Catalogue 2010
Product and Systems Information

Electric and electromechanical control systems
for heating, ventilation and air-conditioning.
Building automation and building management systems.

1910 2010 100 INNOVATION

SAUTER
Creating Sustainable Environments.

For people. For the environment. For your business.

Dear Client and Business Associate,

Building management from SAUTER includes not merely the products and equipment from the field, automation and management levels, and it comprises not just valves, actuators, drives, controllers, sensors, automation stations, room operating units, and SCADA and engineering software. At SAUTER, building management means 'creating sustainable environments'.

With our products, solutions and services, we aim to provide a high degree of energy efficiency for your buildings, projects, systems and installations. We help you to achieve the maximum economic benefits for you and your customers, while keeping energy usage to a minimum. This has been the company's focus for the past hundred years.

The foundations for our (currently very successful) business were laid by Fritz Sauter, the firm's founder, 100 years ago with his very first product, a time-switch for controlling the street lighting. These days, we use a so-called 'Energy Management Solution' to determine the energy consumption of whole installations and building complexes, and are in a position to save energy, cut CO2 emissions and reduce running costs.

Our extensive product range is made up of Swiss quality products and services which enjoy a fine and deserved reputation for high precision, long service life and environmental compatibility. Due to the structure of our sales and distribution system, we are represented throughout the world by competent and committed employees, so we're always close at hand. We are happy to accompany you during all the phases of your projects, for planning or operation, and for all kinds of projects, be they new buildings or refurbishments.
We like to discuss everything with you in great detail.

Bertram Schmitz
CEO

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New products from SAUTER.

1 **New I/O modules for the modu525 automation station**
modu531, 532: input module
modu571, 572: input/output module

2 **SAUTER AXS 215S – Continuous actuator for unit valves, with stroke indicator**
Operation of through and three-way unit valves of the VUL, BUL, VXL and BXL series or other popular makes of unit valves.

3 **SAUTER BKR – 3-way ball valve with female thread, PN 40**
Control ball valve for continuous control of cold water, hot water or air in closed networks.

4 **SAUTER AXT 201, 211 – Thermal actuator for unit valves, with stroke indicator**
Operation of through and three-way unit valves of the VUL, BUL, VXL and BXL series or other popular makes of unit valves.

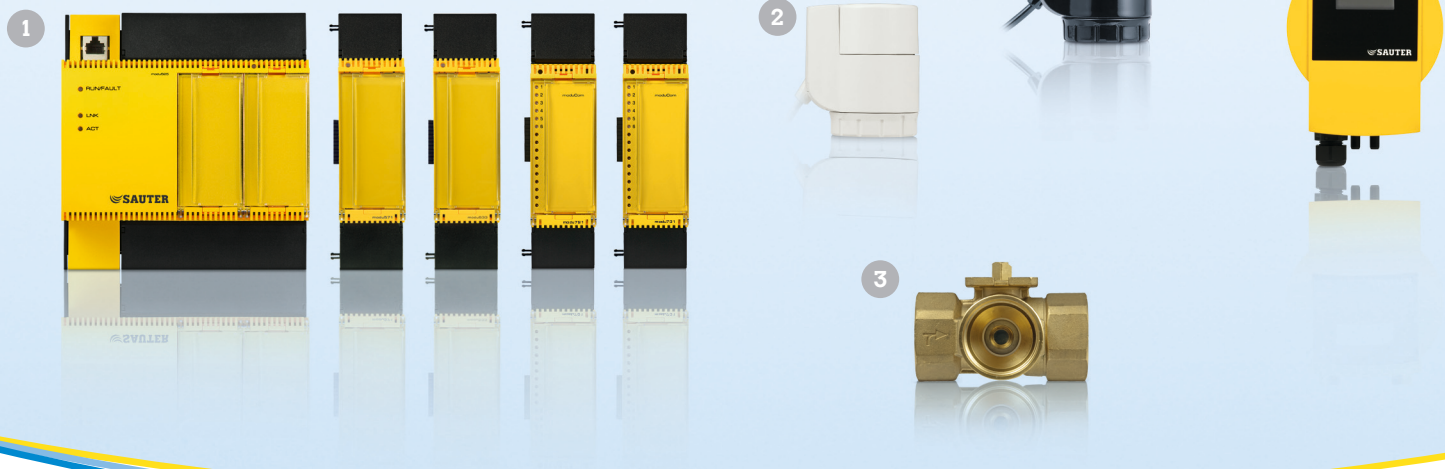
5 **EGP 100 – Transducer for differential pressure**
Enables the accurate measurement of duct pressures in order to optimise the consumption of energy in ventilation systems.

