 to 40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 3 (in accordance with IEC 60664-1) • Vibration resistance: 10 to 55Hz 0,35mm (in accordance with IEC 60068-2-6) • Shock resistance: 15g 11ms (in accordance with IEC 60068-2-27)		
Accessories	PowerModules TR2 (12-400V AC) • Remote potentiomter R2 • sealable intervention protection shield FA-G2 • DC power supply SNT2 24VDC		

Functions

G2ZMF11 and **G2ZMF11 24-240V**

1 delayed contact (cl. 15-16-18) and 1 inst. contact (cl. 25-26-28)

E11	ON delay
R11	OFF delay with control contact
Es11	ON delay with control contact
Wu11	Single shot leading edge voltage controlled
Ws11	Single shot leading edge with control contact
Wa11	Single shot trailing edge with control contact
Bi11	Flasher pulse first
Bp11	Flasher pause first

2 delayed contacts

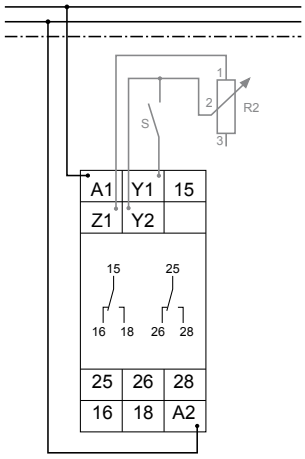
E20	ON delay
R20	OFF delay with control contact
Es20	ON delay with control contact
Wu20	Single shot leading edge voltage controlled
Ws20	Single shot leading edge with control contact
Wa20	Single shot trailing edge with control contact
Bi20	Flasher pulse first
Bp20	Flasher pause first

G2ZM20

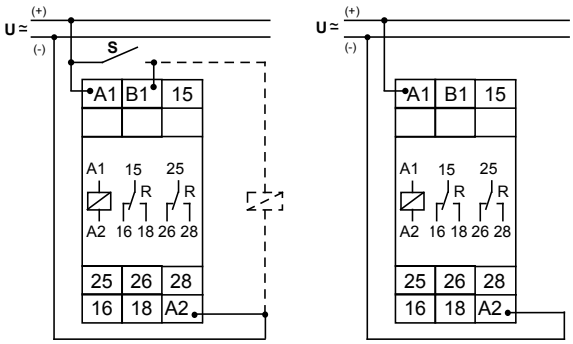
E	ON delay
R	OFF delay with control input
Es	ON delay with control input
Wu	Single shot leading edge voltage controlled
Ws	Single shot leading edge with control input
Wa	Single shot trailing edge with control input
Bi	Flasher pulse first
Bp	Flasher pause first

Connections

G2ZMF11; G2ZMF11 24-240V

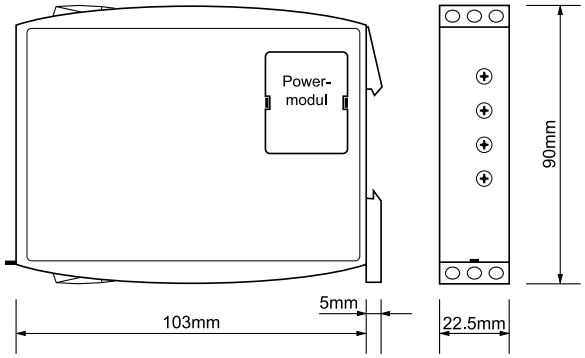


G2ZM20



Dimensions

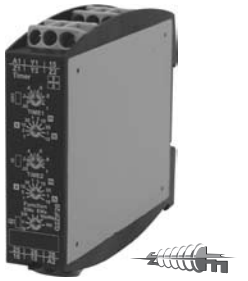
Width 22,5mm



Time Relays **Series GAMMA**

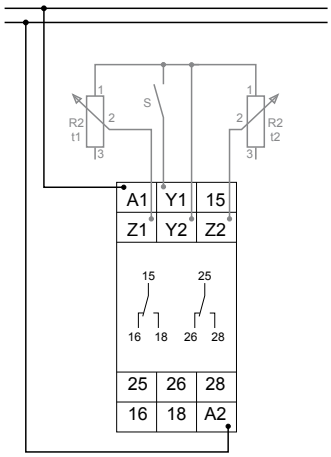
2-Time Multifunction Timer

- Multifunction
- 10 time ranges (G2ZIF20); 7 time ranges (G2ZI20)
- Remote potentiometer optional (G2ZIF20)
- Supply voltage 12-240VAC/DC (G2ZI20)
- Supply voltage selectable via PowerModules, DC power supply or by zoom voltage
- 2 CO contacts
- Width 22,5mm
- Industrial design

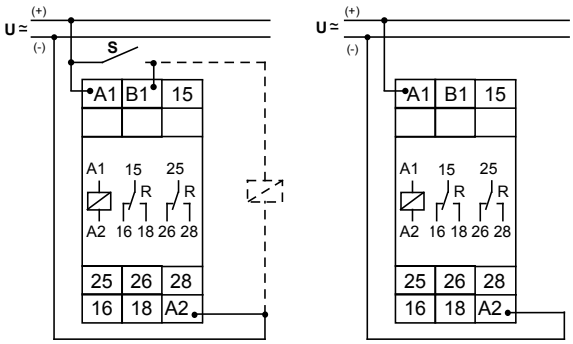
types	G2ZIF20 24-240VAC/DC	G2ZIF20	G2ZI20 12-240VAC/DC
			
Art.No. (PQ1)	120201	120200	120501
Art.No. (PQ10)	-	-	-
EAN13-Code	900866200028	900866200027	900866200032
Controls	Time1 • Time2 • Function	Time1 • Time2 • Function	Time1 • Time2 • Function
Indicators (LEDs)	U/t_1 • t_2 • R	U/t_1 • t_2 • R	U/t • R
Functions	Ip • Ii • ER • EWu • EWs • WsWa • Wt	Ip • Ii • ER • EWu • EWs • WsWa • Wt	Ip • Ii • ER • EWu • EWs • WsWa
Inst. contact	-	-	-
2-time function	yes	yes	yes
Time ranges	1 • 3 • 10 • 30s 1 • 3 • 10 • 30min 1 • 10h	1 • 3 • 10 • 30s 1 • 3 • 10 • 30min 1 • 10h	1 • 10s 1 • 10min 1 • 10 • 100h
Adjustment range	5% to 100%	5% to 100%	5% to 100%
Control input	terminals Y1-Y2 galvanic separated	terminals Y1-Y2 galvanic separated	terminals A1-B1 loadable
Remote potentiometer	Time1: terminals Z1-Y2 Time2: terminals Z2-Y2	Time1: terminals Z1-Y2 Time2: terminals Z2-Y2	-
Supply	24 to 240V AC/DC terminals A1-A2	PowerModule TR2 or SNT2 terminals A1-A2	12 to 240V AC/DC terminals A1-A2
Output	2 CO contacts 250V, 5A AC	2 CO contacts 250V, 5A AC	2 CO contacts 250V, 5A AC
Width	22,5mm	22,5mm	22,5mm
Certificates	CE • UL • cUL • GOST	CE • UL • cUL • GOST	CE • UL • cUL • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required) • IP rating IP20 • Tightening torque max. 1Nm.		
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end		
Ambient conditions	Ambient temperature: -25 to 55°C (in accordance with IEC 60068-1); -25 to 40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 3 (in accordance with IEC 60664-1) • Vibration resistance: 10 to 55Hz 0,35mm (in accordance with IEC 60068-2-6) • Shock resistance: 15g 11ms (in accordance with IEC 60068-2-27)		
Accessories	PowerModule TR2 (12 - 400V AC) • Remote potentiometer RONDO R2 (1MOHM) • sealable intervention protection shield FA-G2 • DC power supply SNT2 24VDC		

Ip	Asymmetric flasher pause first
Ii	Asymmetric flasher pulse first
ER	ON delay and OFF delay with control contact
EWu	ON delay single shot leading edge voltage controlled
EWs	ON delay single shot leading edge with control contact
WsWa	Single shot leading and single shot trailing edge with control contact
Wt	Pulse sequence monitoring

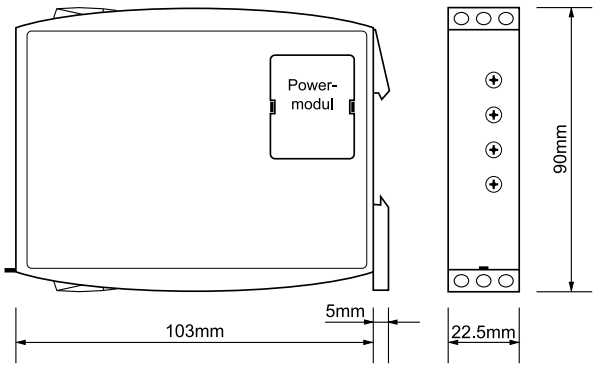
G2ZIF20; G2ZIF20 24-240V



G2ZI20 12-240VAC/DC



Width 22,5mm



Time Relays **Series GAMMA**

Singlefunction Timer

- ON delay
- 16 time ranges
- Supply voltage 400V AC
- 1 CO contact
- Width 22,5mm
- Industrial design

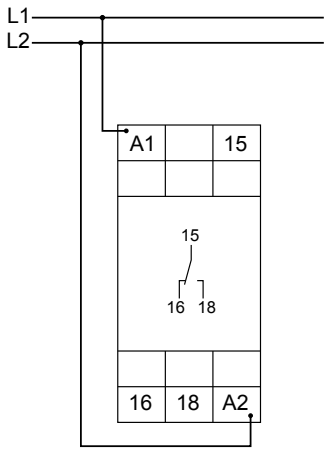
types	G2ZE10 400VAC
	
Art.No. (PQ1)	120104
Art.No. (PQ10)	-
EAN13-Code	9008662005440
Controls	Time
Indicators (LEDs)	U/t • R
Functions	E
Inst. contact	-
2-time function	-
Time ranges	1 • 3 • 10 • 30s 1 • 3 • 10 • 30min 1 • 3 • 10 • 30h 1 • 3 • 10 • 30d
Adjustment range	5% to 100%
Control input	-
Remote potentiometer	-
Supply	400V AC terminals A1-A2
Output	1 CO contact 250V, 5A AC
Width	22,5mm
Certificates	CE • UL • cUL • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque max. 1Nm
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end
Ambient conditions	Ambient temperature: -25 to 55°C (in accordance with IEC 60068-1); -25 to 40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 3 (in accordance with IEC 60664-1) • Vibration resistance: 10 to 55Hz 0,35mm (in accordance with IEC 60068-2-6) • Shock resistance: 15g 11ms (in accordance with IEC 60068-2-27)
Accessories	Sealable intervention protection shield FA-G2

E ON delay

Functions

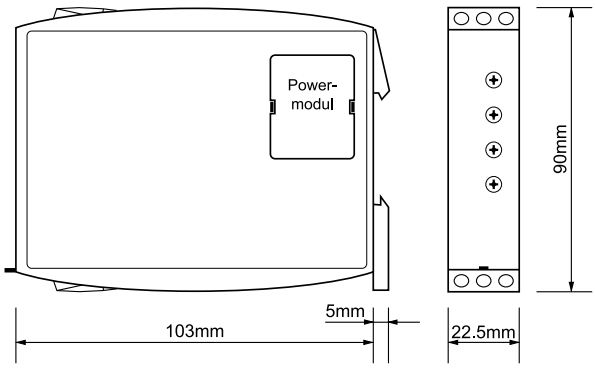
G2ZE10 400VAC

Connections



Width 22,5mm

Dimensions



Time Relays **Series GAMMA**

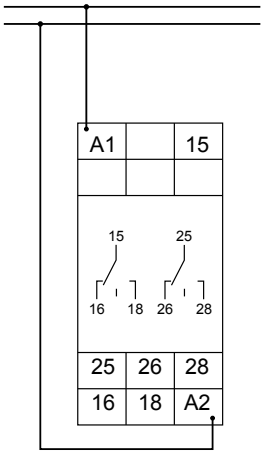
Star-Delta Timer

- Star-Delta start-up
- 4 time ranges (star-time)
- Transit time selectable
- Supply voltage via PowerModules or DC power supply by zoom voltage 24 to 240V AC/DC
- 2 CO contacts
- Width 22,5mm
- Industrial design

types	G2ZS20 24-240VAC/DC	G2ZS20
		
Art.No. (PQ1)	120301	120300
Art.No. (PQ10)	-	-
EAN13-Code	900866200030	900866200029
Controls	Time Y • Time Y → Δ	Time Y • Time Y → Δ
Indicators (LEDs)	U/tY • R	U/tY • R
Functions	S	S
Inst. contact	-	-
2-time function	-	-
Time ranges	Time Y: 10s • 30s • 1min • 3min Time Y → Δ: 40ms • 60ms • 80ms • 100ms	Time Y: 10s • 30s • 1min • 3min Time Y → Δ: 40ms • 60ms • 80ms • 100ms
Adjustment range	5% to 100% (TimeY)	5% to 100% (TimeY)
Control input	-	-
	-	-
Supply	24 to 240V AC/DC terminals A1-A2	PowerModule TR2 or SNT2 terminals A1-A2
Output	2 CO contacts 250V, 5A AC	2 CO contacts 250V, 5A AC
Width	22,5mm	22,5mm
Certificates	CE • UL • cUL • GOST	CE • UL • cUL • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required) • IP rating IP20 • Tightening torque max. 1Nm.	
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end	
Ambient conditions	Ambient temperature: -25 to 55°C (in accordance with IEC 60068-1); -25 to 40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 3 (in accordance with IEC 60664-1) • Vibration resistance: 10 to 55Hz 0,35mm (in accordance with IEC 60068-2-6) • Shock resistance: 15g 11ms (in accordance with IEC 60068-2-27)	
Accessories	PowerModule TR2 (12 - 400V AC) • sealable intervention protection shield FA-G2 • DC power supply SNT2 24VDC	

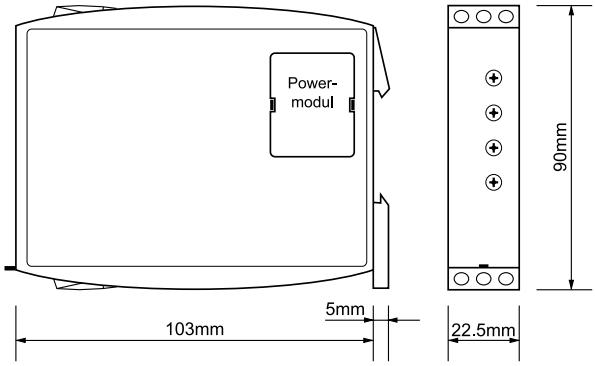
G2ZS20; G2ZS20 24-240V

Connections



Width 22,5mm

Dimensions



Time Relays **Series ENYA**

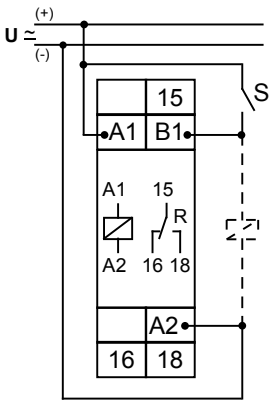
Multifunction Timer

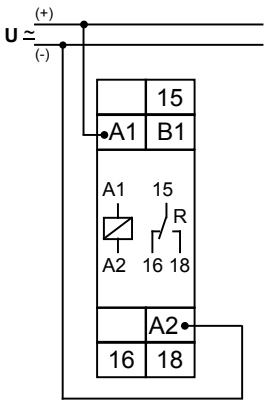
- Multifunction
- 7 time ranges
- Supply voltage through zoom voltage 12 to 240V AC/DC or 24 to 240V AC/DC
- 1 CO contact (E1Z)
- 2 CO contacts (E3Z)
- Width 17,5mm and 35mm
- Installation design

types	E1ZM10 12-240VAC/DC	E1ZM10 24-240VAC/DC	E3ZM20 12-240VAC/DC	E1ZMQ10 24-240VAC/DC	E1ZMW10 24-240VAC/DC
					
Art.No. (PQ1)	110100	110200	111100	110202	-
Art.No. (PQ10)	110100A	110200A	-	110202A	110206A
EAN13-Code	900866200009	900866200012	900866200019	900866200014	900866200521
Controls	Time • Function	Time • Function	Time • Function	Time • Function	Time • Function
Indicators (LEDs)	U/t • R	U/t • R	U/t • R	U/t • R	U/t • R
Functions	E • R • Ws • Wa • Es • Wu • Bp	E • R • Ws • Wa • Es • Wu • Bp	E • R • Ws • Wa • Es • Wu • Bp	E • R • Wu • Bp	E • R • Ws • Wa • WsWa • Wu • Wt
Inst. contact	-	-	-	-	-
2-time function	-	-	-	-	-
Time ranges	1 • 10sec 1 • 10min 1 • 10h • 100h	1 • 10sec 1 • 10min 1 • 10h • 100h	1 • 10sec 1 • 10min 1 • 10h • 100h	1 • 10sec 1 • 10min 1 • 10h • 100h	1 • 10sec 1 • 10min 1 • 10h • 100h
Adjustment range	5% to 100%	5% to 100%	5% to 100%	5% to 100%	5% to 100%
Control input	terminals A1-B1 loadable	terminals A1-B1 loadable	terminals A1-B1 loadable	terminals A1-B1 loadable	terminals A1-B1 loadable
Remote potentiometer	-	-	-	-	-
Supply	12 to 240V AC/DC terminals A1-A2	24 to 240V AC/DC terminals A1-A2	12 to 240V AC/DC terminals A1-A2	24 to 240V AC/DC terminals A1-A2	24 to 240V AC/DC terminals A1-A2
Output	1 CO contact 250V, 8A AC	1 CO contact 250V, 8A AC	2 CO contacts 250V, 8A AC	1 CO contact 250V, 8A AC	1 CO contact 250V, 8A AC
Width	17,5mm	17,5mm	35mm	17,5mm	17,5mm
Certificates	CE • UL • cUL • GOST	CE • UL • cUL • GOST	CE • UL • cUL • GOST	CE • UL • cUL • GOST	CE • UL • cUL • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque max. 1Nm				
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end				
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 2, if built in 3 (in accordance with IEC 60664-1)				
Accessories	-				

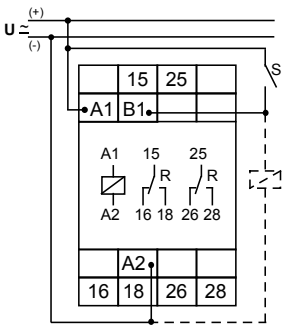
E	ON delay
R	OFF delay with control input
Ws	Single shot leading edge with control input
Wa	Single shot trailing edge with control input
Es	ON delay with control input
Wu	Single shot leading edge voltage controlled
Bp	Flasher pause first
WsWa	Single shot leading edge and single shot trailing edge with control input
Wt	Pulse sequence maintaining

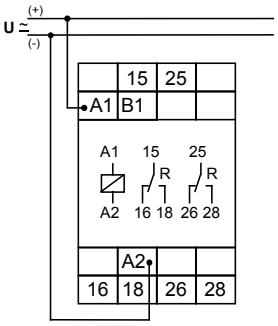
E1ZM



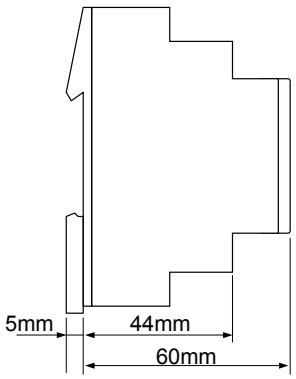


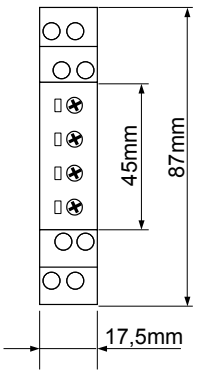
E3ZM20



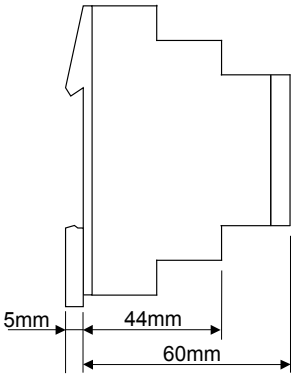


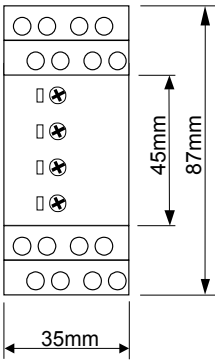
Width 17,5mm





Width 35mm





Time Relays **Series ENYA**

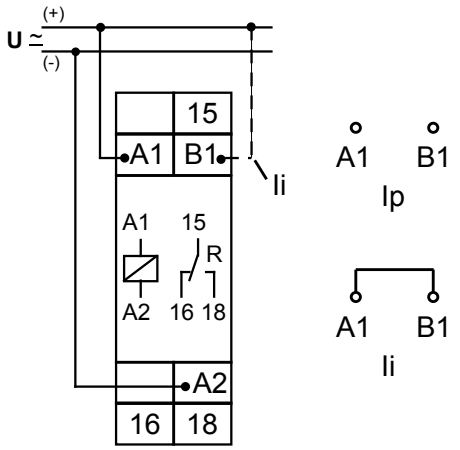
2-Time Multifunction Timer

- Asymmetric flasher (E1ZI10)
- 2-time multifunction (E3ZI20)
- 7 time ranges
- Supply voltage through zoom voltage 12 to 240 V AC/DC
- 1 CO contact (E1ZI10); 2 CO contacts (E3ZI20)
- Width 17,5mm (E1ZI10); 35mm (E3ZI20)
- Installation design

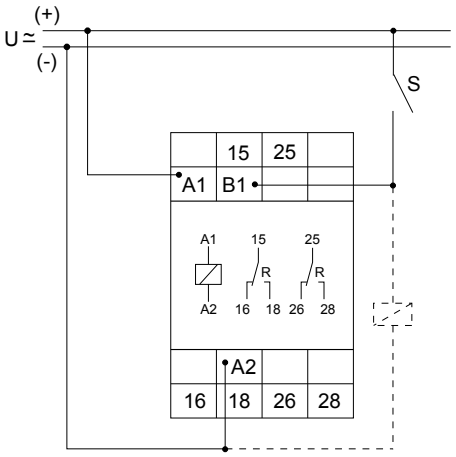
types	E1ZI10 12-240VAC/DC	E3ZI20 12-240VAC/DC
		
Art.No. (PQ1)	110101	111101
Art.No. (PQ10)	-	-
EAN13-Code	900866200011	900866200020
Controls	Time 1 • Time 2	Time 1 • Time 2 • Function
Indicators (LEDs)	U/t • R	U/t • R
Functions	Ip • Ii (wire link A1-B1)	Ip • Ii • ER • EWu • EWs • WsWa • Wt
Inst. contact	-	-
2-time function	yes	yes
Time ranges	1 • 10sec 1 • 10min 1 • 10h • 100h	1 • 10sec 1 • 10min 1 • 10h • 100h
Adjustment range	5% to 100%	5% to 100%
Control input	-	terminals A1-B1 loadable
Remote potentiometer	-	-
Supply	12 to 240V AC/DC terminals A1-A2	12 to 240V AC/DC terminals A1-A2
Output	1 CO contact 250V, 8A AC	2 CO contacts 250V, 8A AC
Width	17,5mm	35mm
Certificates	CE • UL • cUL • GOST	CE • UL • cUL • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque max. 1Nm	
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end	
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 2, if built in 3 (in accordance with IEC 60664-1)	
Accessories	-	

Ip	Asymmetric flasher pause first
Ii	Asymmetric flasher pulse first
ER	ON delay and OFF delay with control contact
EWu	ON delay single shot leading edge voltage controlled
EWs	ON delay single shot leading edge with control contact
WsWa	Single shot leading and single shot trailing edge with control contact
Wt	Pulse sequence monitoring