6 **SAUTER modu200 automation station**
Compact automation station with 38 I/O modules. For accurate control around the clock.

7 **SAUTER ecos500 room automation station**
Room automation via BACnet/IP for up to four axes per device.

8 **Energy Management Solution EMS100, 200**
The software collects, calculates, analyses and reports consumption data from various sources, installations and properties, and compares them with benchmarks. This makes it easy to take the right measures in order to optimise the use of energy.

9 **SAUTER novaPro Web**
Web-capable, object-orientated management level with intuitive operation and alerting. Provides a summary of the consumption of energy and media, and facilitates specific optimisation measures. Event-orientated and historical data memory when values change.



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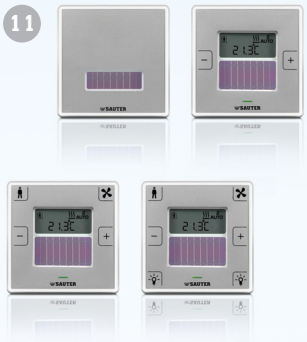
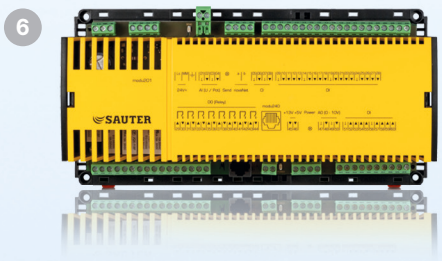
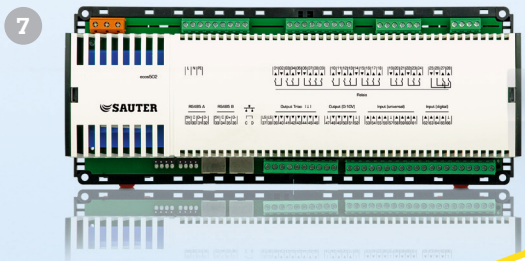
10 **Meteo modu525**
Meteo module for weather forecasts via meteo server for DDC and PLC control.

11 **SAUTER ecoUnit110...146 – room operating unit with wireless technology**
Wireless room control based on bidirectional EnOcean protocol.







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Certificate

SQS herewith certifies that the company named below has a management system which meets the requirements of the normative bases specified below.

SAUTER
Creating Sustainable Environments.

Fr. Sauter AG
CH-4016 Basle

Certified area

Whole Company

Field of activity

Building Control

Normative bases

ISO 9001:2000	Quality Management System
ISO 14001:2004	Environmental Management System
OHSAS 18001:2007	Occupational Health and Safety Assessment System

Swiss Association for Quality and Management Systems SQS
Bernstrasse 103, CH-3052 Zollikofen
Issue date: August 10, 2008

This SQS Certificate is valid up to and including August 9, 2011
Scope number 19
Registration number 10805

X. Edelmann, President SQS

T. Zahner, Managing Director SQS

SCESm 002, 023

Swiss Made

Partner of IQNet

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1 Time-switches

12 Electronic time-switches

Single-channel time-switches
Dual-channel time-switches

→ PDS 12.018

ZDR: Time-switch

T09430

How energy efficiency is improved

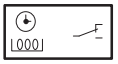
Programmable switching times reduce stand-by losses with electrical loads.
Because of its bi-stable relay outputs, the device has minimal energy consumption of approx. 0.6 W.

Areas of application

For the time-controlled activation of electrical loads such as lighting, heating, ventilation, pumps, chillers, alarm systems, etc.

Features

- Microprocessor-controlled, fully-electronic daily and weekly time-switches
- Suitable for applications with high switching capacity
- Fully automatic switching of loads
- Integrated summertime/wintertime change-over and holiday function
- Easy to operate thanks to NUM keypad and illuminated LCD display
- The optional memory enables optimised switching times to be entered and exported for copying to another device
- Super-capacitor instead of batteries as back-up power supply
- Operating instructions stored safely in a separate compartment in the housing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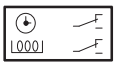
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Technical description

- Power supply: 230 V~
- Maximum switching power: 16 A, 250 V~
- Back-up power supply: up to 36 hours
- Up to 58 memory addresses in two channels with up to 406 switching commands

Type	Power	Number of channels	Memory addresses [1]	Weight kg
ZDR 101 F011	230 V~	1	57	0,41
ZDR 102 F021	230 V~	2	58	0,43

Power supply 230 V~	± 10%, 50...60 Hz
Power consumption	approx. 0.6 W (1,2 VA)
Functional data:-	
Back-up power supply 20 °C	approx. 36 h
Accuracy	± 0.4 (sec per day)
Shortest switching interval	1 min
Pulse duration	2 s

Permissible limit values:-		
Contact rating		16 (6) A, 250 V~
Ambient conditions:-		
Permissible ambient temp.		–5...35 °C
Degree of protection		IP 41 (EN 60529)
Protection class		II (IEC 60730)
Wiring diagram	ZDR 101	A01090
	ZDR 102	A03089
Dimension drawing		M275250
Operating instructions [2]		505105 . . .

Accessories

0226187 001* External memory
0226187 002* Plug-in dummy for memory slot (empty, as a cover)
0275490 000 Frame for panel mounting
0226327 001 Sealable transparent cover

*) Dimension drawing or wiring diagram are available under the same number

1) If blocks with validity for Mo-Su are formed, there are 399 memory addresses (single-channel) or 406 memory addresses (dual-channel).
2) In 6 languages, delivered with each unit. Language code: German = 001; French = 002; English = 003; Italian = 004; Spanish = 005; Swedish = 008.

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2 ON/OFF controllers

21	**Thermostats**	Room thermostats Industrial thermostats Controllers, monitors, limiters
22	**Frost-protection monitors**	Frost-protection monitors with capillary sensors Continuous frost monitor with capillary sensor
23	**Pressure switches**	Pressure switches, differential-pressure switches Pressure monitors, pressure limiters fine-differential-pressure switches
24	**Humidistats**	Room humidistat Build-in humidistat Duct humidistat
29	**Protective tubes (pockets)**	Table of pockets Accessories Dimension drawings for pockets

→ PDS 21.136

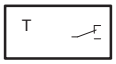
TSO, TSH: Room thermostats

How energy efficiency is improved
Provides demand-led control of HVAC components.

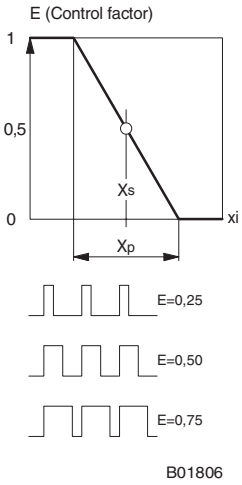
Areas of application
Intelligent unitary temperature control in residential and business premises for activation of, for example, electric heating systems, burners and cooling equipment.