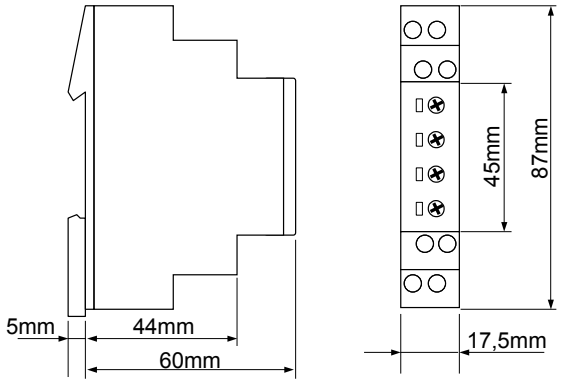
E1ZI10



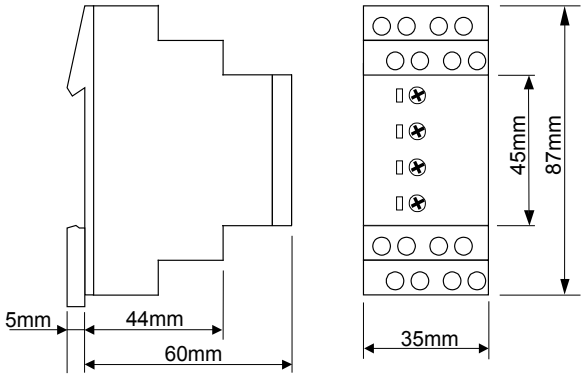
E3ZI20



Width 17,5mm



Width 35mm



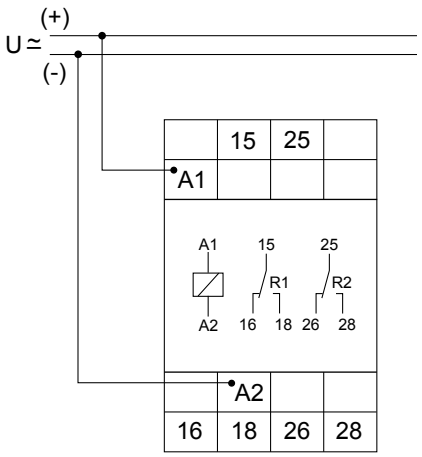
Time Relays **Series ENYA**

Star-Delta Timer

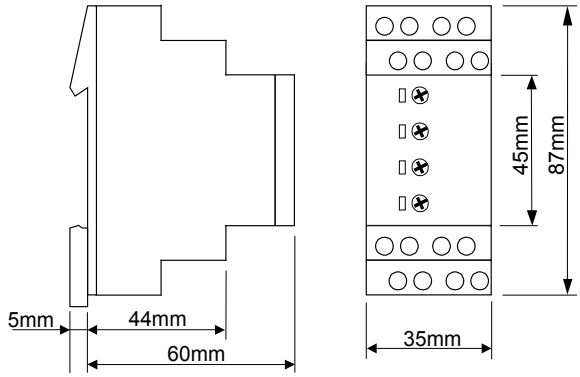
- Star-Delta start-up
- 4 time ranges (star-time)
- Supply voltage through zoom voltage 12 to 240 V AC/DC
- 2 CO contacts
- Width 35mm
- Installation design

types	E3ZS20 12-240VAC/DC
	
Art.No. (PQ1)	111300
Art.No. (PQ10)	-
EAN13-Code	900866200021
Controls	Time • Time Y → Δ
Indicators (LEDs)	U/t • R
Functions	S
Inst. contact	-
2-time function	-
Time ranges	Time Y: 10s • 30s • 1min • 3min Time Y → Δ: 40ms • 60ms • 80ms • 100ms
Adjustment range	5% to 100%
Control input	-
	-
Supply	12 to 240V AC/DC terminals A1-A2
Output	2 CO contacts 250V, 8A AC
Width	17,5mm
Certificates	CE • UL • cUL • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque max. 1Nm
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 2, if built in 3 (in accordance with IEC 60664-1)
Accessories	-

E3ZS



Width 35mm



Time Relays **Series ENYA**

Light Controller

- Electronic staircase lighting timer with switch-off warning
- Retrigger, time extension and energy saving function programmable
- Impulse switch mode selectable
- Low switching noise
- High switching capacity, 80A peak inrush current
- Automatic 3/4 - wire detection
- Push-button glow lamp load up to 100mA
- Width 17,5mm
- Installation design

types	E1ZTPNC 230VAC	E1ZTP 230VAC	E1ZWI
			
Art.No. (PQ1)	110300	110301	110310
Art.No. (PQ10)	-	-	-
EAN13-Code	900866200017	900866200018	900866200506
Controls	Time • Function	Function/Time	Time
Indicators (LEDs)	U • R	U • R	U • R
Functions	TW • T • 1 • 0 • P • PN	TW • 1 • 0 • P	Wi
Inst. contact	-	-	-
2-time function	-	-	-
Time ranges	12min	12min	6min to 60min
Adjustment range	0,5 to 12min	0,5 to 12min	6min to 60min
Control input	terminal B1 (for pushbutton): pushbutton B1-N (3-wire circuit) pushbutton B1-L (4-wire circuit) glow lamp load max. 100mA parallel to the pushbuttons • terminals C1-C2 (additional Control input): voltage range 8..230V AC/DC galvanic separated	terminal B1 (for pushbutton): pushbutton B1-N (3-wire circuit) pushbutton B1-L (4-wire circuit) glow lamp load max. 100mA parallel to the pushbuttons	terminal B1 (for pushbutton): pushbutton B1-N (3-wire circuit) pushbutton B1-L (4-wire circuit) glow lamp load max. 100mA parallel to the pushbuttons
Remote potentiometer	-	-	-
Supply	230V AC terminals L-N	230V AC terminals L-N	230V AC terminals L-N
Output	1 NO contact (terminals L-18) 250V, 16A AC	1 NO contact (terminals L-18) 250V, 16A AC	1 NO contact (terminals L-18) 250V, 16A AC
Width	17,5mm	17,5mm	17,5mm
Certificates	CE • UL • cUL • GOST	CE • UL • cUL • GOST	CE • UL • cUL • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque max. 1Nm		
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end		
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 2, if built in 3 (in accordance with IEC 60664-1)		
Accessories	-		

Functions

Electronic staircase lighting timer with switch-off warning. The control input allows the connection of pushbuttons with a total glow lamp load up to 100mA and enables the application in 3- or 4-wire circuits. The unit can be retriggered via the connected pushbuttons. A long keypress will switch off the light (energy saving function). A fast sequence of pushes (pumping) will extend the period to a multiple of the selected value. Depending upon distinct type, the following operating methods can be selected by the controls on the unit:

TW Automatic timer with switch-off warning

T Automatic timer without switch-off warning

1 Steady light (ON)

0 Switch-off

P Impulse switch mode without time function (only types with option P)

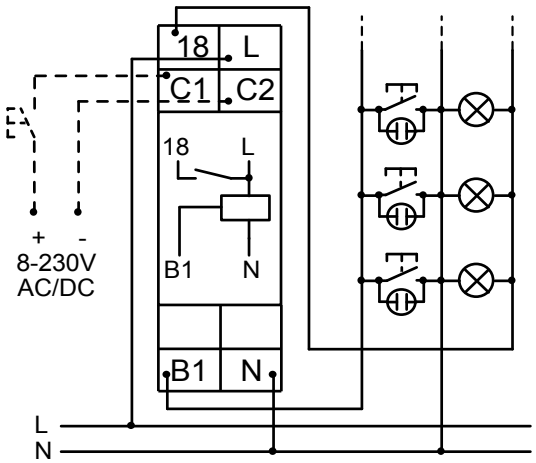
PN Impulse switch mode power fail latch (only types with option PN)

Wi Impulse switch mode with off delay

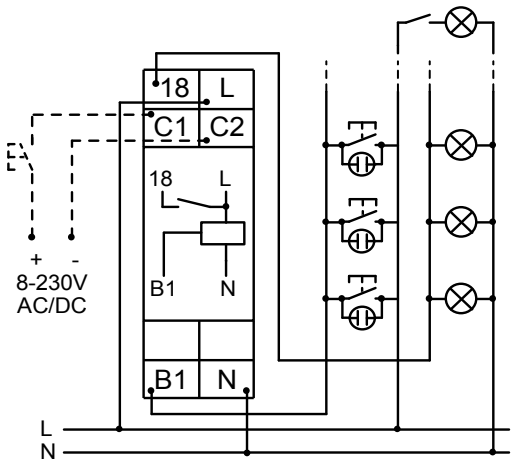
For additional functions of control input (E1ZTPNC) refer to datasheet.

Connections

E1ZT (3-wire circuit)

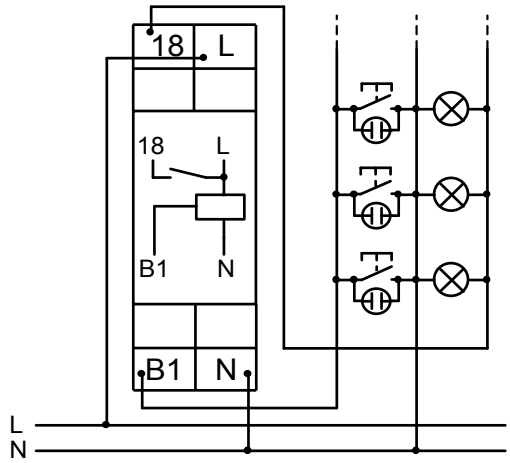


E1ZT (4-wire circuit with attic illumination)

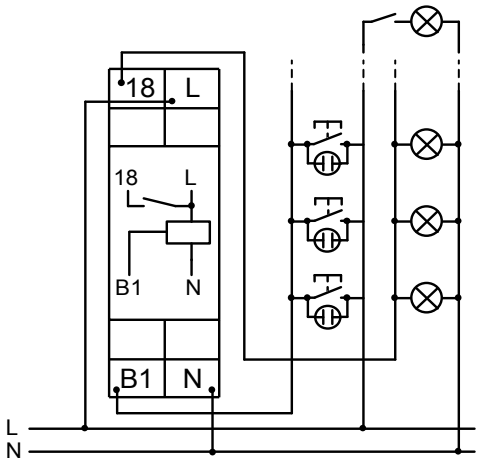


Connections

E1ZWI 3-wire-circuit



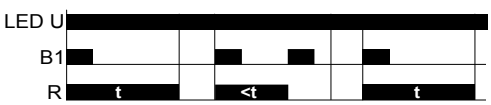
E1ZWI 4-wire-circuit with attic illumination



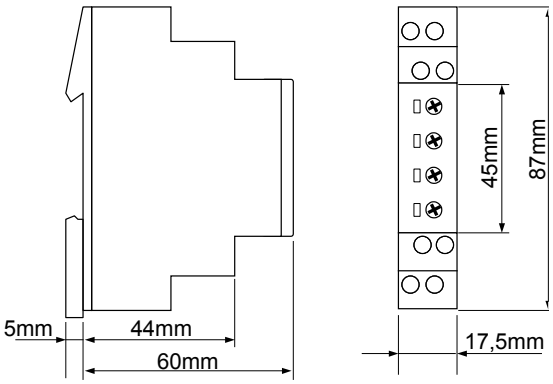
Dimensions

E1ZWI Impulse switch mode with off delay

In this mode, every keypress toggles the output relay R (flip-flop). After the pushbutton at B1 has been pressed, the output relay R closes (terminals L-18 / yellow LED illuminated) and the set interval t begins. After the interval t has expired the output relay R switches into offposition (yellow LED not illuminated). If the pushbutton is pressed again before the interval t has expired, the interval t will be canceled and the output relay R switches into off-position (yellow LED not illuminated).



Width 17,5mm



Time Relays **Series ENYA**

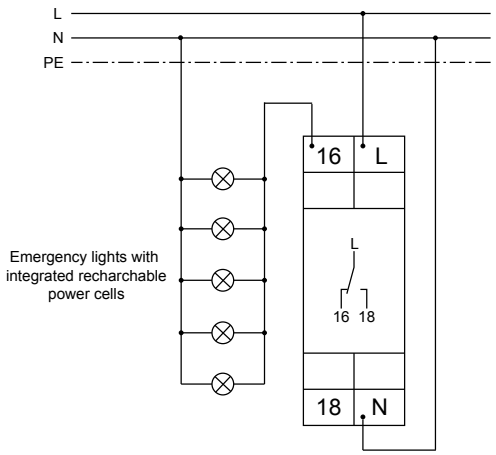
Emergency light tester

- Timer for automatic test of emergency light batteries
- Intergrated test button
- 1 CO contact
- Width 17,5mm
- Installation design

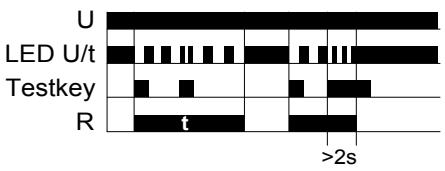
types	E1ZNT 230V AC
	
Art.No. (PQ1)	110500
Art.No. (PQ10)	-
EAN13-Code	900866200586
Controls	Time • Test
Indicators (LEDs)	U/t • R
Functions	Ws
Time ranges	10min • 30min • 60min • 90min • 2h • 3h switchable
Control input	-
Supply	230V AC terminals A1-A2
Output	1 CO contact 250V, NC 16A AC; NO 5A AC
Width	17,5mm
Certificates	CE • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque max. 1Nm
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 2, if built in 3 (in accordance with IEC 60664-1)
Accessories	-

Lamp battery tester

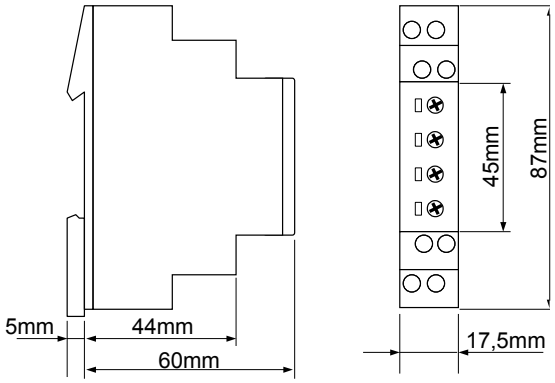
Ws Single shot leading edge with control contact



Ws



Width 17,5mm



Time Relays **Series DELTA**

Multifunction Timer

- Multifunction
- 8 time ranges
- Supply voltage through zoom voltage 24 to 240V AC/DC (D6M); dualvoltage (D6DM; D6DQ)
- 1 CO contact
- Width 22,5mm
- Industrial design

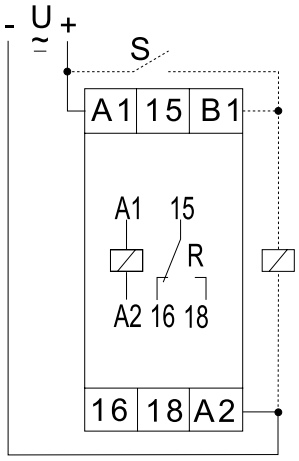
types	D6M 12-240VAC/DC	D6DM 24VAC/DC 110-240VAC	D6DQ 24VAC/DC 110-240VAC
			
Art.No. (PQ1)	234002	234000	234010
Art.No. (PQ10)	-	-	-
EAN13-Code	900866200130	900866200127	900866200134
Controls	Time • Function	Time • Function	Time • Function
Indicators (LEDs)	U/t • R	U/t • R	U/t • R
Functions	E • R • Ws • Wa • Es • Wu • Bp • Wt	E • R • Ws • Wa • Es • Wu • Bp • Wt	E • R • Wu • Bp
Inst. contact	-	-	-
2-time function	-	-	-
Time ranges	1 • 10s 1 • 10min 1 • 10h 1 • 10d	1 • 10s 1 • 10min 1 • 10h 1 • 10d	1 • 10s 1 • 10min 1 • 10h 1 • 10d
Adjustment range	5% to 100%	5% to 100%	5% to 100%
Control input	terminals A1-B1 loadable	terminals A1-B1 loadable	terminals A1-B1 loadable
Remote potentiometer	-	-	-
Supply	12 to 240V AC/DC terminals A1-A2	switchable 24VAC/DC or 110 to 240VAC terminals A1-A2	switchable 24VAC/DC or 110 to 240VAC terminals A1-A2
Output	1 CO contact 250V, 5A AC	1 CO contact 250V, 5A AC	1 CO contact 250V, 5A AC
Width	22,5mm	22,5mm	22,5mm
Certificates	CE • UL • cUL • GOST	CE • UL • cUL • GOST	CE • UL • cUL • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque max. 1Nm		
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end		
Ambient conditions	Ambient temperature: -25 to 55°C (in accordance with IEC 60068-1); -25 to 40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 3 (in accordance with IEC 60664-1)		
Accessories	-		

Functions

E	ON delay
R	OFF delay with control contact
Ws	Single shot leading edge with control contact
Wa	Single shot trailing edge with control contact
Es	ON delay with control contact
Wu	Single shot leading edge voltage controlled
Bp	Flasher pause first
Wt	Pulse detection

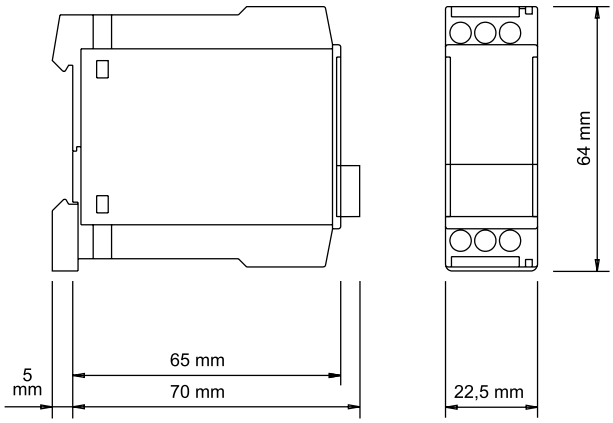
Connections

D6M; D6DM; D6DQ



Dimensions

Width 22,5mm



Time Relays **Series DELTA**

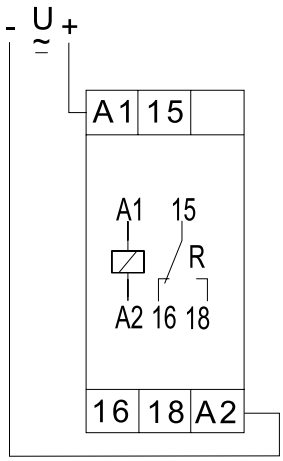
Singlefunction Timer

- ON delay (D6DE)
- ON delay two wire connection (D6DET)
- 8 time ranges (D6DE)
- 4 time ranges (D6DET)
- Dualvoltage
- 1 CO contact (D6DE)
- 1 Thyristor (D6DET)
- Width 22,5mm
- Industrial design

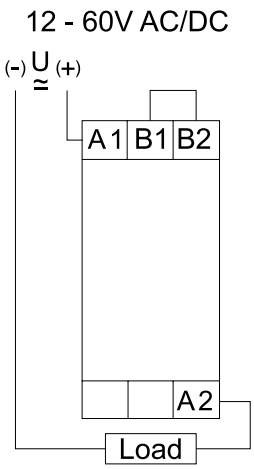
types	D6DE 24VAC/DC 110VAC	D6DE 24VAC/DC 230VAC	D6DET 4MIN 12-240VAC/DC	D6DET 40MIN 12-240VAC/DC
				
Art.No. (PQ1)	234051	234050	234090	234091
Art.No. (PQ10)	-	-	-	-
EAN13-Code	900866200137	900866200136	900866200145	900866200146
Controls	Time	Time	Time	Time
Indicators (LEDs)	U/t • R	U/t • R	U/t • R	-
Functions	E	E	E	E
Inst. contact	-	-	-	-
2-time function	-	-	-	-
Time ranges	1 • 10s 1 • 10min 1 • 10h 1 • 10d	1 • 10s 1 • 10min 1 • 10h 1 • 10d	1 • 4s • 30s 4min	10 • 40s 5 • 40min
Adjustment range	5% to 100%	5% to 100%	5% to 100%	5% to 100%
Control input	-	-	-	-
Remote potentiometer	-	-	-	-
Supply	switchable 24VAC/DC or 110VAC terminals A1-A2	switchable 24VAC/DC or 230VAC terminals A1-A2	selectable through wire link 12 to 60VAC/DC or 60 to 240VAC terminals A1-A2	selectable through wire link 12 to 60VAC/DC or 60 to 240VAC terminals A1-A2
Output	1 CO contact 250V, 5A AC	1 CO contact 250V, 5A AC	1 Thyristor 250V, 10 to 500mA AC	1 Thyristor 250V, 10 to 500mA AC
Width	22,5mm	22,5mm	22,5mm	22,5mm
Certificates	CE • UL • cUL • GOST	CE • UL • cUL • GOST	CE	CE
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque max. 1Nm			
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end			
Ambient conditions	Ambient temperature: -25 to 55°C (in accordance with IEC 60068-1); -25 to 40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 3 (in accordance with IEC 60664-1)			
Accessories	-			

E ON delay

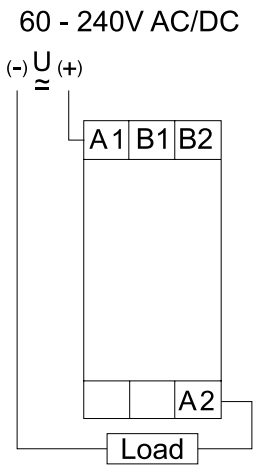
D6DE



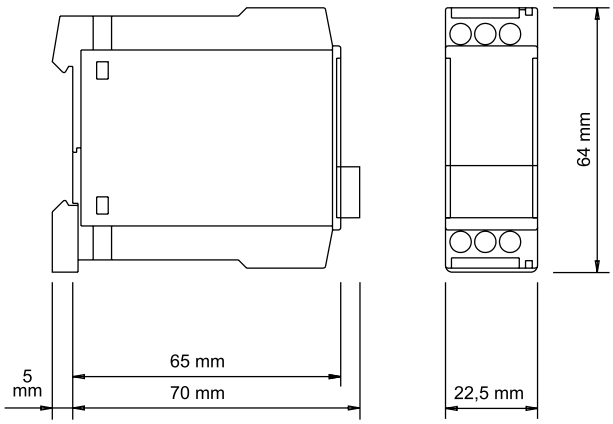
D6DET 12-60V AC/DC



D6DET 60-240V AC/DC



Width 22,5mm



Time Relays **Series DELTA**

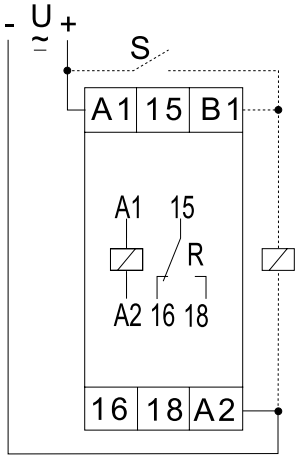
Singlefunction Timer

- OFF delay with control contact (D6DR)
- OFF delay without auxiliary voltage (D6DA)
- 8 time ranges (D6DR)
- 4 time ranges (D6DA)
- Dualvoltage
- 1 CO contact
- Width 22,5mm
- Industrial design

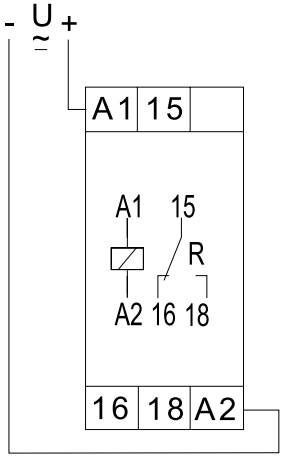
types	D6DR 24VAC/DC 110VAC	D6DR 24VAC/DC 230VAC	D6DA 3MIN 24VAC/DC 110-240VAC	D6DA 10MIN 24VAC/DC 110-240VAC
				
Art.No. (PQ1)	234061	234060	234080	234081
Art.No. (PQ10)	-	-	-	-
EAN13-Code	900866200140	900866200139	900866200143	900866200144
Controls	Time	Time	Time	Time
Indicators (LEDs)	U/t • R	U/t • R	U	U
Functions	R	R	A	A
Inst. contact	-	-	-	-
2-time function	-	-	-	-
Time ranges	1 • 10s 1 • 10min 1 • 10h 1 • 10d	1 • 10s 1 • 10min 1 • 10h 1 • 10d	1 • 10s 1 • 3min	1 • 10s 1 • 10min
Adjustment range	5% to 100%	5% to 100%	10% to 100%	10% to 100%
Control input	terminals A1-B1 loadable	terminals A1-B1 loadable	-	-
Remote potentiometer	-	-	-	-
Supply	switchable 24VAC/DC or 110VAC terminals A1-A2	switchable 24VAC/DC or 230VAC terminals A1-A2	switchable 24VAC/DC or 110 to 240VAC terminals A1-A2	switchable 24VAC/DC or 110 to 240VAC terminals A1-A2
Output	1 CO contact 250V, 5A AC	1 CO contact 250V, 5A AC	1 CO contact 250V, 5A AC	1 CO contact 250V, 5A AC
Width	22,5mm	22,5mm	22,5mm	22,5mm
Certificates	CE • UL • cUL • GOST	CE • UL • cUL • GOST	CE • UL • cUL • GOST	CE • UL • cUL • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque max. 1Nm			
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end			
Ambient conditions	Ambient temperature: -25 to 55°C (in accordance with IEC 60068-1); -25 to 40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 3 (in accordance with IEC 60664-1)			
Accessories	-			

R OFF delay with control contact
A OFF delay without auxiliary voltage

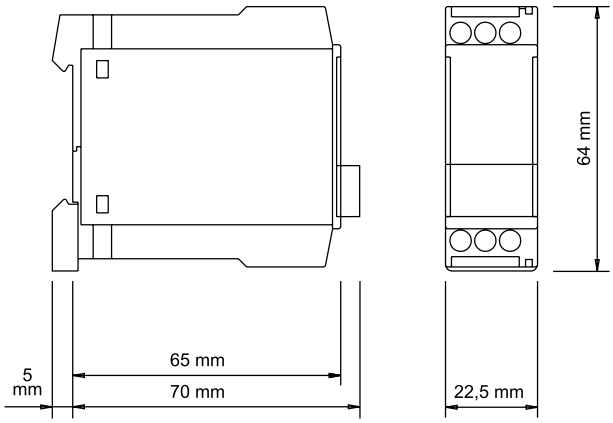
D6DR



D6DA



Width 22,5mm



Time Relays **Series DELTA**

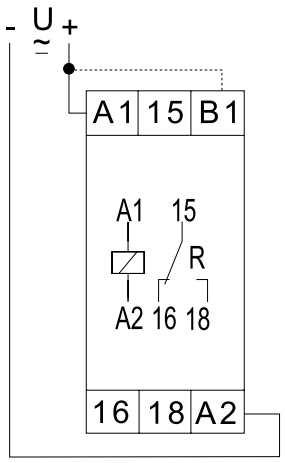
2-Time Multifunction Timer

- Asymmetric flasher
- 8 time ranges
- 2-time function
- Dualvoltage
- 1 CO contact
- Width 22,5mm
- Industrial design

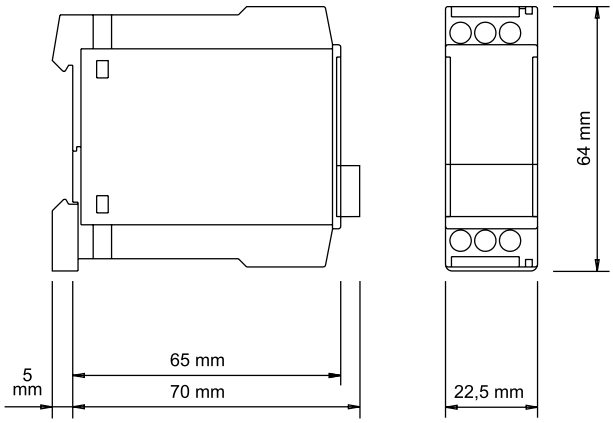
types	D6DI 24VAC/DC 110-240VAC
	
Art.No. (PQ1)	234011
Art.No. (PQ10)	-
EAN13-Code	900866200135
Controls	Time1 • Time2
Indicators (LEDs)	U/t • R
Functions	Ip • Ii (with wire link A1-B1)
Inst. contact	-
2-time function	yes
Time ranges	1 • 10s 1 • 10min 1 • 10h 1 • 10d
Adjustment range	5% to 100%
Control input	-
Remote potentiometer	-
Supply	switchable 24VAC/DC or 110 to 240VAC terminals A1-A2
Output	1 CO contact 250V, 5A AC
Width	22,5mm
Certificates	CE • UL • cUL • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque max. 1Nm
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end
Ambient conditions	Ambient temperature: -25 to 55°C (in accordance with IEC 60068-1); -25 to 40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 3 (in accordance with IEC 60664-1)
Accessories	-

lp Asymmetric flasher pause first
li Asymmetric flasher pulse first (with wire link A1-B1)

D6DI



Width 22,5mm



Time Relays **Series DELTA**

Star-Delta Timer

- Star-Delta start-up
- 4 time ranges
- Dualvoltage
- 2 NO contacts
- Width 22,5mm
- Industrial design

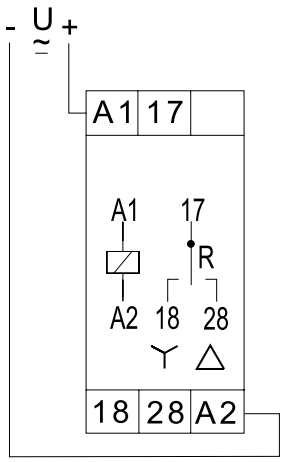
types	D6DS 24VAC/DC 110-240VAC
	
Art.No. (PQ1)	234070
Art.No. (PQ10)	-
EAN13-Code	900866200141
Controls	Time Y • Time Y → Δ
Indicators (LEDs)	U • R
Functions	S
Inst. contact	-
2-time function	-
Time ranges	Time Y: 10s • 30s • 1min • 3min Time Y → Δ: 40ms • 60ms • 80ms • 100ms
Adjustment range	5% to 100% (TimeY)
Control input	-
	-
Supply	switchable 24VAC/DC or 110 to 240VAC terminals A1-A2
Output	2 NO contacts 250V, 8A AC
Width	22,5mm
Certificates	CE • UL • cUL • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque max. 1Nm
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end
Ambient conditions	Ambient temperature: -25 to 55°C (in accordance with IEC 60068-1); -25 to 40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 3 (in accordance with IEC 60664-1)
Accessories	-

S Star-Delta start-up

Functions

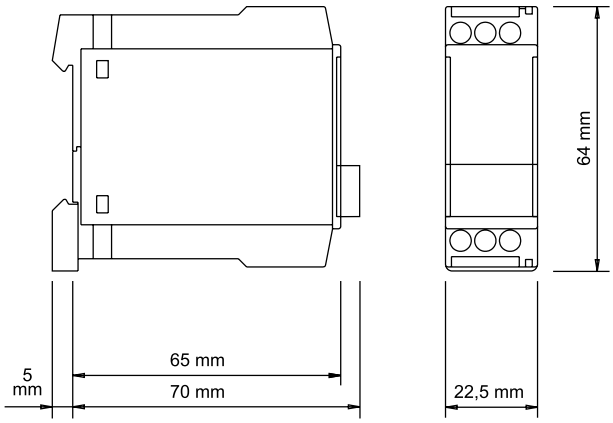
D6DS

Connections



Width 22,5mm

Dimensions



Time Relays **Series KAPPA**

Multifunction Timer

- Multifunction (K3ZM20)
- 2-Time Multifunction Timer (K3ZI20)
- Start-Delta start-up (K3ZS20)
- 7 time ranges (K3ZM20 und K3ZI20)
- 4 time ranges (K3ZS20)
- Supply voltage through zoom voltage 12 to 240V AC/DC
- 2 CO contacts
- Width 38mm
- Plug-in mounting

types	K3ZM20 12-240V AC/DC	K3ZI20 12-240V AC/DC	K3ZS20 12-240V AC/DC
			
Art.No. (PQ1)	135100	135101	135300
Art.No. (PQ10)	-	-	-
EAN13-Code	9008662005914	9008662005921	9008662005938
Controls	Time • Function	Time 1 • Time 2 • Function	Time • Time Y → Δ
Indicators (LEDs)	U/t • R	U/t • R	U/t • R
Functions	E • R • Es • Wa • Es • Wu • Bp	Ip • Ii • ER • EWu • EWs • WsWa • Wt	S
Inst. contact	-	-	-
2-time function	-	ja	-
Time ranges	1 • 10sec 1 • 10min 1 • 10h • 100h	1 • 10sec 1 • 10min 1 • 10h • 100h	Time Y: 10s • 30s • 1min • 3min Time Y → Δ: 40ms • 60ms • 80ms • 100ms
Adjustment range	5% to 100%	5% to 100%	5% to 100%
Control input	terminals A1-B1 loadable	terminals A1-B1 loadable	terminals A1-B1 loadable
Remote potentiometer	-	-	-
Supply	12 to 240V AC/DC terminals A1-A2	12 bis 240V AC/DC terminals A1-A2	12 bis 240V AC/DC terminals A1-A2
Output	2 CO 250V, 8A AC	2 CO 250V, 8A AC	2 CO 250V, 8A AC
Width	38mm	38mm	38mm
Certificates	CE	CE	CE
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on 11-pole screw terminal socket in accordance with IEC 60067-1-18a • Mounting position: any		
Ambient conditions	Ambient temperature: -25 to +55°C • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • Relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 2, if built in 3 (in accordance with IEC 60664-1)		
Accessories	-		

Functions

K3ZM20

E	ON delay
R	OFF delay with control contact
Ws	Single shot leading edge with control contact
Wa	Single shot trailing edge with control contact
Es	ON delay with control contact
Wu	Single shot leading edge voltage controlled
Bp	Flasher pause first

K3ZI20

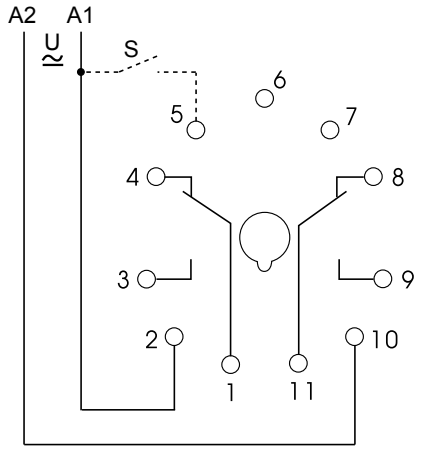
Ip	Asymmetric flasher pause first
Ii	Asymmetric flasher pulse first (with wire link A1-B1)
ER	ON delay and OFF delay with control contact
EWu	ON delay single shot leading edge voltage controlled
EWs	ON delay single shot leading edge with control contact
WsWa	Single shot leading and single shot trailing edge with control contact
Wt	Pulse sequence monitoring

K3ZS20

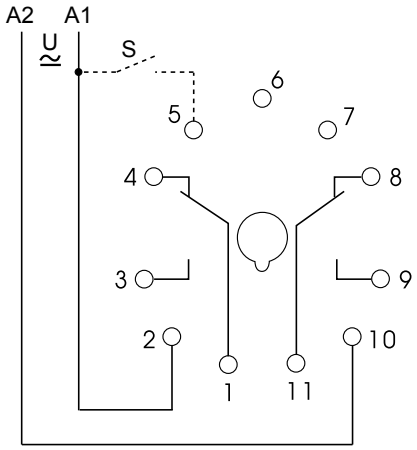
S	Star-Delta start-up

Connections

K3ZM20

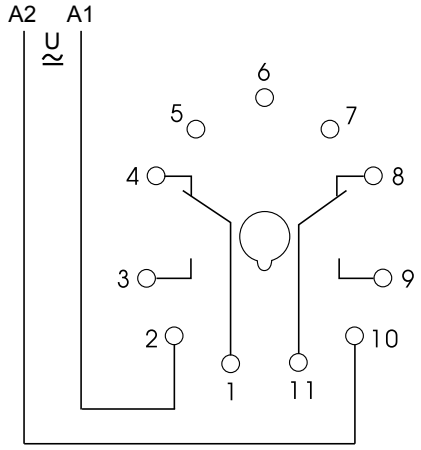


K3ZI20



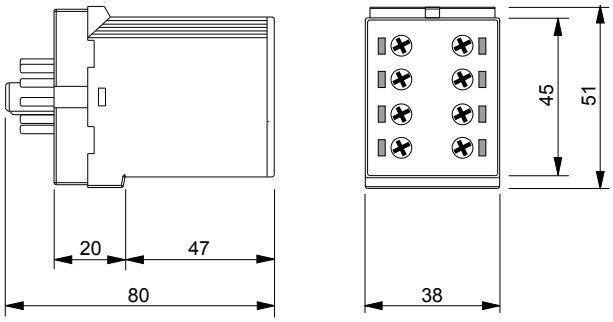
Connections

K3ZS20



Dimensions

Width 38mm



Time Relays **Series PLUS**

Multifunction Timer

- Multifunction
- 4 to 16 time ranges
- Remote potentiometer for time setting required (PDM20F)
- 1 CO contact and 1 NO contact
- 2 CO contacts
- Width 38mm
- Cap size 45mm
- Plug-in mounting

types	PM20P 12-240VAC/DC	PDM20F 24VAC/DC 110-240VAC	PDM11 24VAC/DC 110-240VAC	PDA20 24VAC/DC 110-240VAC	PDI20F 24VAC/DC 110-240VAC
					
Art.No. (PQ1)	236005	236003	236100	236080	236011
Art.No. (PQ10)	-	-	-	-	-
EAN13-Code	900866200196	900866200194	900866200201	900866200200	900866200198
Controls	Time • Function	Time • Function	Time • Function	Time	Time1 • Time2 • Function
Indicators (LEDs)	U/t • R	U/t • R	U/t • R	U	U/t • R
Functions	E • R • Ws • Wa • Es • Wu • Bp • Wt	E • R • Ws • Wa • Es • Wu • Bp • Wt	E11 • E20 R11 • R20 Ws11 • Ws20 Wa11 • Wa20 Es11 • Es20 Wu11 • Wu20 Bp11 • Bp20 Wt11 • Wt20	A	Ip • Ii • ER • EWs • EWu
Inst. contact	-	-	selectable	-	-
2-time function	-	-	-	-	yes
Time ranges	1 • 10sec 1 • 10min 1 • 10h 1 • 10d	1 • 10sec 1 • 10min 1 • 10h 1 • 10d	1 • 3 • 10 • 30sec 1 • 3 • 10 • 30min 1 • 3 • 10 • 30h 1 • 3 • 10 • 30d	1 • 10sec 1 • 3min	1 • 10sec 1 • 10min 1 • 10h 1 • 10d
Adjustment range	5% to 100%	5% to 100%	5% to 100%	5% to 100%	5% to 100%
Control input	pins S5-S6 not potentional free, galvanic separated	pins S2-S5 loadable	pins S2-S5 loadable	-	pins S2-S5 loadable
Remote potentiometer	-	pins S6-S8	-	-	Time1: pins S3-S6 Time2: pins S6-S8
Supply	12 to 240VAC/DC pins S2-S10	selectable via pins 24VAC/DC (S2-S7) 110 to 240VAC (S2-S10)	selectable via pins 24VAC/DC (S2-S7) 110 to 240VAC (S2-S10)	selectable via pins 24VAC/DC (S2-S7) 110 to 240VAC (S2-S10)	selectable via pins 24VAC/DC (S2-S7) 110 to 240VAC (S2-S10)
Output	2 CO contacts 250V, 8A AC	1 CO contact and 1 NO contact 250V, 8A AC	2 CO contacts 250V, 8A AC	2 CO contacts 250V, 5A AC	1 CO contact and 1 NO contact 250V, 8A AC
Width	38mm	38mm	38mm	38mm	38mm
Certificates	CE • GOST	CE • GOST	CE • GOST	CE • GOST	CE • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Connection and mounting by 11-pin socket in accordance with IEC 60067-1-18a • Mounting position: any				
Ambient conditions	Ambient temperature: -25 to 55°C (in accordance with IEC 60068-1); -25 to 40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 3 (in accordance with IEC 60664-1)				
Accessories	Relay socket R11X, ES12; Remote potentiometer RONDO R2 (1MOHM)				

PDM20; PDM20F; PDM10

E	ON delay
R	OFF delay with control contact
Ws	Single shot leading edge with control contact
Wa	Single shot trailing edge with control contact
Es	ON delay with control contact
Wu	Single shot leading edge voltage controlled
Bp	Flasher pause first
Wt	Pulse sequence monitoring

PDA20

A	OFF delay without auxiliary voltage

PDM11

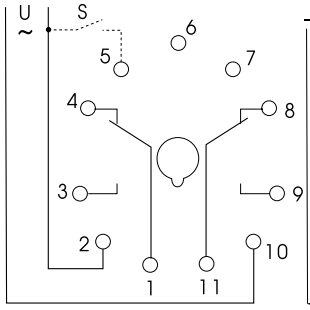
1 delayed contact (S1-S3-S4) and 1 instantaneous contact (S8-S9-S11)

E11	ON delay
R11	OFF delay with control contact
Ws11	Single shot leading edge with control contact
Wa11	Single shot trailing edge with control contact
Es11	ON delay with control contact
Wu11	Single shot leading edge voltage controlled
Bp11	Flasher pause first
Wt11	Pulse sequence monitoring

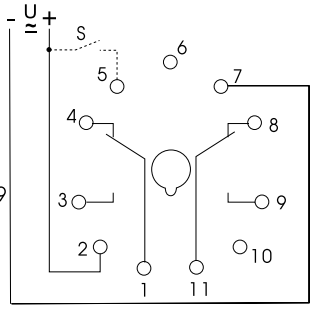
2 delayed contacts

E20	ON delay
R20	OFF delay with control contact
Ws20	Single shot leading edge with control contact
Wa20	Single shot trailing edge with control contact
Es20	ON delay with control contact
Wu20	Single shot leading edge voltage controlled
Bp20	Flasher pause first
Wt20	Pulse sequence monitoring

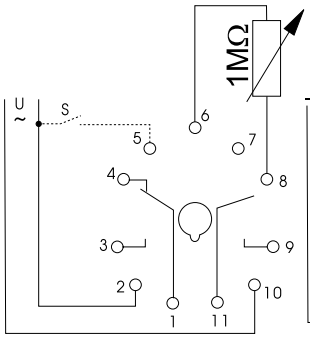
PDM20 (110-240V~)



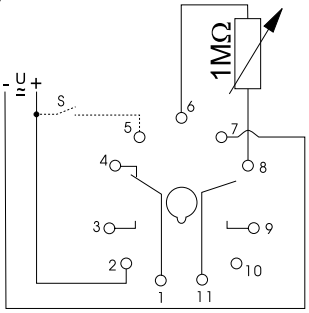
PDM20 (24V)



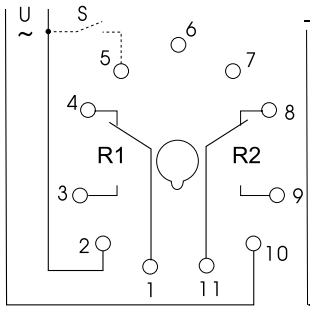
PDM20F (110-240V~)



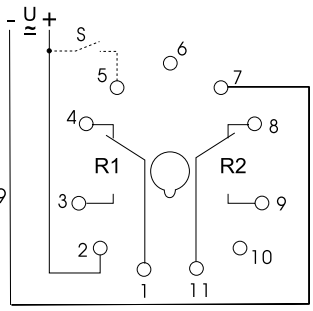
PDM20F (24V)



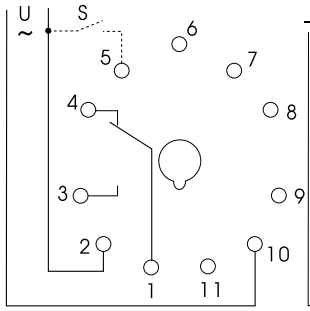
PDM11 (110-240V~)



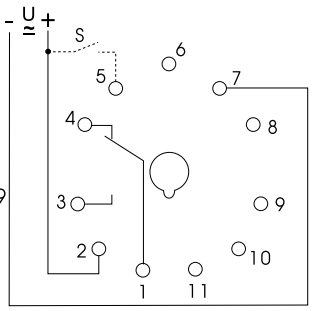
PDM11 (24V)



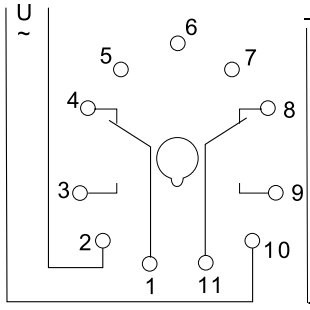
PDM10 (110-240V~)



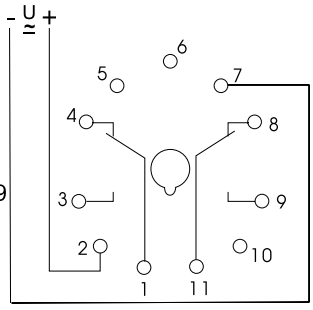
PDM10 (24V)



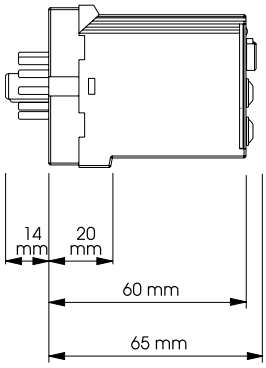
PDA20 (110-240V~)

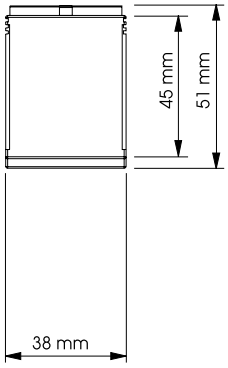


PDA20 (24V)



Baubreite 38mm





Time Relays **Series FRONT**

Multifunction Timer

- 8 Functions
- Digital time setting from 0,001s to 999,9h
- Supply voltage 24V AC/DC or 100-240VAC
- 1 CO contact
- Width 48mm
- Front panel mounting (apertuer 45mm x 45mm)

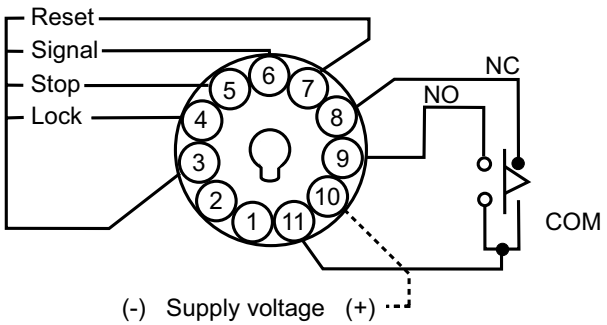
types	FSM10 24VAC/DC	FSM10 100-240VAC
		
Art.No. (PQ1)	180600	180601
Art.No. (PQ10)	-	-
EAN13-Code	9008662	9008662
Controls	button for time setting laterally switches for programming	buttons for time setting laterally switches for programming
Indicators (LEDs)	Display	Display
Functions	functions refer to datasheet	functions refer to datasheet
Inst. contact	-	-
2-time function	-	-
Time ranges	digitale adjustment	digitale adjustment
Adjustment range	0,001 to 999,9h	0,001 to 999,9h
Control input	signalinput pin 3-6 stop input pin 3-5 reset input pin 3-7 keylock input pin 3-4	signalinput pin 3-6 stop input pin 3-5 reset input pin 3-7 keylock input pin 3-4
Remote potentiometer	-	-
Supply	24V AC/DC pins 2-10	100 to 240V AC pins 2-10
Output	1 CO contact 250V, 5A AC	1 CO contact 250V, 5A AC
Width	48mm	48mm
Certificates	CE • UR • cUR • GOST	CE • UR • cUR • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP66 • Mounted in front panel aperture 45mm x 45mm by means of retaining clip (included) in accordance with DIN 43700 • Mounting position any	
Ambient conditions	Ambient temperature: -10 to +55°C • Storage temperature: -10 to +70°C • Transport temperature: -10 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 2, if built in 3 (in accordance with IEC 60664-1)	
Accessories	AZ511, R11X	

Functions

A	ON delay
A2	ON delay with power failure detection
B	ON delay with control contact
C	OFF delay with control contact
D	Single shot leading edge with control contact
E	ON delay pulse operated
F	Flasher pause first
G	ON delay with control contact, adding, power failure

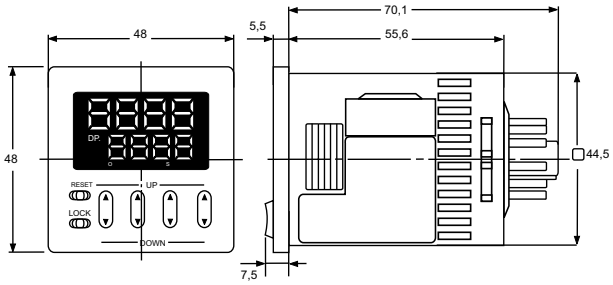
Connections

FSM10



Dimensions

Width 48mm



Time Relays **Series COMBI**

Multifunction Timing Modul

- Timing modul for industrial relays
- 8 Functions
- 8 time ranges
- Supply voltage through zoom voltage 24-240V AC/DC (must match to used relay)
- Solid state output to control the connected industrial relay
- Width 35mm
- Combination only with industrial relays Series RT and socket types ES9 or ES12

types	COM3TP 24-240VAC/DC

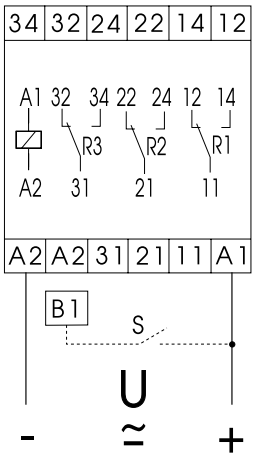
Art.No. (PQ1)	237010
Art.No. (PQ10)	-
EAN13-Code	900866200202
Controls	Time • Function
Indicators (LEDs)	U/t
Functions	E • R • Ws • Wa • Wu • Es • Bp • Bi
Inst. contact	-
2-time function	-
Time ranges	1 • 10sec 1 • 10min 1 • 10h 1 • 10d
Adjustment range	5% to 100%
Control input	terminals A1-B1 loadable
Remote potentiometer	-
Supply	24 to 240V AC/DC terminals A1-A2
Output	Industrial relays
Width	35mm
Certificates	CE • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Connection and mounting by 11-pin socket in accordance with IEC 60067-1-18a (types ES9 or ES12) • Mounting position any
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 2, if built in 3 (in accordance with IEC 60664-1)
Accessories	socket ES9 and ES12; Industrial Relays RT

Functions

E	ON delay
R	OFF delay with control contact
Ws	Single shot leading edge with control contact
Wa	Single shot trailing edge with control contact
Wu	Single shot leading edge voltage controlled
Es	ON delay with control contact
Bp	Flasher pause first
Bi	Flasher pulse first