Features
- Variable room temperature as setpoint based on printed temperature scale
- Other versions are available, e.g. for thermal feedback, night set-back, fan switches, switches for heating and cooling
- Suitable for fitting onto walls or recessed junction boxes
- Setpoint adjuster with mechanical min. and max. limits to range

Technical description
- Housing: 76 × 76 mm, made of flame-retardant, pure white thermoplastic (RAL 9010)
- Base made of black thermoplastic with membrane sensor and contact system
- Cable inlet at rear; screw terminals for wire of up to 1.5 mm²
- Switching capacity: up to 10 A



Type	Mode switch	Additional feature [1]	Output for [1]	Voltage	Wiring diagrams
Without thermal feedback [2]: switching difference 1,3 K					
TSO 670 F001	–	–	H/C	–	A05777
TSO 625 F002	Clock-Day-Night	N/R; LED	H only	230 V~	A05776
TSO 672 F001	Heating-Off-Cooling	–	H//C	–	A05779
TSO 673 F001	Heating-Off-Cooling	Ventilator: I-II	H//C	–	A05774
TSO 674 F001	for ventilator	I-II-III-Off	H/C	–	A05775
With thermal feedback [3]: dynamic switching difference 0.5 K					
TSH 670 F002	–	–	H/C	230 V~	A05778
TSH 672 F002	Heating-Off-Cooling	–	H//C	230 V~	A07876
TSH 676 F002	–	N/R	H/C	230 V~	A07877



Power supply 230 V~ [4]	± 10%, 50...60 Hz	With feedback	
		P-band	approx. 3 K
Switch rating 230 V~	10 (2.5) A	Shortest switching period	approx. 19 min (E = 0.5)
TSO 672, 673	Cooling: 5 (1.5) A		
Switch rating 24 V~	min. 0,2 A	Ambient temperature	0...50 °C
24 V=	max. 1 A	Weight	0,11
		Degree of protection	IP 20 (EN 60529)
Range	5...30 °C	Protection class	II (IEC 60730)
Night reduction (N/R)	approx. 5K		
Time behaviour in air		Wiring diagram	see table of types
still	17 min	Dimension drawing	M06652
moving (0,2 m/s)	13 min	Fitting instructions	MV 505473

Accessories
0362225 001* Intermediate cover plate, pure white, for fitting onto recessed junction boxes on walls
0303124 000* Recessed junction box (only in conjunction with the cover plate 0362225 001)

*) Dimension drawing or wiring diagram are available under the same number

1) N/R= Normal/Reduced for external clock
H/C = Heating or Cooling, depending on the connection; H//C = Heating or Cooling, switchable
2) Devices without thermal feedback are pure 2-point controllers. Stated here is the static switching difference, i.e. for very slow changes in temperature. Where temperatures change more quickly, the time constant must be taken into account.
3) Devices with thermal feedback are made to pulse by an integrated heating resistor. The control factor falls as the temperature rises, i.e. control is proportional. The pulsing causes a small temperature deviation of ± 0.1...0,5 K, depending on the room's time constant.
4) 10% higher voltage results in: a P-band of approx. 4 K; a switching period of 15 min; a reduction of approx. 0,5 K in the actual value.

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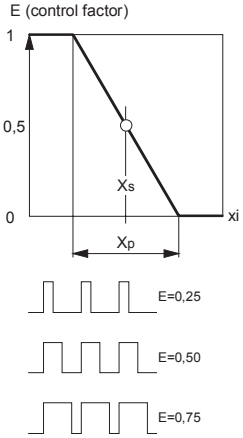
→ PDS 21.164

TSHK 621...661: Fan-coil room-temperature controller, electromechanical



How energy efficiency is improved

Provides demand-led control of HVAC components.

Areas of application

Intelligent unitary temperature control in residential and business premises for activation of, for example, electric heating systems, thermal drives or also fans or cooling equipment in air-conditioning systems.