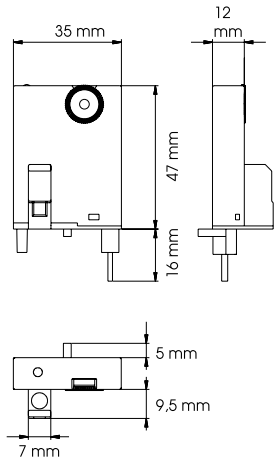
Connections

COM3T + RTx.x.xxx + ES12



Dimensions

Width 35mm



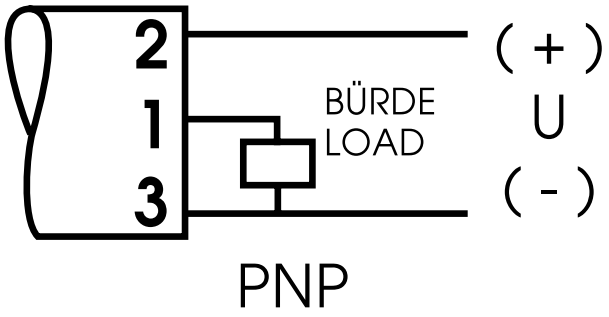
Time Relays **Series RONDO**

Timer with solid state output

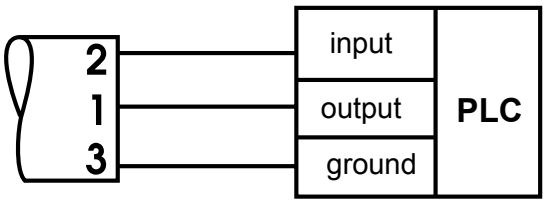
- ON delay
- 1 time range
- Transistor output
- Diameter 28mm
- Front panel mounting

types	SRE2-PNP 1SEC 24VDC	SRE2-PNP 3SEC 24VDC	SRE2-PNP 10SEC 24VDC	SRE2-PNP 1MIN 24VDC	SRE2-PNP 10MIN 24VDC	SRE2-PNP 60MIN 24VDC
						
Art.No. (PQ1)	237060	237066	237061	237062	237063	237064
Art.No. (PQ10)	-	-	-	-	-	-
EAN13-Code	900866200208	900866200213	900866200209	900866200210	900866200211	900866200212
Controls	Time	Time	Time	Time	Time	Time
Indicators (LEDs)	U • R	U • R	U • R	U • R	U • R	U • R
Functions	E	E	E	E	E	E
Inst. contact	-	-	-	-	-	-
2-time function	-	-	-	-	-	-
Time ranges	1s	3s	10s	1min	10min	60min
Adjustment range	10% to 100%	10% to 100%	10% to 100%	10% to 100%	10% to 100%	10% to 100%
Control input	-	-	-	-	-	-
Remote potentiometer	-	-	-	-	-	-
Supply	24V DC terminals 2-3					
Output	1 transistor 6W (200mA / 30V) integrated overcurrent protection					
Width	diameter 28mm					
Certificates	CE • GOST					
Mechanical design	Self-extinguishing plastic housing, IP rating IP64 (frontside) • Mounted in front panel aperture clear diameter 22.5mm by means of retaining clip (included) in accordance with DIN 43700 • Mounting position any • Shockproof terminal connection according to VBG 4, Schutzart IP10 • Tightening torque max 1Nm					
Terminal capacity	1 x 0,5 to 1mm² with/without multicore cable end					
Ambient conditions	Ambient temperature: -25 to 55°C (in accordance with IEC 60068-1) • Storage temperature: -25 to +65°C • Transport temperature: -25 to +65°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 3 (in accordance with IEC 60664-1)					
Accessories	-					

Connections

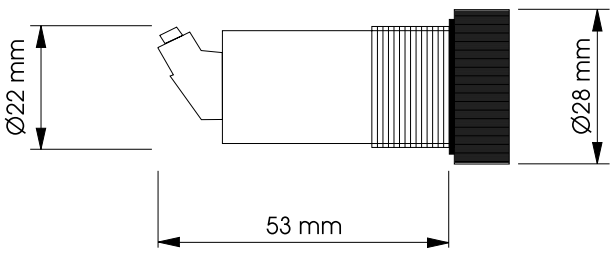


Connections



Dimensions

diameter 28mm



Time Relays **Series RONDO**

Timer with solid state output

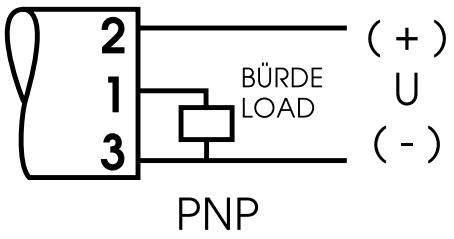
- Single shot leading edge voltage controlled
- 1 Time range
- Transistor output
- Front panel mounting
- Diameter 28mm

types	SRW2-PNP 1SEC 24VDC	SRW2-PNP 10SEC 24VDC	SRW2-PNP 1MIN 24VDC	SRW2-PNP 10MIN 24VDC	SRW2-PNP 60MIN 24VDC
					
Art.No. (PQ1)	237080	237081	237082	237083	237084
Art.No. (PQ10)	-	-	-	-	-
EAN13-Code	900866200217	900866200218	900866200219	900866200220	900866200221
Controls	Time	Time	Time	Time	Time
Indicators (LEDs)	U • R	U • R	U • R	U • R	U • R
Functions	Wu	Wu	Wu	Wu	Wu
Inst. contact	-	-	-	-	-
2-time function	-	-	-	-	-
Time ranges	1s	10s	2min	10min	60min
Adjustment range	10% to 100%	10% to 100%	10% to 100%	10% to 100%	10% to 100%
Control input	-	-	-	-	-
Remote potentiometer	-	-	-	-	-
Supply	24V DC terminals 2-3	24V DC terminals 2-3	24V DC terminals 2-3	24V DC terminals 2-3	24V DC terminals 2-3
Output	1 transistor 6W (200mA / 30V) integrated overcurrent protection	1 transistor 6W (200mA / 30V) integrated overcurrent protection	1 transistor 6W (200mA / 30V) integrated overcurrent protection	1 transistor 6W (200mA / 30V) integrated overcurrent protection	1 transistor 6W (200mA / 30V) integrated overcurrent protection
Width	diameter 28mm	diameter 28mm	diameter 28mm	diameter 28mm	diameter 28mm
Certificates	CE • GOST	CE • GOST	CE • GOST	CE • GOST	CE • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP64 (frontside) • Mounted in front panel aperture clear diameter 22.5mm by means of retaining clip (included) in accordance with DIN 43700 • Mounting position any • Shockproof terminal connection according to VBG 4, Schutzart IP10 • Tightening torque max 1Nm				
Terminal capacity	1 x 0,5 to 1mm² with/without multicore cable end				
Ambient conditions	Ambient temperature: -25 to 55°C (in accordance with IEC 60068-1) • Storage temperature: -25 to +65°C • Transport temperature: -25 to +65°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 3 (in accordance with IEC 60664-1)				
Accessories	-				

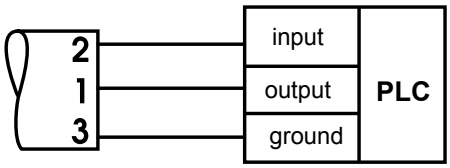
Wu Single shot leading edge voltage controlled

Functions

Connections

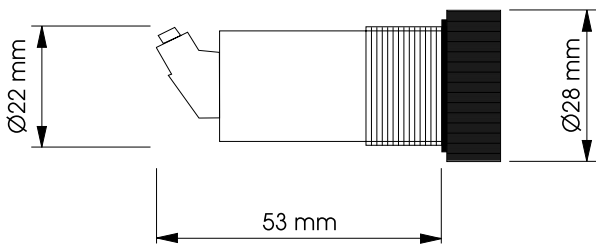


Connections



Dimensions

diameter 28mm




COMPACT
CONTROL
UNITS
Überwachungsrelais
Monitoring relay
Relais de surveillance
ECO.8 IIT 1000kW MAX WÄCHTER
620154
mit Echtzeituhr
1PCS
Control Outputs
Failure
Power

COMPACT CONTROL UNITS

ECO
Energy management

The consumption of energy as uniformly as possible throughout the day offers the supplier the prospect of considerable savings. Agreeing a peak load rate also gives the end consumer the opportunity to significantly reduce
his energy costs.

STEP-T
Sequence controller

Periodic filter cleaning with compressed air, simple water treatment plants, feeding systems, lighting controls, up to 9 output channels are controlled in a timed sequence. No special programming knowledge is required to put the device into operation.

GAMMA
Pumpalternator

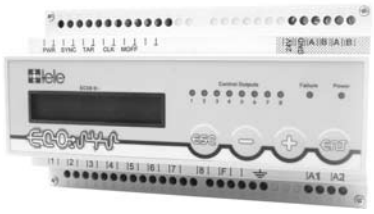
As a compact unit the pump-controller allot the feed of 2 pumps by alternating operation. According to requirments two different modes of parallel operation might be activated to cover high loads. Uniform load sharing and periodical operation of both pump sets are the best condition for operational readiness.

Energymanagement **Series ECO III**

Maximum load controller

ECO - The system

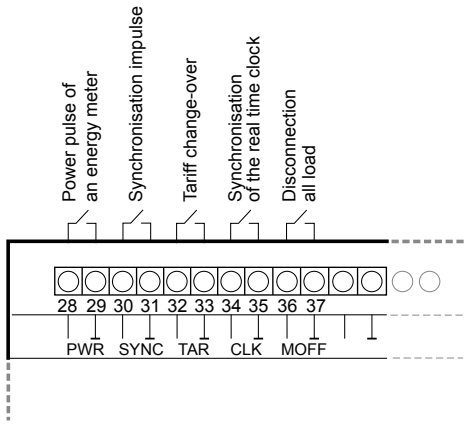
The new EcoSys range in conjunction with the EcoGate expansion modules now makes it possible to implement effective energy management cost effectively even in large sites. For the fi rst time, these devices make it possible to record, assess and control the current consumption of a monitored building centrally while performing the switching activity this requires on a decentralized basis directly in the individual subdistributions. To achieve this, each EcoSys maximum peak load monitor can communicate with up to 7 EcoGate expansion modules through the standard protocol running over RS 485. In this way, up to 64 different consumers or consumer groups can be managed and switched on and off.

types	ECO8 III SYS	ECO8 III GATE
		
Art.No. (PQ1)	620160	620161
EAN13-Code	900866200370	900866200371
Functions	Maximum load controller for allocation of power peaks. Trend computation and limitation of peak power. Variable cycle durations after specification of the EVU adjustable or limitation of the instantaneous values. Amplification up to 64 consumer groups by dint of ECO-GATE amplification modules.	Output extension unit to ECO-SYS. The base device can be extended by 8 signal paths. Maximum 7 ECO GATE's per ECO-SYS are lockable over decentral two-wire bus. Connection facility for sub counter. Control contacts to influence the control mode of individual circuits.
Additional functions	integrated digital time switch for each channel • datalogger	integrated digital time switch for each channel
Controls	4 button prgramming	4 button prgramming
Indicators (LEDs)	Display • 8 LEDs for output status • Failure • Power	Display • 8 LEDs for output status • Failure • Power
Time ranges	min. turn-on time: 0s to 19min 59sec min. turn-off time: 1s to 19min 59sec max. turn-off time: 1s to 19min 59sec	min. turn-on time: 1s to 19min 59sec min. turn-off time: 1s to 19min 59sec max. turn-off time: 1s to 19min 59sec
Priority of outputs	64 levels of priority selectable	64 levels of priority selectable
Control input PWR	Function: power pulse from energy meter Connected: galvanic separated; terminals 28, 29 Typ: S0 (DIN 43864); 12,5mA DC / 15V DC (max. 50Hz)	Function: Connection from sub energy meter Connected: galvanic separated; terminals 28, 29 Typ: S0 (DIN 43864); 12,5mA DC / 15V DC (max. 50Hz)
Additional control input	**Control input SYNC:** pulse for synchronisation from the grid operator Connected: galvanic separated; terminals 30, 31 Typ: S0 (DIN 43864); 12,5mA DC / 15V DC **Control input TAR:** changing tariff input from the grid operator Connected: galvanic separated; terminals 32, 33 Typ: S0 (DIN 43864); 12,5mA DC / 15V DC **Control input CLK:** synchronisation of the clock (optional) Connected: galvanic separated; terminals 34, 35 Typ: current loop; 6,25mA DC / 15V DC **Control input MOFF:** turn off all loads immediately (optional) Connected: galvanic separated; terminals 36, 37 Typ: current loop; 6,25mA DC / 15V DC	**Control input IN1 to IN5** control outputs 1 to 5 (according to program settings) Connected: galvanic separated; terminals 30 to 39 Typ: current loop; 6,25mA DC / 15V DC
Supply	110 to 240V AC or 110 to 300V DC; terminals A1-A2	110 to 240V AC or 110 to 300V DC; terminals A1-A2
Output	8 potential free NO contact 230V AC, 3A (control load groups) 1 potential free CO contact 230V AC, 3A (failure)	8 potential free NO contact 230V AC, 3A (control load groups) 1 potential free CO contact 230V AC, 3A (failure)
Width	157,5mm	157,5mm
Certificates	CE	CE
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position: any • Shockproof terminal connection according to VBG 4, IP rating IP20 • empfohlene/maximale Abisolierlänge for Terminal capacity: 6mm/9mm	
Terminal capacity	1 x 0,5 to 2,5mm² flexible without multicore cable end • 2 x 0,5 to 1,5mm² flexible without multicore cable end • 1 x 1 to 2,5mm² starr/with multicore cable end	
Ambient conditions	Ambient temperature: 0 to 50°C (in accordance with IEC 60068-1) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 2, if built in 3 (in accordance with IEC 60664-1)	
Accessories	**ECO III COM** (Art.Nr. 620170) for PC-Communication, Datalogger reading and parameter settings via RS232 or USB-Port Content: converter RS232/RS485 and USB/RS232; adapter 9pin/25pin; datacable 9pin (1m); Software on CD ROM	

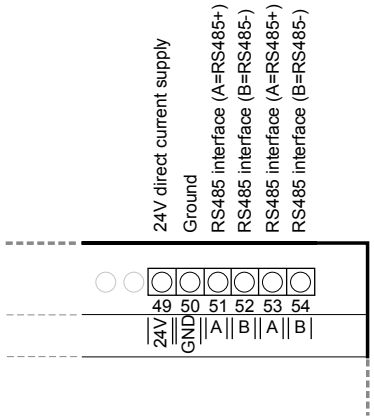
ECO - How it works

In most residential as well as in commercial buildings, the operation of some devices might be disabeled a few minutes without inconvenience of comfort and functionality. Eco takes advantage of this by disconnecting „loads“ such as heating of rooms or hot water provision for short periodes. As soon as the consumer system being monitored is again drawing less power, users that had previously been disconnected are progressively reconnected and can continue operating.
The overall result is a significantly more consistent power uptake by the entire monitored consuming system – the plant’s power requirement is reduced.

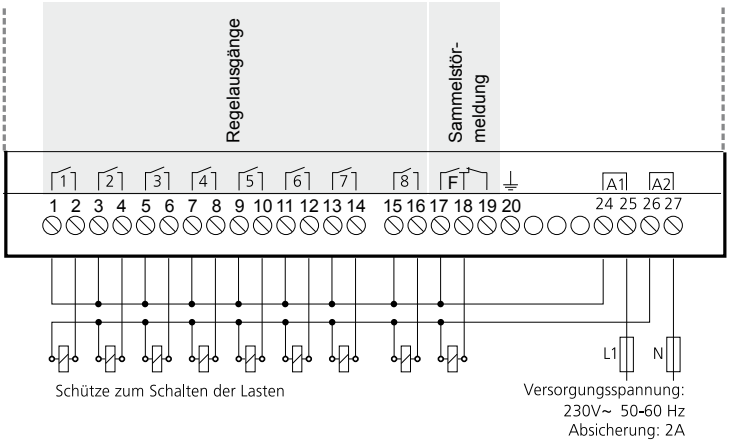
Control inputs



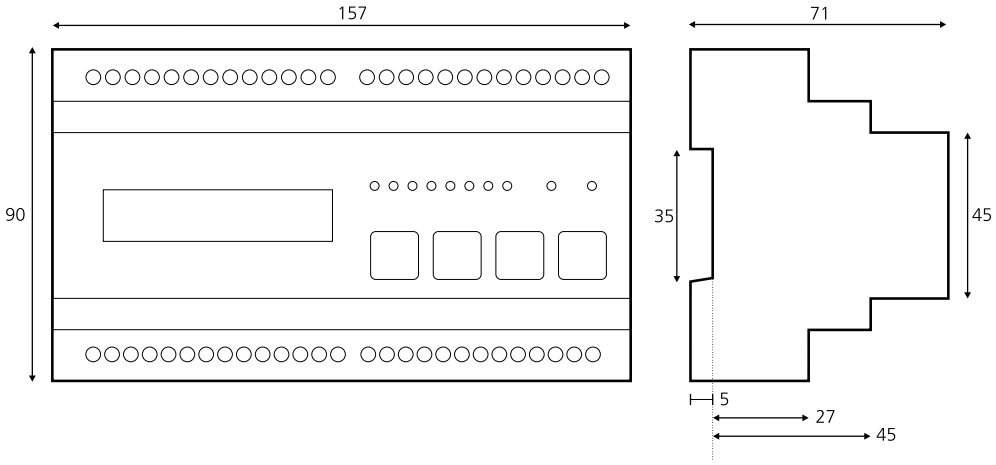
Connections



Outputs



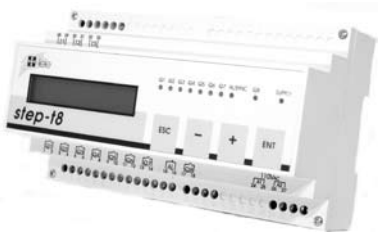
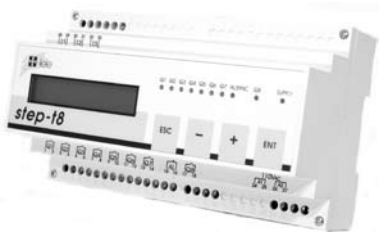
Width 157,5mm



Sequence processor **Series STEP-T8**

State machine

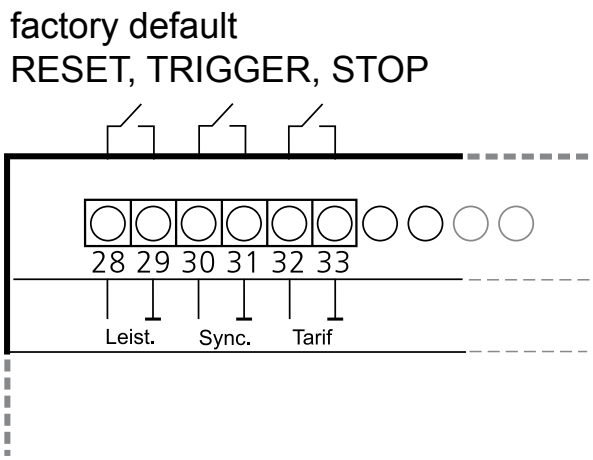
- Sequence processor with 4x20 programm steps
- Function of control inputs programmable
- 7 operation modes
- Remanent latch function (selectable)
- 8 NO contact
- 1 CO contact
- Width 157,5mm
- Installation design

types	STEP-T8 110VAC	STEP-T8 230VAC
		
Art.No. (PQ1)	454002	454001
Art.No. (PQ10)	-	-
EAN13-Code	900866200365	900866200364
Controls	4 button programming	4 button programming
Indicators (LEDs)	Display • 8 LEDs for output status • AL/SYNC • Power	Display • 8 LEDs for output status • AL/SYNC • Power
Functions	Sequence processor with 4x20 programm steps 7 operation modes selectable: **MODE 0** (standard - factory default) • **MODE 1** (power failure detection) • **MODE 2** (start requirement) • **MODE 3** (power failure detection and start requirement) • **MODE 4** (standard with extended Stop-function) • **MODE 5** (power failure detection with extended Stop-function) • **MODE 6** (start requirement with extended Stop-function) • **MODE 7** (power failure detection and start requirement with extended Stop-function)	Sequence processor with 4x20 programm steps 7 operation modes selectable: **MODE 0** (standard - factory default) • **MODE 1** (power failure detection) • **MODE 2** (start requirement) • **MODE 3** (power failure detection and start requirement) • **MODE 4** (standard with extended Stop-function) • **MODE 5** (power failure detection with extended Stop-function) • **MODE 6** (start requirement with extended Stop-function) • **MODE 7** (power failure detection and start requirement with extended Stop-function)
time ranges	0,1s to 59min 59,9sec (100ms resolution) 1s to 99h 95min 59sec (1s resolution)	0,1s to 59min 59,9sec (100ms resolution) 1s to 99h 95min 59sec (1s resolution)
factory default control input setting	**Control input I1**: RESET Connected: galvanic separated; terminals 28-29 Typ: S0 (DIN 43864); 15mA DC / 24V DC **Control input I2**: TRIGGER Connected: galvanic separated; terminals 30-31 Typ: S0 (DIN 43864); 15mA DC / 24V DC **Control input I3**: STOP Connected: galvanic separated; terminals 32-33 Typ: S0 (DIN 43864); 15mA DC / 24V DC	**Control input I1**: RESET Connected: galvanic separated; terminals 28-29 Typ: S0 (DIN 43864); 15mA DC / 24V DC **Control input I2**: TRIGGER Connected: galvanic separated; terminals 30-31 Typ: S0 (DIN 43864); 15mA DC / 24V DC **Control input I3**: STOP Connected: galvanic separated; terminals 32-33 Typ: S0 (DIN 43864); 15mA DC / 24V DC
selectable Input functions	RESTART / STEP BACK • MANUAL • PROGRAMME CHANCE	RESTART / STEP BACK • MANUAL • PROGRAMME CHANCE
Supply	110VAC terminals A1-A2	230VAC terminals A1-A2
Output	8 potential free NO contact 230V AC, 3A 1 potential free NC contact 230V AC, 3A	8 potential free NO contact 230V AC, 3A 1 potential free NC contact 230V AC, 3A
Width	157,5mm	157,5mm
Certificates	CE	CE
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position: any • Shockproof terminal connection according to VBG 4, IP rating IP20 • Tightening torque max. 1Nm	
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end	
Ambient conditions	Ambient temperature: 0 to 50°C (in accordance with IEC 60068-1) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 2, if built in 3 (in accordance with IEC 60664-1)	
Accessories	-	

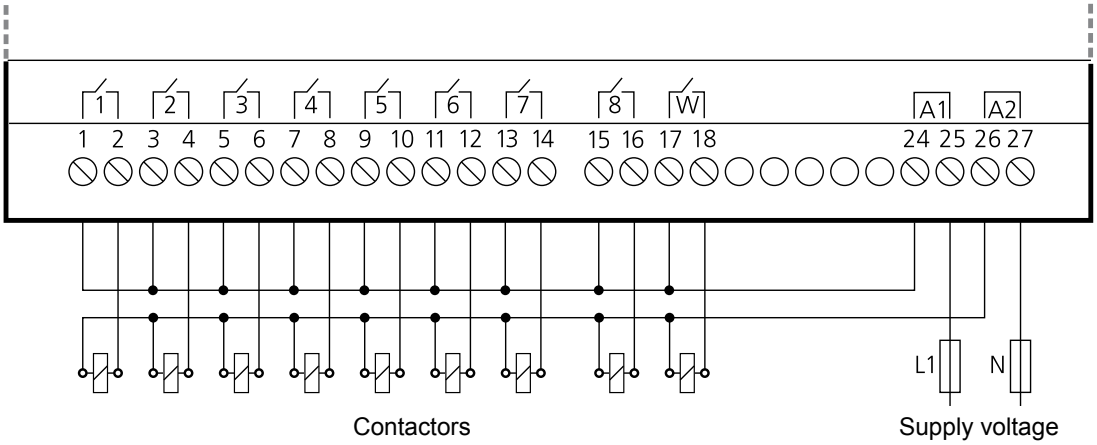
The 8 normally open contacts, as well as the alarm or synchronisation contact, are operated according to the internally saved, time-dependent sequences of steps (programmes). The sequences can run once (E) or cyclically (Z).
The individual steps are defined by a programmed time interval and the associated condition of all output relays (output mask). Any changes to the condition of the output relays therefore require the programming of a new step.

The time-controlled processing of the sequence can be influenced by using the 3 input channels. The product is supplied with a factory default setting.

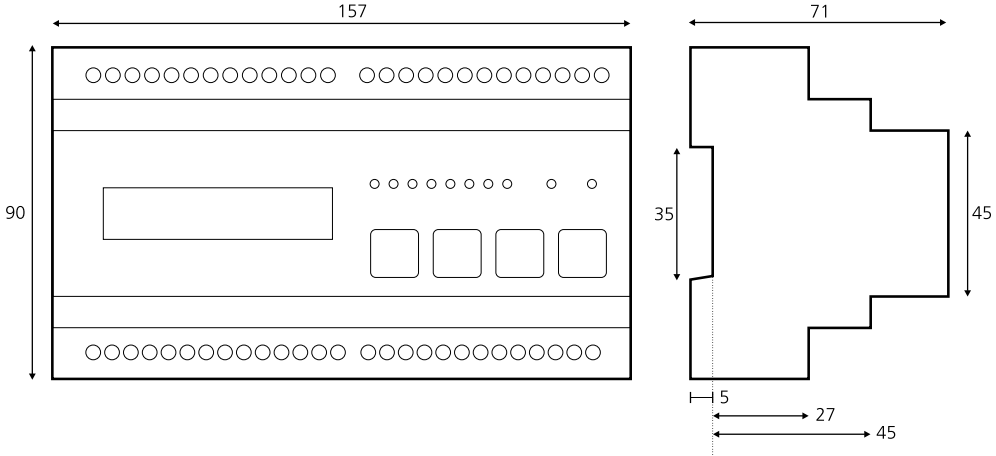
Control input



Outputs



Width 157,5mm



Pump Alternator **Series GAMMA**

Alternating or prallel operation of motors

- Alternated access of two pumps or other devices
- Even distribution of duty
- Parallel duty at high demand
- Operation using 1 or 2 input signals (two modes of operation)
- Timing offset of the two loads to avoid water hammer effcects
- Supply voltage selectable via TR2 PowerModules or DC power supply
- 2 separate change over relays for device control
- Width 22,5mm
- Industrial design

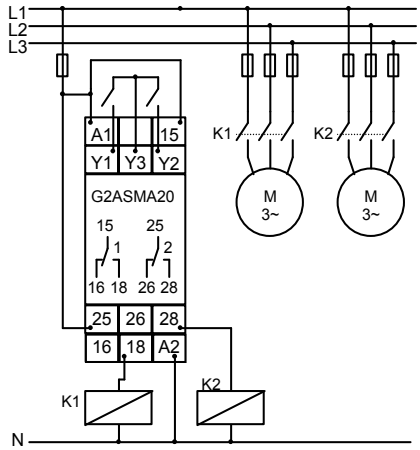
types	G2ASMA20
	
Art.No. (PQ1)	122000
Art.No. (PQ10)	-
EAN13-Code	900866200033
Controls	TIME/MODE
Indicators (LEDs)	U/t • Failure • R1 • R2
Functions	One of two redundant motors will operate on demand signalised by input Y1. Successive requests will operate the motors in an alternating sequence (sharing the duty between the devices). On demand both devices (pumps) will operate in parallel: **Mode A** (parallel operation by separate input signal): Input Y2 initiates parallel operation. Without signal at input Y2, only one single motor will operate at each request. **Mode B** (parallel operation by timing): If an operation request on input Y1 exceeds the ajdusted delay, the unit will start the second motor for parallel operation.
Time ranges	t_1 (for parallel operation): 2s to 5min (only for mode B) t_2 (offset timing): 2s fix
Control input	control input Y1: request for operation; terminals Y1-Y3 control input Y2: parallel operation (Mode A only); terminals Y2-Y3 input circuits galvanic separated
Supply	PowerModule TR2 or SNT2 terminals A1-A2
Output	2 potential free CO contacts 250V AC, 5A
Width	22,5mm
Certificates	CE
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required) • IP rating IP20 • Tightening torque max. 1Nm.
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end
Ambient conditions	Ambient temperature: -25 to 55°C (in accordance with IEC 60068-1); -25 to 40°C (in accordance with UL 508) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 3 (in accordance with IEC 60664-1) • Vibration resistance: 10 to 55Hz 0,35mm (in accordance with IEC 60068-2-6) • Shock resistance: 15g 11ms (in accordance with IEC 60068-2-27)
Accessories	PowerModule TR2 (12 - 400V AC) • DC power supply SNT2 24VDC

Functions

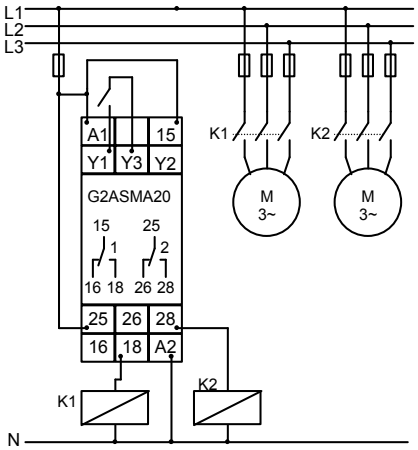
The Pump-Alternator is sensitive to one (mode B) or two (mode A) digital input signals. Each of the two output relays activates one of the two devices (usually pumps or motors) driven. The two outputs (Rel.1 and Rel. 2), are equally configured and interchangeable. In case of request for operation (Y1-Y3 linked by external contact) one of the output relays energises as long as the signal persists on input (Y1). Next time there is a request for operation the alternate output operates in the same manner. This way both connected devices (pumps or motors) will share load.
The information about, which output has done the first cycle after a power reset, is stored in a non-volatile memory. Next time after a power reset the other output will do the first cycle.
There is no definite delivery status about which of the two outputs will operate at the first occasion.
Mode and time setting can be done with a screwdriver at the front of the G2ASMA20. Control by supply voltage.

Connections

Modus A

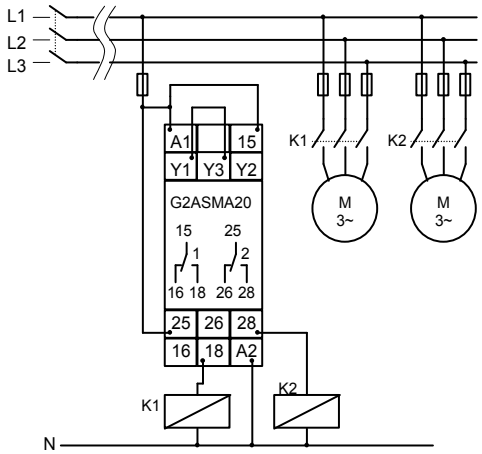


Modus B



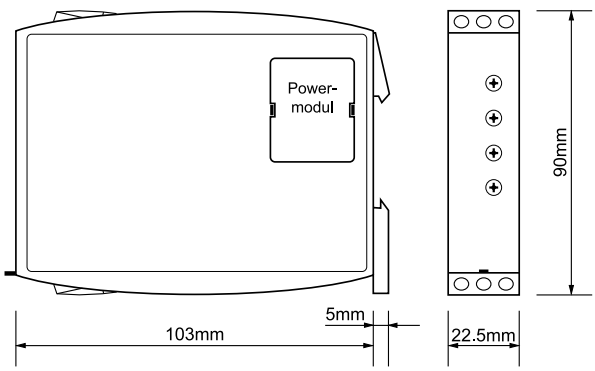
Connections

Control by supply voltage



Dimensions

Width 22,5mm



COUPLING UNITS

COUPLING UNITS

OCTO
Coupling units

With universal supply, emergency light controls and analog data encoders facilitate and expedite maintenance in building service systems. Plant construction can also benefit from the convenience of being able to switch sections of plant over to manual operation locally on an individual basis.

TREND
Coupling units

The compact diode modules series TREND bundle your signals for shared transmission. It may used as well to build up testing circuits for display lamps in a simple and easy way.

VOX
Coupling units

In a housing just 22.5 mm wide, these coupling relays provide four separately controllable contacts. The status of each contact is indicated by a front-panel mounted LED.

M1
Signal transmitter

The slim units offer universal connectivity as well as highest operational safety. Analogue standard signals or values of temperature sensors got transformed to the required output. Galvanic separation of all circuits, input-, output-, as well as universal supply, guaranty precision safety and reliability.

Coupling units **Series ENYA**

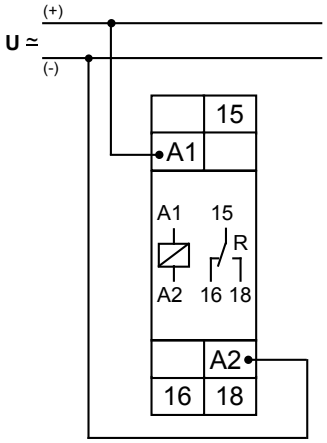
Coupling relay

- Coupling relay
- Zoom voltage 24-240V AC/DC
- 1 CO; 2 CO contacts
- Width 17,5mm; 35mm
- Installation design

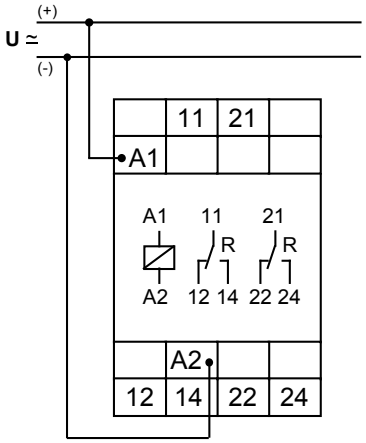
types	E1K 24-240VAC/DC	E3K 12-240VAC/DC
		
Art.No. (PQ1)	110700	111700
Art.No. (PQ10)	-	-
EAN13-Code	9008662006034	9008662006041
Controls	-	-
Indicators (LEDs)	R	R
Functions	Coupling relays	Coupling relays
Isolation	Rated voltage 250V AC	Rated voltage 250V AC
Overvoltage cat.	III (in accordance with IEC 60664-1) Rated voltage: 4kV	III (in accordance with IEC 60664-1) Rated voltage: 4kV
Supply	24-240VAC/DC terminals A1-A2	12-240VAC/DC terminals A1-A2
Output	1 potential free change over contact 250V AC, 8A	2 potential free change over contact 250V AC, 8A
Width	17,5mm	35mm
Certificates	CE	CE
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-rail TS 35 according to EN 60715 • Mounting position: any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque: max. 1Nm	
Terminal capacity	1 x 0.5 to 2.5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0.5 to 1.5mm² with/without multicore cable end 2 x 2.5mm² flexible without multicore cable end	
Ambient conditions	Ambient temperature: -25 to +55°C • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • Relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 2, if built in 3 (in accordance with IEC 60664-1)	
Accessories	-	

Connections

E1K

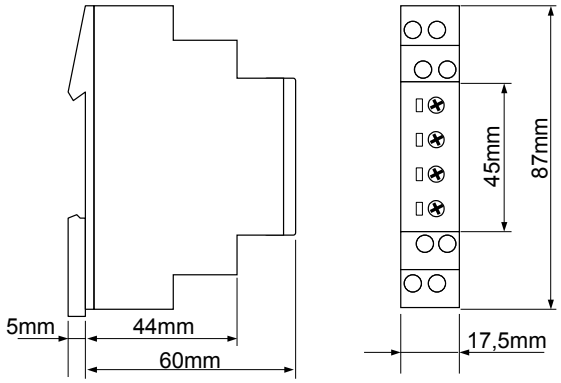


E3K

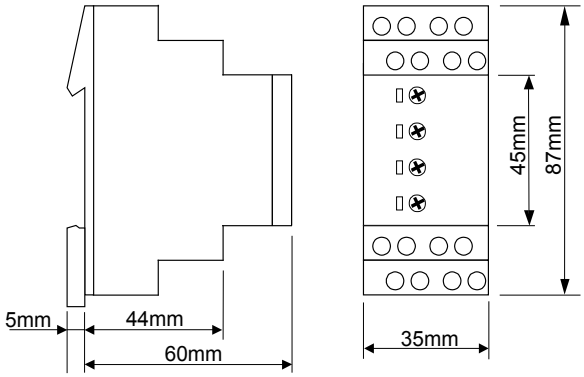


Dimensions

Width 17,5mm



Width 35mm



Coupling units **Series OCTO**

Automatic-Manual-OFF relay

- Three-way switch: Automatic, permanently OFF or ON
- Checkback signal of the switch setting AUTO
- 1 CO contact
- Width 17,5mm
- Installation design

types	HAR1
	
Art.No. (PQ1)	170010
Art.No. (PQ10)	-
EAN13-Code	900866200067
Controls	Function
Indicators (LEDs)	R
Functions	AUTO (automatic) • 0 (permanently OFF) • HAND (permanently ON)
Control input	control voltage for automatic operation 24V AC/DC terminals A3-A2
Output	1 potential free CO contact 250V AC, 8A
Checkback	1 potential free NO contact for checkback signal of the switch setting AUTO 48V AC/DC; 500mA terminals B1-B2
Supply	24V AC/DC terminals A1-A2
Width	17,5mm
Certificates	CE • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque max. 1Nm
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 2, if built in 3 (in accordance with IEC 60664-1)
Accessories	-

Functions

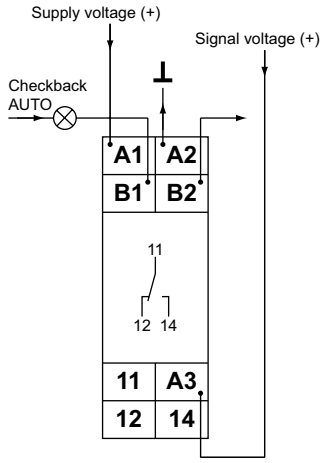
Automatic (AUTO)
The contact of checkback B1-B2 is closed.
When the signal voltage U is applied at terminal A3 the output relay R switches into on-position (yellow LD illuminated)

Permanently OFF (0)
The contact of checkback B1-B2 is opened.
The output relay R remains in off-position independent from the connected signal voltage.

Permanently ON (HAND)
The contact of checkback B1-B2 is opened.
When the supply voltage U is applied at terminal A1 the output relay R switches into on-position (yellow LED illuminated). Changes of the signal voltage do not influence the state of the output relay.

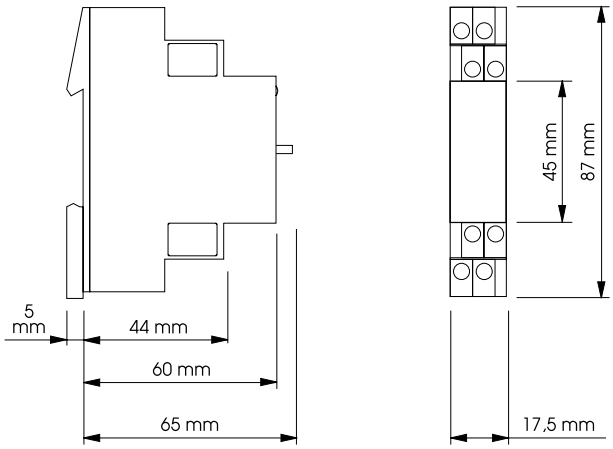
Connections

HAR1



Dimensions

Width 17,5mm



Coupling units **Series OCTO**

Analog data encoder

- Analog data encoder 0 to 10V DC (OVP1)
- Analog data encoder 0 to 20mA DC (OCP1)
- Checkback signal of the switch setting AUTO
- 1 analogue output and 1 NO contact (checkback)
- Width 17,5mm
- Installation design

types	OVP1 24VAC/DC	OCP1 24VAC/DC
		
Art.No. (PQ1)	170012	170018
Art.No. (PQ10)	-	-
EAN13-Code	900866200069	900866200075
Controls	function • analogue data	function • analogue data
Indicators (LEDs)	LED (intensity according to the value of the output signal)	LED (intensity according to the value of the output signal)
Functions	AUTO (output according to input YR) 0 (permanently OFF) HAND (output according to set value (regulator)	AUTO (output according to input YR) 0 (permanently OFF) HAND (output according to set value (regulator)
Analogue input	input for automatic operation 0 to 10V DC terminals YR-GND	input for automatic operation 0 to 20mA DC terminals YR-GND
Output	1 analogue output 0 to 10V DC terminals Y-GND	1 analogue output 0 to 20mA DC terminals Y-GND
Checkback	1 potential free NO contact for checkback signal of the switch setting AUTO 28V AC/DC; 2A terminals B1-B2	1 potential free NO contact for checkback signal of the switch setting AUTO 28V AC/DC; 2A terminals B1-B2
Supply	24V AC/DC terminals A1-A2	24V AC/DC terminals A1-A2
Width	17,5mm	17,5mm
Certificates	CE • GOST	CE • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque max. 1Nm	
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end	
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 2, if built in 3 (in accordance with IEC 60664-1)	
Accessories	-	

Functions

OVP1

Automatic (AUTO): The contact of checkback B1-B2 is closed. The input signal applied to terminal YR is looped through unchanged to terminal Y.

Permanently OFF (0): The contact of checkback B1-B2 is opened. No outputsignal at terminal Y.

Manual signal (HAND): The contact of checkback B1-B2 is opened. Output signal at terminal Y (0 to 10V DC) according to the value set on the front mounted regulator.

OCP1

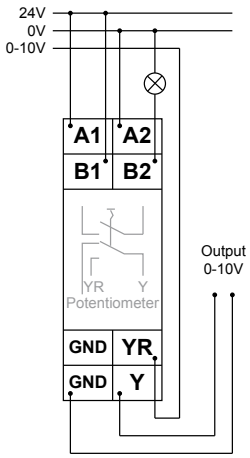
Automatic (AUTO): The contact of checkback B1-B2 is closed. The input signal applied to terminal YR is looped through unchanged to terminal Y.

Permanently OFF (0): The contact of checkback B1-B2 is opened. No outputsignal at terminal Y.

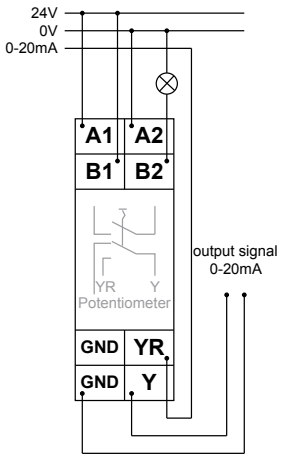
Manual signal (HAND): The contact of checkback B1-B2 is opened. Output signal at terminal Y (0 to 20mA DC) according to the value set on the front mounted regulator.

Connections

OVP1

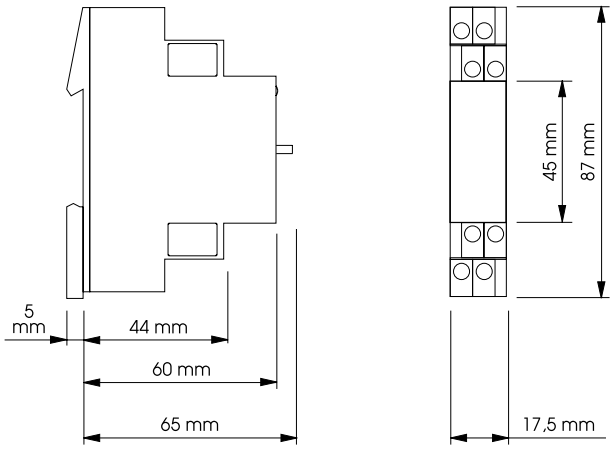


OCP1



Dimensions

Width 17,5mm



Coupling units **Series OCTO**

Levelswitch

- Trigger 1 to 10V DC (OVL1)
- Trigger 2 to 20mA DC (OCL1)
- Checkback signal for switch setting AUTO
- 1 CO contact
- Width 17,5mm
- Installation design

types	OVL1 24VAC/DC	OCL1 24VAC/DC
		
Art.No. (PQ1)	170015	170017
Art.No. (PQ10)	-	-
EAN13-Code	900866200072	900866200074
Controls	Function • levelswitch	Function • levelswitch
Indicators (LEDs)	U • R	U • R
Functions	AUTO (output according to signal on YR) 0 (permanently OFF) 1 (permanently ON)	AUTO (output according to signal on YR) 0 (permanently OFF) 1 (permanently ON)
Trigger level	1 to 10V DC	2 to 20mA DC
Analogue input	input for automatic operation 0 to 10V DC terminals YR-A2	input for automatic operation 0 to 20mA DC terminals YR-A2
Checkback	1 potential free NO contact for checkback signal of the switch setting AUTO 28V AC/DC; 2A terminals B1-B2	1 potential free NO contact for checkback signal of the switch setting AUTO 28V AC/DC; 2A terminals B1-B2
Supply	24V AC/DC terminals A1-A2	24V AC/DC terminals A1-A2
Output	1 potential free CO contact 250V AC, 8A	1 potential free CO contact 250V AC, 8A
Width	17,5mm	17,5mm
Certificates	CE • GOST	CE • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque max. 1Nm	
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end	
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 2, if built in 3 (in accordance with IEC 60664-1)	
Accessories	-	

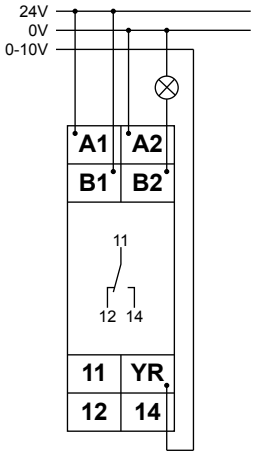
Functions

OVL1
Automatic (AUTO): The contact of checkback B1-B2 is closed. The output relay R switches into on-position (yellow LED illuminated) when the signal voltage applied at the terminals YR-A2 exceeds the the value adjusted at the regulator. The output relay switches into off-position (yellow LED not illuminated) when the signal voltage falls below the set value by more than the fixed hysteresis.
Permanently OFF (0): The contact of checkback B1-B2 is opened. The output relay R remains in off-position (yellow LED not illuminated) independent from the connected signal voltage.
Permanently ON (HAND): The contact of checkback B1-B2 is opened. When the supply voltage U is applied at terminal A1 the output relay R switches into on-position (yellow LED illuminated). Changes of the signal voltage do not influence the state of the output relay.

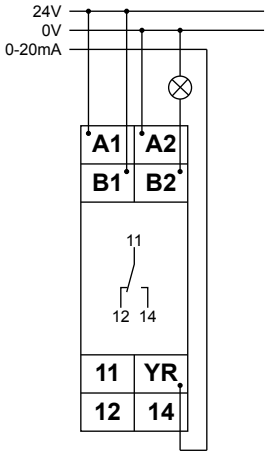
OCL1
Automatic (AUTO): The contact of checkback B1-B2 is closed. The output relay R switches into on-position (yellow LED illuminated) when the signal voltage applied at the terminals YR-A2 exceeds the the value adjusted at the regulator. The output relay switches into off-position (yellow LED not illuminated) when the signal voltage falls below the set value by more than the fixed hysteresis.
Permanently OFF (0): The contact of checkback B1-B2 is opened. The output relay R remains in off-position (yellow LED not illuminated) independent from the connected signal voltage.
Permanently ON (HAND): The contact of checkback B1-B2 is opened. When the supply voltage U is applied at terminal A1 the output relay R switches into on-position (yellow LED illuminated). Changes of the signal voltage do not influence the state of the output relay.

Connections

OVL1

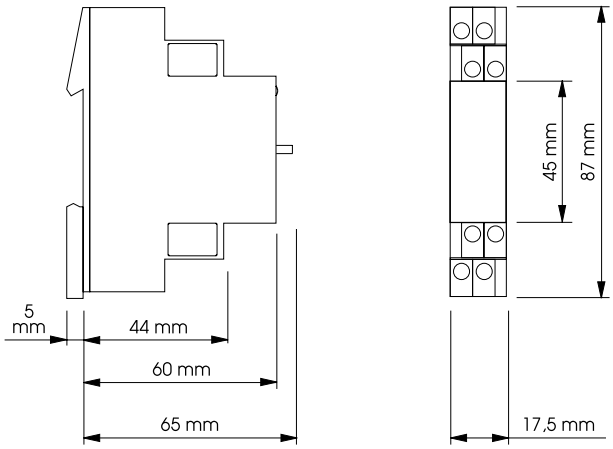


OCL1



Dimensions

Width 17,5mm



Diode gate **Series TREND**

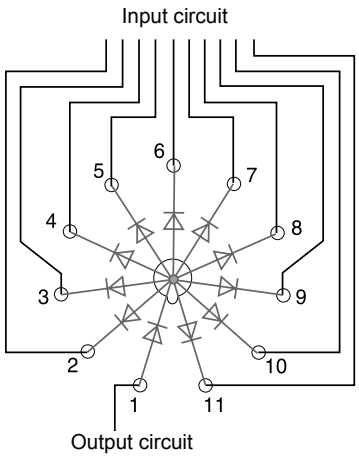
Array with ‚or' function

- Diode gate with 10 inputs and one output
- Cap size 45mm
- Width 22,5mm
- Plug-in mounting

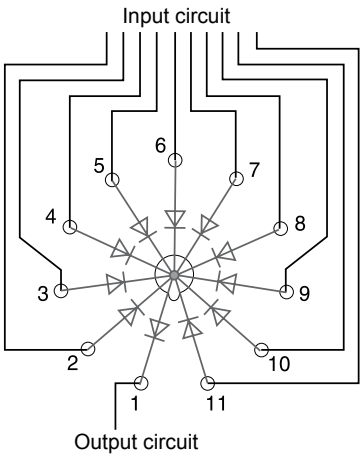
types	TD1	TD2
		
Art.No. (PQ1)	2490000	2490001
Art.No. (PQ10)	-	-
EAN13-Code	9008662005846	9008662005853
Controls	-	-
Indicators (LEDs)	-	-
Functions	logical function ‚OR'	logical function ‚OR'
Inputs	semiconductor elements: pins 2 to 11 10 diodes (types 1N4007) anode is common peak voltage: 1000V forward voltage: approx. 0,8V forward current per diode: 0,7A (single channel) forward current per diode: 0,1A (all channels)	semiconductor elements: pins 2 to 11 10 diodes (types 1N4007) cathode is common peak voltage: 1000V forward voltage: approx. 0,8V forward current per diode: 0,7A (single channel) forward current per diode: 0,1A (all channels)
Supply	-	-
Output	semiconductor element: pins 1 1 diodes (types 1N4007) peak voltage: 1000V forward voltage: approx. 0,8V forward current: max. 1A	semiconductor element: pins 1 1 diodes (types 1N4007) peak voltage: 1000V forward voltage: approx. 0,8V forward current: max. 1A
Width	22,5mm	22,5mm
Certificates	CE • GOST	CE • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Connection and mounting by 11-pin socket in accordance with IEC 60067-1-18a (types R11X or ES12) • Mounting position any	
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 3 (in accordance with IEC 60664-1)	
Accessories	Plug-in socket R11X or ES12	

Diode gate with 10 inputs and one output

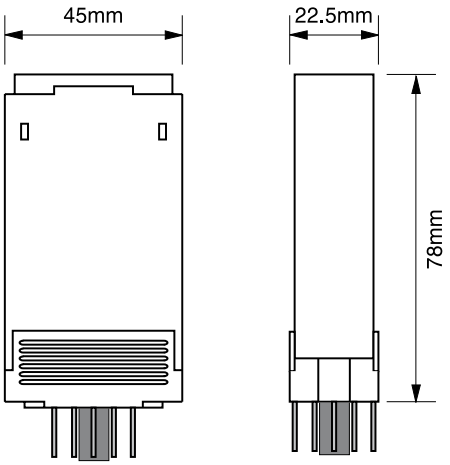
TD1



TD2



Width 22,5mm



Coupling units **Series VOX**

Multicoupling relay

- 4-way coupling relay
- PNP (KM2X04P-M) or NPN (KM2X04M-M) control
- 2 CO contacts, 2 NO contacts
- Width 22,5mm
- Industrial design

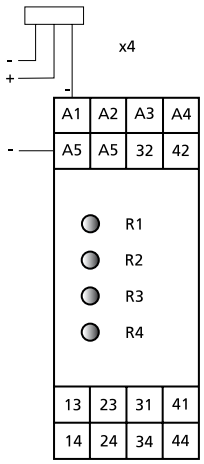
types	KM2X04P-M 24VDC	KM2X04M-M 24VDC
		
Art.No. (PQ1)	423501	423502
Art.No. (PQ10)	-	-
EAN13-Code	900866200352	900866200356
Controls	-	
Indicators (LEDs)	R1 • R2 • R3 • R4	R1 • R2 • R3 • R4
Functions	coupling relay	coupling relay
Supply	24V DC terminals A1-A5 (relay 1) terminals A2-A5 (relay 2) terminals A3-A5 (relay 3) terminals A4-A5 (relay 4) polarity: +24V as common on terminal A5	24V DC terminals A1-A5 (relay 1) terminals A2-A5 (relay 2) terminals A3-A5 (relay 3) terminals A4-A5 (relay 4) polarity: GND (-) as common on terminal A5
Output	2 potential free CO contact; 250V AC, 8A 2 potential free NO contact; 250V AC, 8A	2 potential free CO contact; 250V AC, 8A 2 potential free NO contact; 250V AC, 8A
Width	22,5mm	22,5mm
Certificates	CE • GOST	CE • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque max. 1Nm	
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end	
Ambient conditions	Ambient temperature: -25 to +55°C (in accordance with IEC 60068-1) • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85% (in accordance with IEC 60721-3-3 class 3K3) • Pollution degree: 2, if built in 3 (in accordance with IEC 60664-1)	
Accessories	-	

Functions

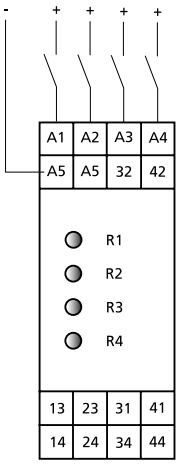
Coupling relay with four independent circuits including galvanic separated output relays.