Features

- Variable room temperature as setpoint based on printed temperature scale
- Change over from heating to cooling by means of switch or type of connection
- On/Off toggle switch for mains power, depending on type other slide switches for operating mode and fan
- More consistent room temperature thanks to thermal feedback
- Suitable for fitting onto walls or recessed junction boxes
- Setpoint adjuster with mechanical min. and max. limits to range

Technical description

- Housing made of pure white, flame-retardant thermoplastic (RAL 9010, fire classification as per UL94 HB)
- Base made of black thermoplastic with bimetal sensor and contact snap fastening system with permanent magnet
- 2-point pulsed activation
- Cable inlet at rear, screw terminals for wires of up to 2.5 mm²
- Switching capacity: up to 6 A

Type	Operating mode	Power	Weight kg
TSHK 621 F001	Heating/cooling; 2-pipe	230 V~	0,18
TSHK 631 F001	Cooling; 2-pipe	230 V~	0,18
TSHK 642 F001	Heating only/cooling only; 2-pipe	230 V~	0,18
TSHK 643 F001	Heating/cooling; 4-pipe	230 V~	0,18
TSHK 644 F002	Heating/cooling; 4-pipe	230/24V~	0,18
TSHK 645 F001	Heating/cooling; 4-pipe; ON/Auto	230 V~	0,18
TSHK 646 F001	Heating/cooling; 4-pipe; 3 LEDs	230 V~	0,18
TSHK 661 F001	Heating/cooling; 2-pipe or 4-pipe	230 V~	0,18

	TSHK 621	TSHK 631	TSHK 642	TSHK 643	TSHK 644	TSHK 645	TSHK 646	TSHK 661
Mains switch, on/off	●	●	●	●	●	●	●	●
Mode switch	♨ ❄	⅄ ❄	–	♨ ❄	♨ ⅄ ❄	♨ ⅄ ❄	♨ ⅄ ❄	
Fan speeds	⅄ ⅄ ⅄	⅄ ⅄ ⅄	⅄ ⅄ ⅄	⅄ ⅄ ⅄	–	⅄ ⅄ ⅄	⅄ ⅄ ⅄	⅄ ⅄ ⅄
Ventilator mode		ON/AUTO			ON/AUTO	ON/AUTO		
Wiring diagram	A09153	A09154	A09155	A09156	A09157	A09158	A09159	A09160

Power supply [1]	± 10%, 50...60 Hz
Switch rating	6 (3) A, 230 V~
Ventilator	6 (3) A, 230 V~
Setting range	5...30 °C
P-band Xp	3 K
Hysteresis[2]	approx. ± 0,1...0,5 K
Shortest switching period	approx. 19 min (E = 0,5)

Time behaviour in air:	**Dead time**	**Time constant**
still	2 min	20 min
moving (0.2 m/s)	1 min	15 min
Ambient temperature	0...55 °C	
Degree of protection	IP 30 (EN 60529)	
Protection class	II (IEC 60730)	
Wiring diagram	see table	
Dimension drawing	M09206	
Fitting instructions	MV 505680	

Accessories

0362239 001* Intermediate cover plate in pure white; fits various recessed junction boxes

*) Dimension drawing or wiring diagram are available under the same number

1) 10% higher voltage provides: P-band approx. 4 K; switching period 15 min.; actual-value reduction approximately 0,5 K.

2) Devices with thermal feedback are made to pulse by an integrated heating resistor. The control factor falls as the temperature rises, i.e. control has proportional behaviour. The pulsing causes a small temperature deviation of ± 0,1...0,5 K, depending on the time constant of the room.

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→ PDS 21.165

TSHK 670...672: Fan-coil room-temperature controller, heating-cooling sequence

How energy efficiency is improved

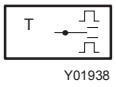
Provides demand-led control of HVAC components.

Areas of application

Intelligent unitary temperature control in residential and business premises for activation of, for example, electric heating systems, thermal drives or also fans or cooling equipment in air-conditioning systems .