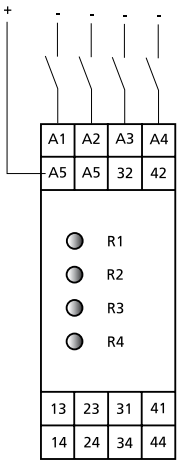
Connections

Semiconductor control KM2X04P-M



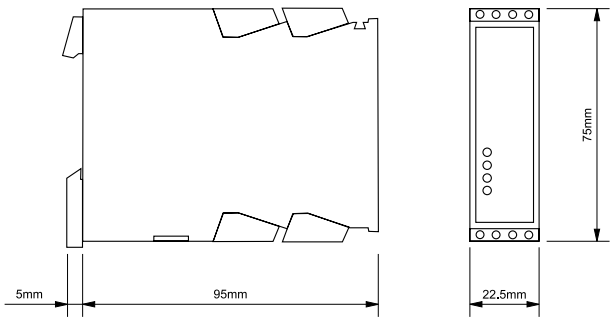
KM2X04M-M





Dimensions

Width 22,5mm



Signal converter **Series M1**

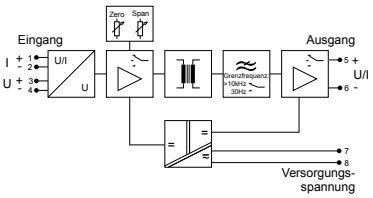
Signalamplifier

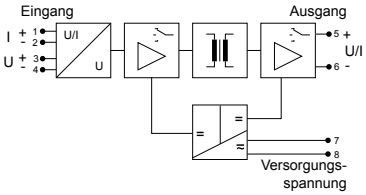
- Separation and transformation of standard signals (M1MTB1; M1MTN1)
- Uni- and bipolare industrial signals (M1MTB1)
- Temperature signal converter for temperatures from -100 to +700°C (M1MPT100)
- Applicable to PT100 and PT1000 probes
- 3-Port-separation with save galvanic separation
- Supply voltage by zoom voltage 24 to 240V AC/DC
- 1 output
- Width 12,5mm
- Industrial design

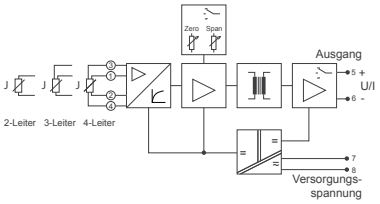
types	M1MTB1 24-240V	M1MTN1 24-240V	M1MPT100 24-240V
			
Art.No. (PQ1)	717002	717003	717004
Art.No. (PQ10)	-	-	-
EAN13-Code			
Controls	Zero • Span	-	Zero • Span
Indicators (LEDs)	U	U	U
Functions	Universal signal amplifier	Standard signal amplifier	Universal temperature signal amplifier
Input circuit	current input terminals 1-2: ±20mA • 0 to 20mA • 4 to 20mA • ±10mA • 0 to 10mA • 2 to 10mA (input resistance 25Ohm) voltage input terminals 3-4: ±10V • 0 to 10V • 2 to 10V • ±5V • 0 to 5V • 1 to 5V (input resistance: approx. 1 Ohm)	current input terminals 1-2: 0 to 20mA • 4 to 20mA (input resistance 22Ohm) voltage input terminals 3-4: 0 to 10V (input resistance: approx. 1 Ohm)	thermo couple input terminals 1 to 4: probe: PT100 or PT1000 2-wire, 3-wire or 4-wire measured range: -100°C to +700°C probe current PT100: 1mA probe current PT1000: 0,1mA wiring impedance per wire: max. 10Ohm sensor wire brake detection: yes
Output circuit	current output terminals 5-6: ±20mA • 0 to 20mA • 4 to 20mA • ±10mA • 0 to 10mA • 2 to 10mA (output voltage: max. 12V) voltage output terminals 5-6: ±10V • 0 to 10V • 2 to 10V • ±5V • 0 to 5V • 1 to 5V (output current: max. 10mA)	current output terminals 5-6: 0 to 20mA • 4 to 20mA (output voltage: max. 10V) voltage output terminals 5-6: 0 to 10V (output current: max. 10mA)	current output terminals 5-6: 0 to 20mA • 4 to 20mA (output voltage: max. 10V) voltage output terminals 5-6: 0 to 10V • 2 to 10V • 0 to 5V • 1 to 5V (output current: max. 5mA)
Isolation	3-way isolation: save galvanic separation up to 600V AC (in accordance with DIN EN 61010 part 1) overvoltage cat. II (4kV AC)	3-way isolation overvoltage cat. II (2,5kV AC)	3-way isolation: save galvanic separation up to 300V AC/DC (in accordance with DIN EN 61010 part 1) overvoltage cat. II (2,5kV)
Supply	24 to 240V AC/DC terminals 7-8	24 to 240V AC/DC terminals 7-8	24 to 240V AC/DC terminals 7-8
Width	12,5mm	12,5mm	12,5mm
Certificates	CE • GOST	CE • GOST	CE • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque max. 1Nm		
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end		
Ambient conditions	Ambient temperature: -20 to 70°C • Storage temperature: -35 to +85°C • Transport temperature: -35 to +85°C • relative humidity: 15% to 85% • Pollution degree: 2		
Accessories	-		

M1MTB1 24-24V M1MTN1 24-240V M1MPT100 24-240V

Block diagram

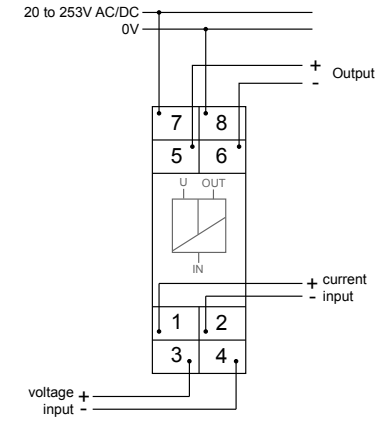






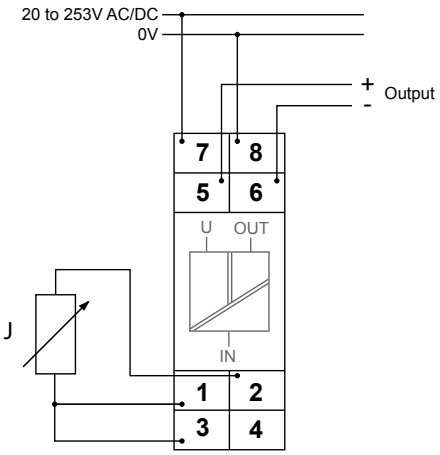
M1MTB1 24-240V

Connections



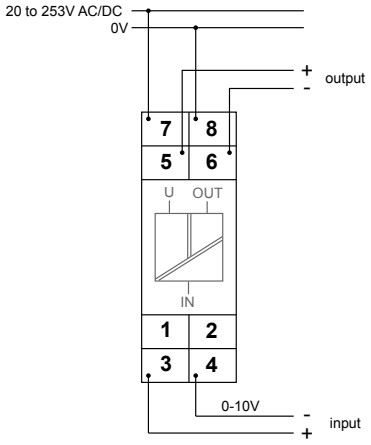
Do not operate inputs for voltage and current simultaneously!

M1MPT100 24-240V

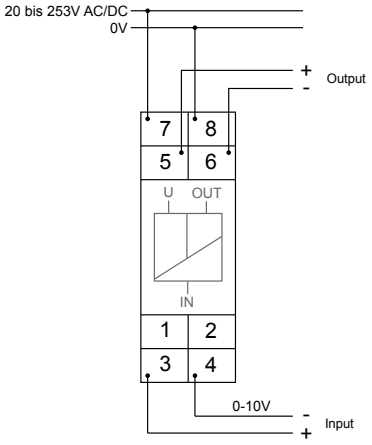


M1MTN1 24-240V with current input

Connections

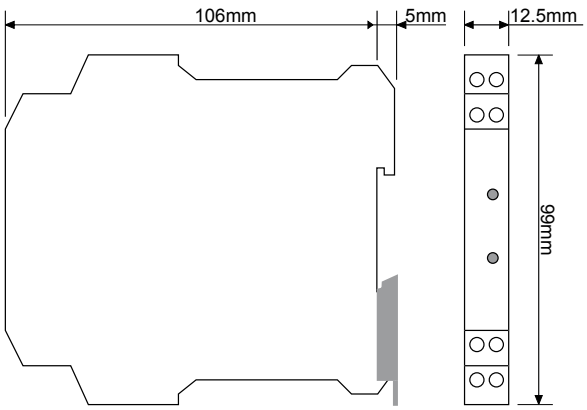


M1MTN1 24-240V with voltage input



Width 12,5mm

Dimensions



Signal converter **Series M1**

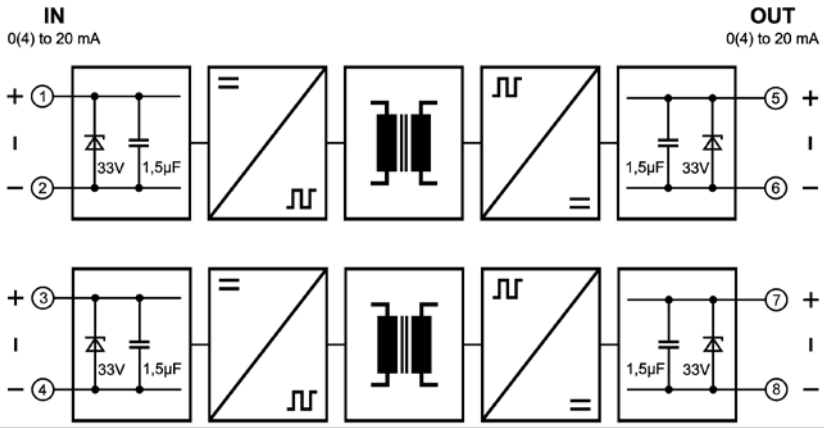
Loop-Powered Isolator

- Seperation of 0(4)...20mA Standard Signals
- No power supply signal required
- 2-channels with safe galvanic seperation; test voltage 4 kV ~
- Width 12,5mm
- Industrial design

types	M1MTNI
	
Art.No. (PQ1)	717005
Art.No. (PQ10)	
EAN13-Code	
Controls	-
Indicators (LEDs)	-
Functions	Loop-Powered Isolator
Input circuit	current input terminals 1-2, 3-4 4 to 20mA / max. 30V operating current: < 20 µA overload: ≤ 100 mA, ≤ 30V
Output circuit	current output terminals 5-6, 7-8 4 to 20mA / max. 28V response time: approx. 5ms at 500 Ω load ripple: < 10 mVeff
Isolation	working voltage: (basic insulation) up to 600V AC/DC for overvoltage category II (4kV AC), (accord. DIN EN 61010-1)
Supply	-
Width	12,5mm
Certificates	CE • GOST
Mechanical design	Self-extinguishing plastic housing, IP rating IP40 • Mounted on DIN-Rail TS 35 in accordance with EN 60715 • Mounting position any • Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20 • Tightening torque max. 1Nm
Terminal capacity	1 x 0,5 to 2,5mm² with/without multicore cable end • 1 x 4mm² without multicore cable end • 2 x 0,5 to 1,5mm² with/without multicore cable end • 2 x 2,5mm² flexible without multicore cable end
Ambient conditions	Ambient temperature: -20 to 70°C • Storage temperature: -35 to +85°C • Transport temperature: -35 to +85°C • relative humidity: 15% to 85% • Pollution degree: 2
Accessories	-

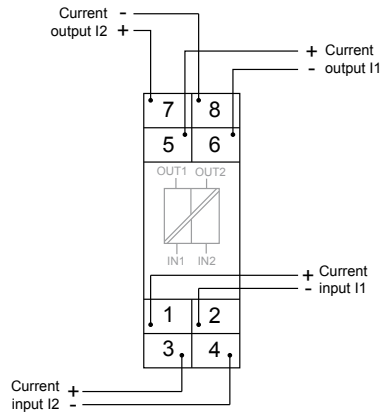
M1MTNI

Block diagram



M1MTNI

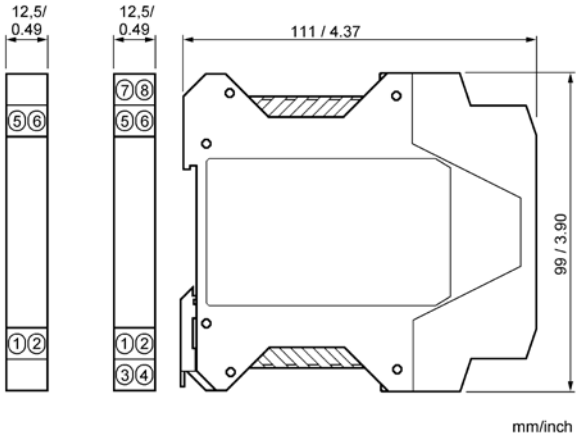
Connections



Do not operate inputs for voltage and current simultaneously!

Width 12,5mm

Dimensions



ENHA-
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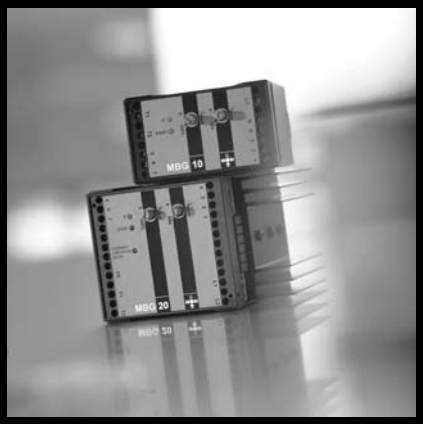
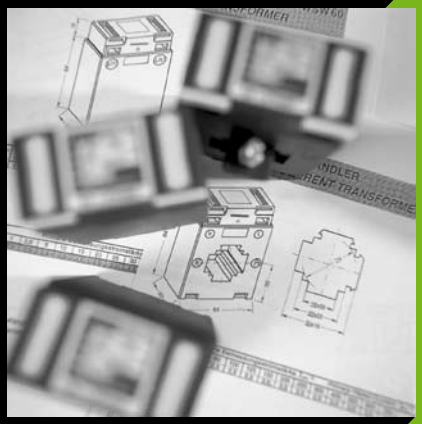




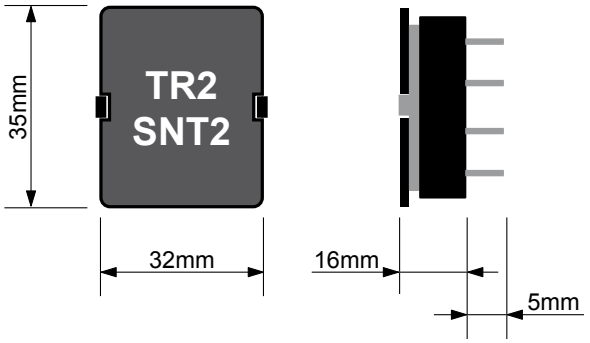

Accessories

PowerModules - Series TR and PowerSupply - Series SNT

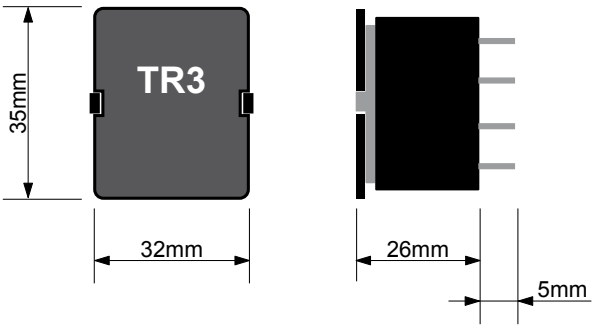
- Plug-in power modul for transforming the supply voltage at terminals A1-A2 to internal operating voltage 24V
- Sealed self-extinguishing plastic houseing. IP-rating IP40 (if mounted)
- Mounting by plug-in system in prepared slot of compatible units (no tools required)
- Transformer modules, providing galvanic separation between control or measuring circuits and supply voltage
- Tolerance: 0.85 to 1.1 x U_N • Rated frequency: 50/60Hz • Duration of operation: 100%

Type	Nominal voltage	Rated consumtion	Rated load	Design	Art.No.
SNT2 24VDC	24VDC			A	282050
TR2 - 12VAC	12VAC	2VA	0,5VA	A	282121
TR2 - 24VAC	24VAC	2VA	0,5VA	A	282110
TR2 - 42VAC	42VAC	2VA	0,5VA	A	282111
TR2 - 48VAC	48VAC	2VA	0,5VA	A	282112
TR2 - 110VAC	110VAC	2VA	0,5VA	A	282113
TR2 - 127VAC	127VAC	2VA	0,5VA	A	282114
TR2 - 230VAC	230VAC	2VA	0,5VA	A	282120
TR2 - 400VAC	400VAC	2VA	0,5VA	A	282117
TR3 - 24VAC	24VAC	4VA	1,5VA	B	285010
TR3 - 42VAC	42VAC	4VA	1,5VA	B	285011
TR3 - 48VAC	48VAC	4VA	1,5VA	B	285012
TR3 - 110VAC	110VAC	4VA	1,5VA	B	285013
TR3 - 230VAC	230VAC	4VA	1,5VA	B	285025
TR3 - 400VAC	400VAC	4VA	1,5VA	B	285017
TR3 - 440VAC	440VAC	4VA	1,5VA	B	285019
TR3 - 500VAC	500VAC	4VA	1,5VA	B	285026

Design A - Type TR2



Design B - Type TR3

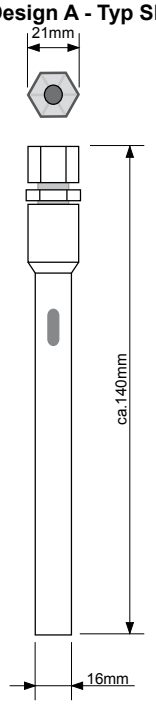


Accessories

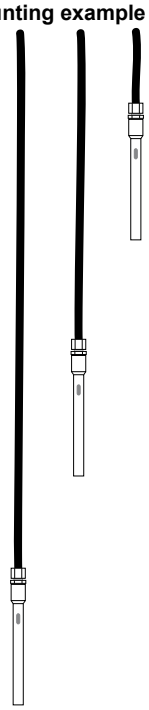
Sonden - Series SK

- Probe for monitoring level of conductive liquids
- Stainless levelprobes, PVC covered, IP rating IP44
- Measuring voltage: max. 24VAC
- Ambient temperature: SK1: 0 to +60°C • SK2 and SK3: 0 to +90°C • Storage temperature: -25 to +90°C • Transport temperature: -25 to +90°C • relative humidity: 15% to 85%

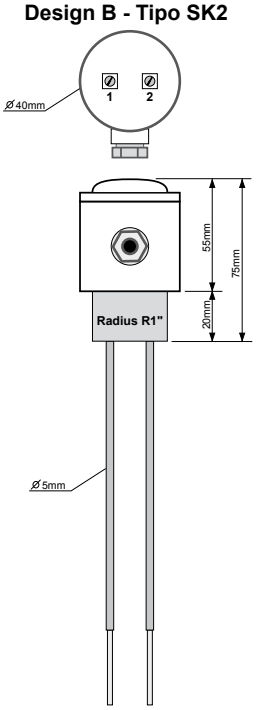
Design A - Typ SK1



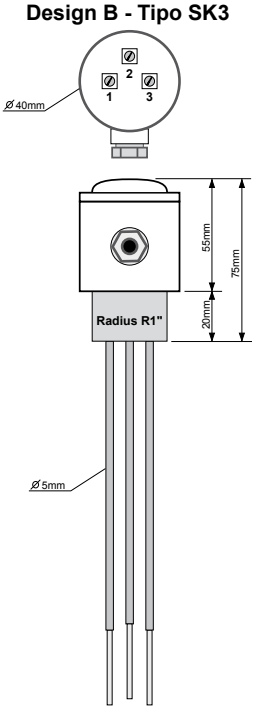
Mounting example SK1



Design B - Tipo SK2



Design B - Tipo SK3



SK1	Immersion electrode	190107
SK2	Conductive level sensor, 2 electrodes, length 500mm	190108
SK3-500	Conductive level sensor, 3 electrodes, length 500mm	190109
SK3-1000	Conductive level sensor, 3 electrodes, length 1000mm	190110

Type SK1: The SK1 is designed for being duck completely under water. It is fixed at the cable end and fixed at the depending level.
Type SK2 and SK3: The SK2 and SK3 can be mounted on a mounting plate or directly into the top cover of the tank. The connection box has to be installed in a way that it is never covered by liquids.

Accessories

Base load component GLE • Mounting clip • Protection cover • Remote potentiometer

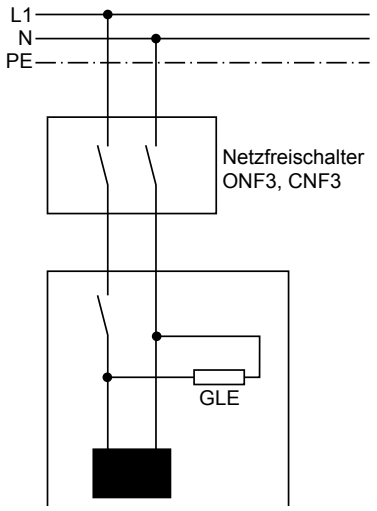
Base load component GLE

Function
Base load element for TELE mains decoupler.
The base load element is connected in parallel to electronic loads to ensure that the mains decoupler can detect the switching on of the depending circuit. After the decoupler has reconnected the circuit to the supplying power network, the base load element warms up and changes from low-impendance to high-impedance (PTC-resistor).

Mechanical design
Silicone covered PTC-resistor with connection wires for built-in applications.

Ambient conditions
Ambient temperature: -25 to +55°C • Storage temperature: -25 to +70°C • Transport temperature: -25 to +70°C • relative humidity: 15% to 85%

Montage
The base load element has to be connected in parallel to the load.

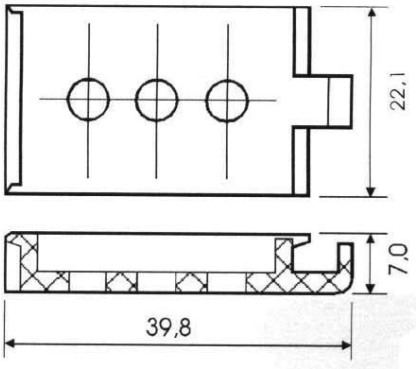


Mounting clip MP

Function
Mounting plate for fixing TELE devices on a mounting plate or wall.

Mechanical design
Self-extinguishing plastic, three drillholes diameter 4mm.

MP	Mounting clip	Art.No. 075474
MP Gamma	Mounting clip Series Gamma	Art.No. 075475

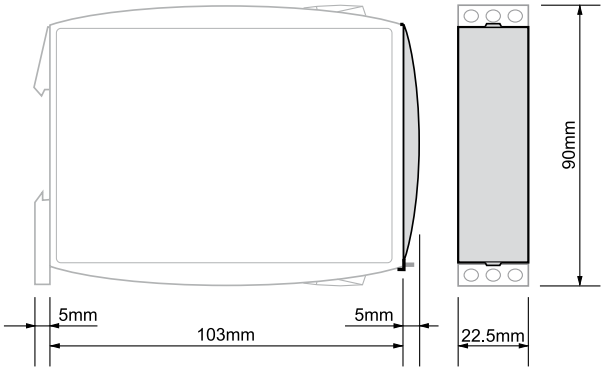


Protection cover GAMMA

Function
Sealable front cover for GAMMA monitoring relays

Mechanical design
Plastic cover

FA-G2 (IPS 22,5)	Front cover Gamma 22,5	Art.No. 070160



Remote potentiometer RONDO R2

Remote potentiometer for front panel mounting. With the remote potentiometer time values can be adjusted from a distance.

Maximum adjustment value:

1MΩ	(R2 1MΩ 0.1)	scale 0.1 to 1
1MΩ	(R2 1MΩ 0.3)	scale 0.3 to 3
Connections:	1	First
	2	Wiper
	3	Finish
Base accurancy:	±10% (of maximum scale value)	
Surge accurancy:	≤0,01%	

R2 1MOHM 0,1	Remote potentiometer, scale 0,1-1	Art.No. 282130
R2 1MOHM 0,3	Remote potentiometer, scale 0,3-3	Art.No. 282133
R20 10KOHM	Remote potentiometer, scale 1-10	Art.No. 282131

Switching Relays **Series RA and RM**

Miniature Relays

- Hand operation
- Position indicator via LED
- 2 CO contacts, max. 12A switching voltage (Series RA)
- 4 CO contacts, max. 6A switching voltage (Series RM)
- Plug-in mounting

RA

RM

Series RA - 2 CO contacts		
RA 012L	Miniature Relays, 12VDC, 2 CO contacts, LED	100625LD
RA 024L	Miniature Relays, 24VDC, 2 CO contacts, LED	100622LD
RA 524L	Miniature Relays, 24VAC, 2 CO contacts, LED	100623LD
RA 615L	Miniature Relays, 115VAC, 2 CO contacts, LED	100621LD
RA 730L	Miniature Relays, 230VAC, 2 CO contacts, LED	100624LD
Series RM - 4 CO contacts		
RM 012L	Miniature Relays, 12VDC, 4 CO contacts, LED	100601LD
RM 012.02LD	Miniature Relays, 12VDC, 4 CO contacts, LED, protection diode, gold-coated	100601HD
RM 024	Miniature Relays, 24VDC, 4 CO contacts	100603
RM 024L	Miniature Relays, 24VDC, 4 CO contacts, LED	100603LD
RM 024LD	Miniature Relays, 24VDC, 4 CO contacts, LED, protection diode	100604FD
RM 024.02LD	Miniature Relays, 24VDC, 4 CO contacts, LED, protection diode, gold-coated	100603HD
RM 048L	Miniature Relays, 48VDC, 4 CO contacts, LED	100602LD
RM 048.02LD	Miniature Relays, 48VDC, 4 CO contacts, LED, protection diode, gold-coated	100602HD
RM 060L	Miniature Relays, 60VDC, 4 CO contacts, LED	100616LD
RM 060.02LD	Miniature Relays, 60VDC, 4 CO contacts, LED, protection diode, gold-coated	100616HD
RM 110L	Miniature Relays, 110VDC, 4 CO contacts, LED	100617LD
RM 110.02LD	Miniature Relays, 110VDC, 4 CO contacts, LED, protection diode, gold-coated	100617HD
RM 220L	Miniature Relays, 220VDC, 4 CO contacts, LED	100620LD
RM 220.02LD	Miniature Relays, 220VDC, 4 CO contacts, LED, protection diode, gold-coated	100619HF
RM 512L	Miniature Relays, 12VAC, 4 CO contacts, LED	100612LD
RM 524	Miniature Relays, 24VAC, 4 CO contacts	100613
RM 524L	Miniature Relays, 24VAC, 4 CO contacts, LED	100613LD
RM 524.02L	Miniature Relays, 24VAC, 4 CO contacts, LED, gold-coated	100613H
RM 548L	Miniature Relays, 48VAC, 4 CO contacts, LED	100614LD
RM 615L	Miniature Relays, 115VAC, 4 CO contacts, LED	100618LD
RM 615.02L	Miniature Relays, 115VAC, 4 CO contacts, LED, gold-coated	100618H
RM 730	Miniature Relays 230VAC, 4 CO contacts	100619
RM 730L	Miniature Relays 230VAC, 4 CO contacts, LED	100619LD
RM 730.02L	Miniature Relays 230VAC, 4 CO contacts, LED, gold-coated	100619HL
Relaysets		
SET RM024LD+RSS214	Miniature Relays, 24VDC, 4 CO contacts, LED, protection diode, socket RSS214	100680

Switching Relays **Series RA and RM**

Relaysets and accessories

- Various socket typs
- Socket with screw-type terminals or cage clamps
- Varios LED and protection modules
- Retaining clip
- Jumper link

ES 15/4B

ES 15/4G

ES 15/4N

ES 15/4S

Módulo M21P

HB/RM-RA

HB/ES15

ES 15/4B	Relay socket series RA, RM, 10A	180046
ES 15/4G	Relay socket series RA, RM (cage clamp), 10A	180048
ES 15/4N	Relay socket series RA, RM, 12A	180034
ES 15/4S	Relay socket series RA, RM, 12A	180045
Modul M21P	diode 6-230VDC (+A2) for ES 15/4N, ES 15/4S, ES 50, ES 50/3	180260
Modul M21N	Diode 6-230VDC (+A1) for ES 15/4N, ES 15/4S, ES 50, ES 50/3	180261
Modul M31R	LED(red)+diode 6-24VDC (+A2) for ES 15/4N, ES 15/4S, ES 50, ES 50/3	180262
Modul M41R	LED(red)+diode 6-24VDC (+A1) for ES 15/4N, ES 15/4S, ES 50, ES 50/3	180263
Modul M53	RC element 110-240VAC for ES 15/4N, ES 15/4S, ES 50, ES 50/3	180264
Modul M61R	LED(red) 6-24VAC/DC (+A1) for ES 15/4N, ES 15/4S, ES 50, ES 50/3	180265
Modul M71	Varistor 24VAC for ES 15/4N, ES 15/4S, ES 50, ES 50/3	180266
Modul M73	Varistor 230VAC for ES 15/4N, ES 15/4S, ES 50, ES 50/3	180267
Modul M63R	LED(red) 110-230VAC/DC (+A1) for ES 15/4N, ES 15/4S, ES 50, ES 50/3	180268
Modul M93G	Plug-in modul Varistor 110-230V + LED(red)	180276
Modul M103	Resistor 110/230VAC for GZ4 (ES15/4N),ES15/4S,ES50, ES50/3	180269
HB/RM-RA	Retaining clip for RSS214, ES 15/4, ES 15/4N, ES 15/4S	180032
HB/ES15	Plastic-Retaining Clip for ES 15/4B, ES 15/4N, ES 15/4S	P0000033

RSS214

EM 03

SET RM

RSS214	Relay socket Series RM	180050
PB RSS5	5-way jumper link for RSS214 (5 relay)	180051
PBA RSS	End cover for PB RSS5	180052
EM 03	RC element 110-230VAC for RSS214, PSS8/3	180300
EM 04	Varistor 24VAC for RSS214, PSS8/3	180301
EM 05	Varistor 230VAC for RSS214, PSS8/3	180302
EM 10	LED 110-230VAC for RSS214, PSS8/3	180307
EM 11	LED 6-24AC/DC for RSS214, PSS8/3	180308
EM 12	LED+diode 6-24DC (+A1) for RSS214, PSS8/3	180309
Relaissets		
SET RM024LD+RSS214	Miniature Relays, 24VDC, 4 CO contacts, LED, protection diode, socket RSS214	100680
SET RM524L+ES15/4N	Miniature Relays, 24VAC, 4 CO contacts, LED, socket ES15/4N, HB/ES15	100670
SET RM024LD+ES15/4N	Miniature Relays, 24VDC, 4 CO contacts, LED, protection diode, socket ES15/4N, HB/ES15	100671
SET RM730L+ES15/4N	Miniature Relays, 230VAC, 4 CO contacts, LED, socket ES15/4N, HB/ES15	100672

Switching Relays **Series RT**

Industrial Relays

- Hand operation
- Position indicator
- 8-pin or 11-pin socket
- 2 or 3 CO contacts, max. 10A switching voltage
- Plug-in mounting

RT

ES8

RX11

Тип11

HB/RT

Industrial Relays (8-pin)		
RT 1.2.012L	Industrial Relays, 12VAC, 2 CO contacts, LED	100508LD
RT 1.2.024L	Industrial Relays, 24VAC, 2 CO contacts, LED	100507LD
RT 1.2.110L	Industrial Relays, 110VAC, 2 CO contacts, LED	100505LD
RT 1.2.230L	Industrial Relays, 230VAC, 2 CO contacts, LED	100502LD
RT 2.2.012L	Industrial Relays, 12VDC, 2 CO contacts, LED	100517LD
RT 2.2.024L	Industrial Relays, 24VDC, 2 CO contacts, LED	100516LD
Industrial Relays (11-pin)		
RT 1.3.024L	Industrial Relays, 24VAC, 3 CO contacts, LED	100526LD
RT 1.3.048L	Industrial Relays, 48VAC, 3 CO contacts, LED	100524LD
RT 1.3.110L	Industrial Relays, 110VAC, 3 CO contacts, LED	100522LD
RT 1.3.230	Industrial Relays, 230VAC, 3 CO contacts	100521
RT 1.3.230L	Industrial Relays, 230VAC, 3 CO contacts, LED	100521LD
RT 1.3.230.02L	Industrial Relays, 230VAC, 3 CO contacts, LED, gold-coated	100521H
RT 2.3.012L	Industrial Relays, 12VDC, 3 CO contacts, LED	100536LD
RT 2.3.024	Industrial Relays, 24VDC, 3 CO contacts	100535
RT 2.3.024L	Industrial Relays, 24VDC, 3 CO contacts, LED	100535LD
RT 2.3.024LD	Industrial Relays, 24VDC, 3 CO contacts, LED, protection diode	100535FD
RT 2.3.024.02LD	Industrial Relays, 24VDC, 3 CO contacts, LED, protection diode, gold-coated	100535H
RT 2.3.048L	Industrial Relays, 48VDC, 3 CO contacts, LED	100533LD
RT 2.3.060L	Industrial Relays, 60VDC, 3 CO contacts, LED	100532LD
RT 2.3.110	Industrial Relays, 110VDC, 3 CO contacts	100531
RT 2.3.220	Industrial Relays, 220VDC, 3 CO contacts	100530
Accessories Industrial Relays		
HB/RT	Retaining clip for ES 8, ES 9, ES 12, R11X	180043
ES 8 (TVE 8)	Relay socket series RT (8-pin)	180039
ES 9	Relay socket series COMBI, RT (8-pin)	180041
ES 12 (TVE 12)	Relay socket series PLUS, COMBI, RT (11-pin)	180036
TYPE 11 (TVD 2)	Diode 6-230VDC (+A2) for ES 9, ES 12	180231
TYPE 21 (TVD 1)	Diode 6-230VDC (+A1) for ES 9, ES 12	180230
TYPE 31 (TVL 2)	LED+diode 6-24VDC (+A2) for ES 9, ES 12	180233
TYPE 41 (TVL 1)	LED+diode 6-24VDC (+A1) for ES 9, ES 12	180232
TYPE 51 (TVR)	RC element 110-240VAC for ES 9, ES 12	180236
TYPE 61 (TVL 3)	LED 6-24VAC/DC (+A1) for ES 9, ES 12	180234
TYPE 71 (TVV1)	Varistor 24VAC for ES 9, ES 12	180237
TYPE 81 (TVV 2)	Varistor 230VAC for ES 9, ES 12	180238
TYPE 91 (TVL 4)	LED 110-230VAC/DC (+A1) for ES 9, ES 12	180235
R11X	Relay socket Series RT (11-pin)	180055

Switching Relays **Series RP**

PCB Relays

- Modules for protection and coil voltage
- 1 CO contact, max. 16A switching voltage
- 2 CO contacts, max. 8A switching voltage
- Mounting in socket or on printed circuit boards (PCB)
- Relaysets with socket and retaining clip

RP 012-2	ES35	ES50/3	SET RP
			

RP 012-2	PCB Relays, 12VDC, 8A, 2 CO contacts	100420
RP 024-1	PCB Relays, 24VDC, 16A, 1 CO contact	100430
RP 024-2	PCB Relays, 24VDC, 8A, 2 CO contacts	100416
RP 024-hv	PCB Relays, 24VDC, 8A, 2 CO contacts, gold-coated	100416H
RP 524-1	PCB Relays, 24VAC, 16A, 1 CO contact	100431
RP 524-2	PCB Relays, 24VAC, 8A, 2 CO contacts	100417
RP 615-2	PCB Relays, 115VAC, 8A, 2 CO contacts	100421
RP 730-1	PCB Relays, 230VDC, 16A, 1 CO contact	100432
RP 730-2	PCB Relays, 230VAC, 8A, 2 CO contacts	100418
RP 730-hv	PCB Relays, 230VAC, 8A, 2 CO contacts, gold-coated	100418H

Accessories PCB Relays		
ES 50 (TPE8)	Relay socket Series RP	180037
ES 50/3	Relay socket Series RP	180033
HB/RP 16	Retaining clip for ES 50	180029
PSS8/3 (7564)	Relay socket Series RP	180056
BS/PSS	Front cover for PSS8/3	180057
HB/PSS	Retaining clip for PSS8/3	180058

Relaysets		
SET RP024+LD/FD+PSS8+HB	PCB Relays, 24VDC, 2 CO contacts, LED, protection diode, socket PSS8/3	100681
SET RP024+LD/FD+ES50+HB	PCB Relays, 24VDC, 2 CO contacts, LED, protection diode, socket ES 50	100682
SET RP524+LD+PSS8+HB	PCB Relays, 24VAC, 2 CO contacts, LED, socket PSS8/3	100686
SET RP730+LD+PSS8+HB	PCB Relays, 230VAC, 2 CO contacts, LED, socket PSS8/3	100684
SET RP730+LD/VARISTOR+ES50/3+HB	PCB Relays, 230VAC, 2 CO contacts, LED/Varistor, socket ES50/3	100688
other sets on request		

Switching Relays **Series SKR**

Interface Relays

- Position indicator via LED
- Rated coil voltage 24VAC/DC or 230V AC
- 1 CO contact, max. 6A switching voltage
- Width 6,2mm
- Accessories: 20-way jumper link

SKR

STKR

SKR 024	Coupling relay, 24VDC, 1 CO contact	180500
SKR 524	Coupling relay, 24VAC/DC, 1 CO contact	180501
SKR 730	Coupling relay, 230VAC, 1 CO contact	180502
RM699V-3011-85-1024	Relais 24VDC for STKR 024, STKR 524	100660
RM699V-3011-85-1060	Relais 60VDC for STKR 730	100661
Set pluggable interface relays		
STKR 024	Set pluggable interface relay, 24VDC, 1 CO contact	180503
STKR 524	Set pluggable interface relay, 24VAC/DC, 1 CO contact	180504
STKR 730	Set pluggable interface relay, 230VAC, 1 CO contact	180505
other sets on request		
Accessories Interface Relays		
PB-B SKR	Jumper link blue for 20 coupling units series SKR and STKR	180535
PB-R SKR	Jumper link red for 20 coupling units series SKR and STKR	180536

Safety relays **Series S²**

Modul system

- Emercency-Stop with pushbuttons, light curtain, and safetymats monitoring
- Two-hand control devices in accordance with EN 574 III C
- Contact extentions, delayed or instantaneous switching
- Stop categorie 0 or 1
- Width 22,5mm

S2NT030 24VAC/DC	Safety Relays, SC4, Emercency-Stop, protective grille	588826
S2NGS021 24VAC/DC	Safety Relays, SC4, Emercency-Stop, protective grille	588815
S2NG021 24VAC/DC	Safety Relays, SC4, Emercency-Stop, protective grille	588814
S2NGR120 3S 24VDC	Safety Relays, SC4, OFF delay	588816
S2LST030 24VAC/DC	Safety Relays, SC4, Emercency-Stop, protective grille, light curtain	588823
S2Z021 24VAC/DC	Safety Relays, SC4, OFF delay, two-hand control	588818
S2NT031 24VAC/DC	Safety Relays, SC2, Emercency-Stop, protective grille	588811
S2K043 24VAC/DC	Safety Relays, SC4, Contact extention	588821
S2KR403 3S 24VDC	Safety Relays, SC4, Contact extention with 3sec fixed delay	588822
ZK31X45 24VDC	Emergency-Stop-Relay, safety category SC 4	588000
ZK31X45 230VAC	Emergency-Stop-Relay, safety category SC 4	588033

	Applications										Reset			Input Circuit				Output Circuit			Supply Voltage			
	Maximum Achievable Safety-Category	Stop-Category	Emergency Stop	Safety Gate	Safety Mat	OSSD (light grill)	Monitoring of Valve-State	Two-Channel Activation	Contact Expansion Without Delay	Contact Expansion With Delay	Automatic Start	Start with Reset Monitoring	Start without Reset Monitoring	Synchronous Time Check Selectable	Cross Monitoring	Actuation via Semic. Output (OSSD) poss.	Input Debouncing	Delayed Enabling Current Path	Enabling current Path without Delay	Signalling current Paths	24VDC	24VAC	115-120V AC	230V AC
S2NG021	4	0	■	■		■					■	■	■	■	■	■		0	2	1	■	■		
S2NGS021	4	0	■	■	■	■					■	■	■		■	■	■	0	2	1	■	■		
S2NGR120	4/3	0/1	■	■		■					■	■	■	■	■	■		1	2	0	■			
S2NT030	4	0	■	■			■				■	■	■	■	■	■		0	3	0	■	■	o.R.	o.R.
S2NT031	2	0	■	■							■	■	■		■			0	3	1	■	■	o.R.	o.R.
S2LST030	4	0	■			■					■	■	■	■	■	■		0	3	0	■	■	o.R.	o.R.
S2Z021	4	0						■			■			■	■			0	2	1	■	■	o.R.	o.R.
S2K043	4	0							■									0	4	3	■	■		
S2KR403	4	1								■								4	0	3	■			

Softstarter **Series EUROSTART**

Compact design

- 3-phase control
- Reduced mechanical stress on drives
- Reduced starting current compared to direct start
- Open loop connection possible
- Integrated bridging contactor control

EUROSTART 1,5	Softstarter 1,5kW, 3-phase control, book design	490133
EUROSTART 2,2	Softstarter 2,2kW, 3-phase control, book design	490134
EUROSTART 3	Softstarter 3,0kW, 3-phase control, book design	490136
EUROSTART 4	Softstarter 4,0kW, 3-phase control, book design	490135
EUROSTART 5,5	Softstarter 5,5kW, 3-phase control, book design	490137
EUROSTART 7,5	Softstarter 7,5kW, 3-phase control, book design	490139
EUROSTART 11	Softstarter 11kW, 3-phase control, book design	490142
EUROSTART 15	Softstarter 15kW, 3-phase control, book design	490145
EUROSTART 18,5	Softstarter 18,5kW, 3-phase control, book design	490147
EUROSTART 22	Softstarter 22kW, 3-phase control, book design	490149
EUROSTART 30	Softstarter 30kW, 3-phase control	490159
EUROSTART 37	Softstarter 37kW, 3-phase control	490175
EUROSTART 45	Softstarter 45kW, 3-phase control	490180
EUROSTART 55	Softstarter 55kW, 3-phase control	490185
EUROSTART 75	Softstarter 75kW, 3-phase control	490189
Options		
/DB EURO-30	100% duty for motor powers 30-90kW (forced ventilation) - Integrated	AS0023

Softstarter **Series TSG**

Compact design

- 1-phase control
- Reduced mechanical stress on drives
- Maintenance-free
- Width 22,5mm
- Industrial design

TSG 2,2 230VAC	Softstarter 1,1kW, industrial design 22,5mm	490251
TSG 2,2 400VAC	Softstarter 2,2kW, industrial design 22,5mm	490250

Softstarter **Series MSG**

Compact design

- 3-phase half-cycle controlled
- Reduced mechanical stress on drives
- Reduced starting current compared to direct start
- Integrated phase sequence, phase loss (MSG 5,5 and MSG 11) and PTC-control
- Integrated bridging contactor

MSG 3-3s 400VAC	Softstarter 3kW, industrial design 45mm	490000
MSG 3-30s 400VAC	Softstarter 3kW, industrial design 45mm	490002
MSG 5,5 400VAC	Softstarter 5,5kW, industrial design 70mm	490007
MSG 11 400VAC	Softstarter 11kW, industrial design 100mm	490008

Options		
FA-MSG 3	Front cover MSG 3 (sealable)	490245
FA-MSG 5,5	Front cover MSG 5,5 (sealable)	490246
FA-MSG 11	Front cover MSG 11 (sealable)	490247

Softstarter **Series ESG**

Open design

- 3-phase control
- Reduced mechanical stress on drives
- Reduced starting current compared to direct start
- Open loop connection possible
- Integrated bridging contactor control

ESG 2,2-400	Softstarter 2,2kW	490010
ESG-I 2,2-400	Softstarter 2,2kW with current limitation	490011
ESG 3-400	Softstarter 3kW	490015
ESG-I 3-400	Softstarter 3kW with current limitation	490061
ESG 4-400	Softstarter 4kW	490020
ESG-I 4-400	Softstarter 4kW with current limitation	490021
ESG 5,5-400	Softstarter 5,5kW	490025
ESG-I 5,5-400	Softstarter 5,5kW with current limitation	490026
ESG 7,5-400	Softstarter 7,5kW	490030
ESG-I 7,5-400	Softstarter 7,5kW with current limitation	490031
ESG 11-400	Softstarter 11kW	490035
ESG-I 11-400	Softstarter 11kW with current limitation	490036
ESG 15-400	Softstarter 15kW	490040
ESG-I 15-400	Softstarter 15kW with current limitation	490041
ESG 18,5-400	Softstarter 18,5kW	490045
ESG-I 18,5-400	Softstarter 18,5kW with current limitation	490046
ESG 22-400	Softstarter 22kW	490050
ESG-I 22-400	Softstarter 22kW with current limitation	490051
ESG 30-400	Softstarter 30kW	490055
ESG-I 30-400	Softstarter 30kW with current limitation	490056
ESG 37-400	Softstarter 37kW	490060
ESG-I 37-400	Softstarter 37kW with current limitation	490063
ESG 45-400	Softstarter 45kW	490065
ESG-I 45-400	Softstarter 45kW with current limitation	490067
ESG 55-400	Softstarter 55kW	490070
ESG-I 55-400	Softstarter 55kW with current limitation	490072
ESG 75-400	Softstarter 75kW	490075
ESG-I 75-400	Softstarter 75kW with current limitation	490076
ESG-I 90-400	Softstarter 90kW with current limitation	490081
ESG-I 110-400	Softstarter 110kW with current limitation	490085
ESG-I 140-400	Softstarter 140 kW with current limitation	490093
ESG-I 160-400	Softstarter 160kW with current limitation	490096
ESG-I 200-400	Softstarter 200kW with current limitation	490101
ESG-I 250-400	Softstarter 250kW with current limitation	490110
ESG-I 315-400	Softstarter 315kW with current limitation	490111
ESG-I 355-400	Softstarter 355kW with current limitation	490112
ESG-I 400-400	Softstarter 400kW with current limitation	490113
ESG-I 560-400	Softstarter 560kW with current limitation	490114

Softstarter **Series ESG**

Open design

- 3-phase control
- Reduced mechanical stress on drives
- Reduced starting current compared to direct start
- Open loop connection possible
- Integrated bridging contactor control

Options		
/DB ESG-2,2	100% duty for motor powers 2.2-4kW (forced ventilation) - integrated	AS0015
/DB ESG-5,5	100% duty for motor powers 5.5- 22kW (forced ventilation) - integrated	AS0016
/DB ESG-30	100% duty for motor powers 30-75kW (forced ventilation) - integrated	AS0017
/DB ESG-90	100% duty for motor powers 90-140kW (forced ventilation) - integrated	AS0018
/BG ESG	Braking module (ESG 3 and higher) - integrated in the device	AS0019
/24VDC ESG	Control voltage 24VDC - integrated in the device	AS0020
/400VAC ESG	Control voltage 400VAC - integrated in the device	AS0021

Braking Units **Series MBG**

Compact design

- Electronic motor brake
- No additional braking accessory required
- Integrated brake contactor
- Brake contactor switches after de-energization
- Integrated motor contactor control

MBG10

MBG20

MBG35

MBG10 230VAC	Electronic motor brake, braking current 10A, industrial design, 45mm	499110
MBG20 400V	Electronic motor brake, braking current 20A, industrial design, 45mm	499111
MBG35 400V	Electronic motor brake, braking current 35A, industrial design, 45mm	499112

Braking Units **Series BG**

Open design

- Electronic motor brake
- Integrated brake contactor control
- Integrated motor contactor control
- Brake contactor is switched after de-energization
- Open design

BG 20	Electronic motor brake, braking current 20A	499950
BG 35	Electronic motor brake, braking current 35A	499951
BG 60	Electronic motor brake, braking current 60A	499982
BG 100	Electronic motor brake, braking current 100A	499981
BG 150	Electronic motor brake, braking current 150A	499983
BG 220	Electronic motor brake, braking current 220A	499984
BG 300	Electronic motor brake, braking current 300A	499955
BG 400	Electronic motor brake, braking current 400A	499956
BG 500	Electronic motor brake, braking current 500A	499957
BG 750	Electronic motor brake, braking current 750A	499977
BG 1000	Electronic motor brake, braking current 1000A	499959
BG 1500	Electronic motor brake, braking current 1500A	499985
BG 2000	Electronic motor brake, braking current 2000A	499986

Thyristor control unit **Series TST**

Compact design

- 1-phase control (TST1) and 3-phase control (TST3)
- Fully controlled
- Phase clipping and burst control switchable (TST3)
- Multi control signal (TST3)
- Maintenance-free

TST1

TST3

TST1		
TST1 05	Thyristor control unit 5A, phase clipping control, 1-phase, compact design	499996
TST1-SP 05	Thyristor control unit 5A, burst control 1-phase, compact design	499996S
TST1 15	Thyristor control unit 15A, phase clipping control, 1-phase, compact design	499991
TST1-SP 15	Thyristor control unit 15A, burst control 1-phase, compact design	499991S
TST1 25	Thyristor control unit 25A, phase clipping control, 1-phase, compact design	499992
TST1-SP 25	Thyristor control unit 25A, burst control, 1-phase, compact design	499992S
TST1 35	Thyristor control unit 35A, phase clipping control, 1-phase, compact design	499993
TST1-SP 35	Thyristor control unit 35A, burst control, 1-phase, compact design	499993S
TST1 50	Thyristor control unit 50A, phase clipping control, 1-phase, compact design	499994
TST1-SP 50	Thyristor control unit 50A, burst control, 1-phase, compact design	499994S
TST3		
TST3 05 3x400/230V	Thyristor control unit 5A, 3-phase control, book design	499053
TST3 15 3x400/230V	Thyristor control unit 15A, 3-phase control, book design	499050
TST3 25 3x400/230V	Thyristor control unit 25A, 3-phase control, book design	499051
TST3 35 3x400/230V	Thyristor control unit 35A, 3-phase control, book design	499052
TST3 50 3x400/230V	Thyristor control unit 50A, 3-phase control, book design	499054
Options		
/IV 230VAC TST1	Internal power supply 230VAC	AS0029
/IV 400VAC TST1	Internal power supply 400VAC	AS0033
/400VAC TST3	Internal control voltage 400VAC	AS0032

Thyristor control unit **Series ESGT**

Open design

- 1-phase or 3-phase control (depends on selected device)
- Phase clipping or burst control (depends on selcted device)
- Fully controlled
- For resistive or inductive load
- Industrial design

ESGT 08	Thyristor control unit 8A, phase clipping control, 3-phase	490200
ESGT-SP 08	Thyristor control unit 8A, burst control, 3-phase, 3-wire mains	490341
ESGT-SP-N 08	Thyristor control unit 8A , burst control, 3-phase, 4-wire mains (N)	490356
ESGT 15	Thyristor control unit 15A, phase clipping control, 3-phase	490201
ESGT-SP 15	Thyristor control unit 15A, burst control, 3-phase, 3-wire mains	490343
ESGT-SP-N 15	Thyristor control unit 15A, burst control, 3-phase, 4-wire mains (N)	490358
ESGT 25	Thyristor control unit 25A, phase clipping control, 3-phase	490213
ESGT-SP 25	Thyristor control unit 25A, burst control, 3-phase, 3-wire mains	490346
ESGT-SP-N 25	Thyristor control unit 25A, burst control, 3-phase, 4-wire mains (N)	490361
ESGT 35	Thyristor control unit 35A, phase clipping control, 3-phase	490203
ESGT-SP 35	Thyristor control unit 35A, burst control, 3-phase, 3-wire mains	490349
ESGT-SP-N 35	Thyristor control unit 35A, burst control, 3-phase, 4-wire mains (N)	490363
ESGT 50	Thyristor control unit 50A, phase clipping control, 3-phase	490216
ESGT-SP 50	Thyristor control unit 50A, burst control, 3-phase, 3-wire mains	490351
ESGT-SP-N 50	Thyristor control unit 50A, burst control, 3-phase, 4-wire mains (N)	490365
ESGT 60	Thyristor control unit 60A, phase clipping control, 3-phase	490217
ESGT-SP 60	Thyristor control unit 60A, burst control, 3-phase, 3-wire mains	490353
ESGT-SP-N 60	Thyristor control unit 60A, burst control, 3-phase, 4-wire mains (N)	490366
ESGT 75	Thyristor control unit 75A, phase clipping control, 3-phase	490218
ESGT-SP 75	Thyristor control unit 75A, burst control, 3-phase, 3-wire mains	490354
ESGT-SP-N 75	Thyristor control unit 75A, burst control, 3-phase, 4-wire mains (N)	490367
ESGT 90	Thyristor control unit 90A, phase clipping control, 3-phase	490220
ESGT-SP 90	Thyristor control unit 90A, burst control, 3-phase, 3-wire mains	490355
ESGT-SP-N 90	Thyristor control unit 90A, burst control, 3-phase, 4-wire mains (N)	490368
ESGT 120	Thyristor control unit 120A, phase clipping control, 3-phase	490205
ESGT-SP 120	Thyristor control unit 120A, burst control, 3-phase, 3-wire mains	490342
ESGT-SP-N 120	Thyristor control unit 120A, burst control, 3-phase, 4-wire mains (N)	490357
ESGT 160	Thyristor control unit 160A, phase clipping control, 3-phase	490210
ESGT-SP 160	Thyristor control unit 160A, burst control, 3-phase, 3-wire mains	490344
ESGT-SP-N 160	Thyristor control unit 160A, burst control, 3-phase, 4-wire mains (N)	490359
ESGT 220	Thyristor control unit 220A, phase clipping control, 3-phase	490212
ESGT-SP 220	Thyristor control unit 220A, burst control, 3-phase, 3-wire mains	490345
ESGT-SP-N 220	Thyristor control unit 220A, burst control, 3-phase, 4-wire mains (N)	490360
ESGT 280	Thyristor control unit 280A, phase clipping control, 3-phase	490214
ESGT-SP 280	Thyristor control unit 280A, burst control, 3-phase, 3-wire mains	490348
ESGT-SP-N 280	Thyristor control unit 280A, burst control, 3-phase, 4-wire mains (N)	490362
ESGT 350	Thyristor control unit 350A, phase clipping control, 3-phase	490215
ESGT-SP 350	Thyristor control unit 350A, burst control, 3-phase, 3-wire mains	490350
ESGT-SP-N 350	Thyristor control unit 350A, burst control, 3-phase, 4-wire mains (N)	490364

Thyristor control unit **Series ESGT**

Open design

- 1-phase or 3-phase control (depends on selected device)
- Phase clipping or burst control (depends on selcted device)
- Fully controlled
- For resistive or inductive load
- Industrial design

ESGT 420	Thyristor control unit 420A, phase clipping control, 3-phase	490370
ESGT-SP 420	Thyristor control unit 420A, burst control, 3-phase, 3-wire mains	490371
ESGT-SP-N 420	Thyristor control unit 420A, burst control, 3-phase, 4-wire mains (N)	490372
ESGT 560	Thyristor control unit 560A, phase clipping control, 3-phase	490373
ESGT-SP 560	Thyristor control unit 560A, burst control, 3-phase, 3-wire mains	490374
ESGT-SP-N 560	Thyristor control unit 560A, burst control, 3-phase, 4-wire mains (N)	490375
ESGT 720	Thyristor control unit 720A, phase clipping control, 3-phase	490376
ESGT-SP 720	Thyristor control unit 720A, burst control 3-phase, 3-wire mains	490377
ESGT-SP-N 720	Thyristor control unit 720A, burst control 3-phase, 4-wire mains (N)	490378
ESGT 1000	Thyristor control unit 1000A, phase clipping control, 3-phase	490379
ESGT-SP 1000	Thyristor control unit 1000A, burst control, 3-phase, 3-wire mains	490380
ESGT-SP-N 1000	Thyristor control unit 1000A, burst control, 3-phase, 4-wire mains (N)	490381

ESGT-1PH 08	Thyristor control unit 8A ,phase clipping control, 1-phase	490300
ESGT-1PH-SP 08	Thyristor control unit 8A, burst control, 1-phase	490319
ESGT-1PH 15	Thyristor control unit 15A, phase clipping control, 1-phase	490301
ESGT-1PH-SP 15	Thyristor control unit 15A, burst control, 1-phase	490321
ESGT-1PH 25	Thyristor control unit 25A, phase clipping control, 1-phase	490310
ESGT-1PH-SP 25	Thyristor control unit 25A, burst control, 1-phase	490323
ESGT-1PH 35	Thyristor control unit 35A, phase clipping control, 1-phase	490313
ESGT-1PH-SP 35	Thyristor control unit 35A, burst control, 1-phase	490325
ESGT-1PH 50	Thyristor control unit 50A, phase clipping control, 1-phase	490315
ESGT-1PH-SP 50	Thyristor control unit 50A, burst control, 1-phase	490327
ESGT-1PH 60	Thyristor control unit 60A, phase clipping control, 1-phase	490316
ESGT-1PH-SP 60	Thyristor control unit 60A, burst control, 1-phase	490328
ESGT-1PH 75	Thyristor control unit 75A, phase clipping control, 1-phase	490317
ESGT-1PH-SP 75	Thyristor control unit 75A, burst control, 1-phase	490329
ESGT-1PH 90	Thyristor control unit 90A, phase clipping control, 1-phase	490318
ESGT-1PH-SP 90	Thyristor control unit 90A, burst control, 1-phase	490330
ESGT-1PH 125	Thyristor control unit 125A, phase clipping control, 1-phase	490320
ESGT-1PH-SP 125	Thyristor control unit 125A, burst control, 1-phase	490326
ESGT-1PH 220	Thyristor control unit 220A, phase clipping control, 1-phase	490224
ESGT-1PH-SP 220	Thyristor control unit 220A, burst control, 1-phase	490322
ESGT-1PH 300	Thyristor control unit 300A, phase clipping control 1-phase	490312
ESGT-1PH-SP 300	Thyristor control unit 300A, burst control, 1-phase	490324
ESGT-1PH 350	Thyristor control unit 350A, phase clipping control, 1-phase	490314
ESGT-1PH-SP 350	Thyristor control unit 350A, burst control, 1-phase	490314S

Thyristor control unit **Series ESGT**

Open design

- 1-phase or 3-phase control (depends on selected device)
- Phase clipping or burst control (depends on selcted device)
- Fully controlled
- For resistive or inductive load
- Industrial design

Options		
/J ESGT	Constant-current regulation, 3 current transformers included - Integrated	AS0008
/U ESGT	Constant-voltage regulation - Integrated in the device	AS0009
/IB ESGT	Current-limit control with high-speed disconnection - Integrated	AS0010
/AI ESGT	Current output (0-100% nominal current equ. 0-10V) - Integrated	AS0011
/AU ESGT	Voltage output 0-10V trimmable to nominal voltage - Integrated	AS0012
/24VDC ESGT	Control voltage 24VDC - Integrated in the device	AS0013
/400VAC ESGT	Control voltage 400VAC - Integrated in the device	AS0014
/J ESGT-1PH	Constant-current regulation, current transformer included - Integrated	AS0001
/U ESGT-1PH	Constant-voltage regulation - Integrated in the device	AS0002
/IB ESGT-1PH	Current-limit control with high-speed disconnection - Integrated	AS0003
/AI ESGT-1PH	Current output (0-100% nominal current equ. 0-10V) - Integrated	AS0004
/AU ESGT-1PH	Voltage output 0-10V trimmable to nominal voltage - Integrated	AS0005
/24VDC ESGT-1PH	Control voltage 24VDC - Integrated in the device	AS0006
/400VAC ESGT-1PH	Control voltage 400VAC - Integrated in the device	AS0007

Accessories		
R20 10KOHM	Remote potentiometer, scale 1-10, 10KOhm	282131

Current Transformers **Series WSW and DSW**

Baffle-type and bar-type current transformers

- Nickle-plate terminals
- Integrated sealable terminal covers
- Baffle-type current transformer (WSW 60)
- Bar-typ current transformers (DSW 60 and DSW 80)
- DIN rail mounting clip optional

WSW

DSW

WSW		
WSW 60 1A/5A 2,5VA	Baffle-type current transformer, class 1	498060
WSW 60 2,5A/5A 2,5VA	Baffle-type current transformer, class 1	498061
WSW 60 5A/5A 2,5VA	Baffle-type current transformer, class 1	498062
WSW 60 10A/5A 2,5VA	Baffle-type current transformer, class 1	498063
WSW 60 15A/5A 2,5VA	Baffle-type current transformer, class 1	498064
WSW 60 20A/5A 2,5VA	Baffle-type current transformer, class 1	498065
WSW 60 25A/5A 2,5VA	Baffle-type current transformer, class 1	498066
WSW 60 30A/5A 2,5VA	Baffle-type current transformer, class 1	498067
WSW 60 40A/5A 2,5VA	Baffle-type current transformer, class 1	498068
DSW		
DSW 60 50A/5A 1,25VA	Bar-type current transformer, class 3	498069
DSW 60 60A/5A 1,25VA	Bar-type current transformer, class 1	498070
DSW 60 75A/5A 2,5VA	Bar-type current transformer, class 3	498071
DSW 60 80A/5A 2,5VA	Bar-type current transformer, class 3	498072
DSW 60 100A/5A 2,5VA	Bar-type current transformer, class 1	498073
DSW 60 125A/5A 2,5VA	Bar-type current transformer, class 1	498074
DSW 60 150A/5A 3,75VA	Bar-type current transformer, class 1	498075
DSW 60 200A/5A 5VA	Bar-type current transformer, class 1	498076
DSW 60 250A/5A 5VA	Bar-type current transformer, class 1	498077
DSW 60 300A/5A 5VA	Bar-type current transformer, class 1	498078
DSW 80 400A/5A	Bar-type current transformer, class 1	498081
DSW 80 500A/5A	Bar-type current transformer, class 1	498085
DSW 80 600A/5A	Bar-type current transformer, class 1	498082
DSW 80 750A/5A	Bar-type current transformer, class 1	498080
DSW 80 800A/5A	Bar-type current transformer, class 1	498084
DSW 80 1000A/5A	Bar-type current transformer, class 1	498079
DSW 80 1250A/5A	Bar-type current transformer, class 1	498083
Accessories		
MC-SW (2 pcs.) for DSW and WSW	Mounting clip (2 pcs.) for series DSW and WSW	498100

DC Power Supplies **Series RNG and RNG-I**

Transformers

- Low residual ripple
- Integrated thermo protection (RNG)
- Self cooling
- Sealed-in (RNG)
- DIN rail mounting (RNG-I)

RNG		
RNG 36/12-230	DC power supply (net regulated), 230VAC, 12V/3A	490508
RNG 36-230	DC power supply (regulated), 230VAC, 24V/1,5A	490505
RNG 36-400	DC power supply (regulated), 400VAC, 24V/1,5A	490506
RNG 72-230	DC power supply (net regulated), 230VAC, 24V/3A	490510
RNG 72-400	DC power supply (net regulated), 400VAC, 24V/3A	490511
RNG 120-230	DC power supply (net regulated), 230VAC, 24V/5A	490515
RNG 120-400	DC power supply (net regulated), 400VAC, 24V/5A	490516
RNG 240-230	DC power supply (net regulated), 230VAC, 24V/10A	490520
RNG 240-400	DC power supply (net regulated), 400VAC, 24V/10A	490519
Accessories		
MP-RNG 36	Mounting clip for RNG 36	490593
MP-RNG 72	Mounting clip for RNG 72	490594
MP-RNG 120	Mounting clip for RNG 120	490592

DC power supply **TELE VIP**

Switching power supply

- DIN rail mounting
- Overload and short circuit protection
- Industrial housing for the switching cabinaet and plant construction
- Installation design for distribution and plant construction
- Valued Industrial Partner

A

B

C

D

E

DRA05-05A	A	DC power supply (regulated), Industrial housing, 5VDC/1A; 1-phase	Width 22,5mm	491410
DRA05-15A	A	DC power supply (regulated), Industrial housing, 15VDC/0,3A; 1-phase	Width 22,5mm	491415
DRA05-24A	A	DC power supply (regulated), Industrial housing, 24VDC/0,2A; 1-phase	Width 22,5mm	491420
DRA10-05A	A	DC power supply (regulated), Industrial housing, 5VDC/2A; 1-phase	Width 22,5mm	491411
DRA10-15A	A	DC power supply (regulated), Industrial housing, 15VDC/0,7A; 1-phase	Width 22,5mm	491414
DRA10-24A	A	DC power supply (regulated), Industrial housing, 24VDC/0,4A; 1-phase	Width 22,5mm	491424
DRA18-05A	A	DC power supply (regulated), Industrial housing, 5VDC/3A; 1-phase	Width 22,5mm	491412
DRA18-12A	A	DC power supply (regulated), Industrial housing, 12VDC/1,5A; 1-phase	Width 22,5mm	491422
DRA18-24A	A	DC power supply (regulated), Industrial housing, 24VDC/0,8A; 1-phase	Width 22,5mm	491425
DRAN30-05A	A	DC power supply (regulated), Industrial housing, 5VDC/6A; 1-phase	Width 40,5mm	491576
DRAN30-12A	A	DC power supply (regulated), Industrial housing, 12VDC/2,5A; 1-phase	Width 40,5mm	491572
DRAN30-24A	A	DC power supply (regulated), Industrial housing, 24VDC/1,25A; 1-phase	Width 40,5mm	491476
DRAN60-12A	A	DC power supply (regulated), Industrial housing, 12VDC/5A; 1-phase	Width 40,5mm	491587
DRAN60-24A	A	DC power supply (regulated), Industrial housing, 24VDC/2,5A; 1-phase	Width 40,5mm	491575
DRA120-12FSA	B	DC power supply (regulated), Industrial housing, 12VDC/10A; 1-phase	Width 63,5mm	491568
DRA120-24FSA	B	DC power supply (regulated), Industrial housing, 24VDC/5A; 1-phase	Width 63,5mm	491569
DRA120-24FPA	B	DC power supply (regulated), Industrial housing, 24VDC/5A; 1-phase	Width 63,5mm	491567
DRA240-24A	B	DC power supply (regulated), Industrial housing, 24VDC/10A; 1-phase	Width 83,0mm	491571
DRA480-24A	B	DC power supply (regulated), Industrial housing, 24VDC/20A; 1-phase	Width 175,0mm	491577
DRH-120-24	C	DC power supply (regulated), Industrial housing, 24VDC/5A; 1-phase	Width 65,5mm	491604
DRP-240-24	C	DC power supply (regulated), Industrial housing, 24VDC/10A; 3-phase	Width 125,5mm	491605
DRP-480-24	C	DC power supply (regulated), Industrial housing, 24VDC/20A; 3-phase	Width 227,0mm	491606
DRT-240-24	C	DC power supply (regulated), Industrial housing, 24VDC/10A; 3-phase	Width 125,5mm	491590
DRT-480-24	C	DC power supply (regulated), Industrial housing, 24VDC/20A; 3-phase	Width 227,0mm	491613
DRT-960-24	C	DC power supply (regulated), Industrial housing, 24VDC/40A; 3-phase	Width 276,0mm	491614
DRT-240-48	C	DC power supply (regulated), Industrial housing, 48VDC/5A; 3-phase	Width 125,5mm	491615
DRT-480-48	C	DC power supply (regulated), Industrial housing, 48VDC/10A; 3-phase	Width 227,0mm	491616
DR-4512	E	DC power supply (regulated), Industrial housing, 12VDC/3,5A; 1-phase	Width 78,0mm	491607
DR-4524	E	DC power supply (regulated), Industrial housing, 24VDC/2A; 1-phase	Width 78,0mm	491611
DR-75-12	C	DC power supply (regulated), Industrial housing, 12VDC/6,3A; 1-phase	Width 55,5mm	491608
DR-75-24	C	DC power supply (regulated), Industrial housing, 24VDC/3,2A; 1-phase	Width 55,5mm	491612
DR-120-12	C	DC power supply (regulated), Industrial housing, 12VDC/10A; 1-phase	Width 65,5mm	491602
DR-120-24	C	DC power supply (regulated), Industrial housing, 24VDC/5A; 1-phase	Width 65,5mm	491603
DRAN30-24A*	A	DC Backup System; 27,2VDC; 1,1A; 1-phase	Width 40,5mm	491476BU
DRAN60-24A*	A	DC Backup System; 27,2VDC; 2,2A; 1-phase	Width 40,5mm	491575BU
DRAN120-24A*	A	DC Backup System; 27,2VDC; 4,4A; 1-phase	Width 65,5mm	491569BU
DRAN240-24A*	A	DC Backup System; 27,2VDC; 8,8A; 1-phase	Width 83,0mm	491571BU
DRAN480-24A*	A	DC Backup System; 27,2VDC; 17,6A; 1-phase	Width 175,0mm	491577BU
DR-30-12	D	DC power supply (regulated), Installation design, 12VDC/2A ; 1-phase	Width 78,0mm	491620
DR-60-12	D	DC power supply (regulated), Installation design, 12VDC/4,5A; 1-phase	Width 78,0mm	491622
DR-30-24	D	DC power supply (regulated), Installation design, 24VDC/1,5A; 1-phase	Width 78,0mm	491623
DR-60-24	D	DC power supply (regulated), Installation design, 24VDC/2,5A; 1-phase	Width 78,0mm	491621

Time Switches **Series TSC**

DIN rail mounting and front panel mounting

- Daily-, weekly- or yearly program
- Automatic summertime change over
- Unrestricted block-programming
- Up to 4 CO contacts
- Different supply voltages

TSC28

TSC44

TSC98

TSCx8	**DIN rail mounting**	
TSC98.20 pro 230VAC	Digital time switch, 2 CO contacts	711132
TSC98.40 pro 230VAC	Digital time switch, 3 CO contacts, 1 NO contact	711131
TSC28.11 pro 230VAC	Digital time switch, 2 CO contacts	711142
TSC28.21 pro 230VAC	Digital time switch, 2 CO contacts	711143
TSC28.23 pro 230VAC	Digital time switch, 2 CO contacts / astro function	711147
TSC18.10 pro 230VAC	Digital time switch, 1 NO contact	711144

TSC44	**Front panel mounting**	
TSC44.12 24VAC	Digital time switch, 1 CO contact	711676
TSC44.12 115VAC	Digital time switch, 1 CO contact	711576
TSC44.12 230VAC	Digital time switch, 1 CO contact	711578
TSC44.22 24VAC	Digital time switch, 1 CO contact, 1 NO contact	711679
TSC44.22 230VAC	Digital time switch, 1 CO contact, 1 NO contact	711579

Hour Meters **Series TBG and TBW**

DIN rail mounting and front panel mounting

- AC powered devices syncronised by mains frequency
- DC powered devices quarz stabilised
- Capacity up to 999.999h
- Increment 0,1h
- Indication of operation mechanical or by flashing LED

A

B

C

D

TBG DC			
TBG30.18 12-48VDC	A	Hour Meters, 99.999 hours	711056
TBG40.17 12-48VDC	B	Hour Meters, 999.999 hours	711025
TBG70.18 12-48VDC	C	Hour Meters, 99.999 hours	711435
TBG70.29 12-48VDC	D	Hour Meters, 99.999 hours	711408
TBW AC			
TBW30.18 230VAC 50Hz	A	Hour Meters, 99.999 hours	711050
TBW40.18 24VAC 50Hz	B	Hour Meters, 99.999 hours	711045
TBW40.18 115VAC 50Hz	B	Hour Meters, 99.999 hours	711042
TBW40.18 230VAC 50Hz	B	Hour Meters, 99.999 hours	711040
TBW70.18 115VAC 50Hz	C	Hour Meters, 99.999 hours	711434
TBW70.18 230VAC 50Hz	C	Hour Meters, 99.999 hours	711430
TBW70.89 48VAC 50/60Hz	D	Hour Meters, 99.999 hours	711139
TBW70.89 115VAC 50/60Hz	D	Hour Meters, 99.999 hours	711140
TBW70.89 230VAC 50/60Hz	D	Hour Meters, 99.999 hours	711141
TBW70.29 24VAC 50/60Hz	D	Hour Meters, 99.999 hours	711355
TBW70.29 230VAC 50/60Hz	D	Hour Meters, 99.999 hours	711350

Accessories		
SB-TBX30	Taut-tape for TBG/TBW30	711809
B55-TBX40	Frame for TBG/TBW40 (55x55mm)	711800
ME72-TBX40	Frame for TBG/TBW40 (72x72mm)	711801
SB-TBX40	Taut-tape for TBG/TBW40	711807
DR-TBW40	Sealing ringfor TBW40 (IP54)	711813
KA-TBX70.29	Terminal cover for TBG/TBW70.29 (sealable)	711812