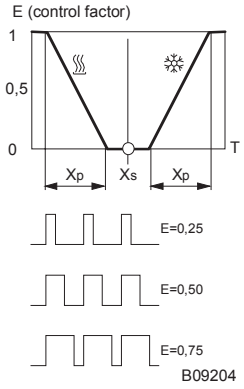
Features

- Variable room temperature as setpoint based on printed temperature scale
- Smooth transition from heating to cooling thanks to sequence characteristic
- Versions with main switch and slide switch for fan
- Suitable for fitting onto walls or recessed junction boxes
- Electronic analysis system and switching relay
- Setpoint adjuster with mechanical min. and max. limits to range



Technical description

- Housing made of pure white, flame-retardant thermoplastic (RAL 9010, fire classification as per UL94 HB)
- Base made of black thermoplastic with NTC sensor
- Cable inlet at rear, screw terminals for wires of up to 2.5 mm²
- Quasi-constant temperature control
- 2-point pulsed activation
- Switching capacity: up to 10 A



Type	Operating mode	Number of switches	Power	Weight kg
TSHK 670 F001	Heating-cooling sequence; 4-pipe	–	230 V~	0,18
TSHK 671 F001	Heating-cooling sequence; 4-pipe	1	230 V~	0,18
TSHK 672 F001	Heating-cooling sequence; 4-pipe	2	230 V~	0,18

	TSHK 670	TSHK 671	TSHK 672
Mains switch, on/off	–	●	●
Mode switch	–	–	
Fan speeds	–	–	
Indicator	–	–	1 LED
Wiring diagram	A09161	A09162	A09163

Power supply [1]	± 10%, 50...60 Hz
Switch rating	10(4) A, 230 V~
Ventilator	6 (3) A, 230 V~
Setting range	5...30 °C
P-band Xp	2 × 3 K
Sequence dead zone	2 K ± 0,7
Hysteresis[1]	approx. ± 0,1...0,5 K
Shortest switching period	approx. 19 min (E = 0,5)

Time behaviour in air:	**Dead time**	**Time constant**
still	2 min	20 min
moving (0.2 m/s)	1 min	15 min
Ambient temperature	0...55 °C	
Degree of protection	IP 30 (EN 60529)	
Protection class	II (IEC 60730)	
Wiring diagram	see table	
Dimension drawing	M09206	
Fitting instructions	MV 505680	

Accessories

0362239 001* Intermediate cover plate in pure white; fits various recessed junction boxes

*) Dimension drawing for accessory is available under the same number

1) The device is electronically made to pulse. The control factor initially falls to nought at the 'heating' output as the temperature rises. After a dead zone, the control factor rises at the 'cooling' output. The pulsing causes a small temperature deviation of ± 0,1...0,5 K, depending on the time constant of the room.

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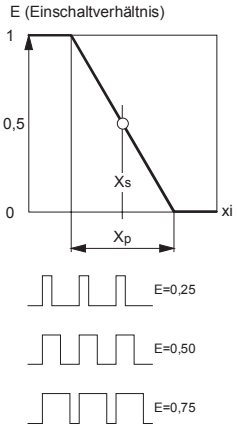
→ PDS 21.166

TSHK 681, 682: Fan-coil room-temperature controller, with digital display



How energy efficiency is improved

Provides demand-led control of HVAC components; cuts off automatically when not in use.

Areas of application

Intelligent unitary temperature control in residential and business premises for activation of, for example, electric heating systems, thermal drives or also fans or cooling equipment in air-conditioning systems.

Features

- LCD display for showing room temperature or setpoint, two keys (±) for adjusting the setpoint.
- Output for heating or cooling depending on type of connection or reversal of direction of travel with external switch
- With main switch for mains power and slide switch for three fan positions
- Suitable for fitting onto walls or recessed junction boxes
- Electronic analysis system and switching relay

Technical description

- Housing made of pure white, flame-retardant thermoplastic (RAL 9010, fire classification as per UL94 HB)
- Base made of black thermoplastic with NTC sensor
- Cable inlet at rear, screw terminals for wires of up to 2.5 mm²
- Quasi-constant temperature control
- 2-point pulsed activation
- Switching capacity: up to 6 A

Type	Operating mode	Power	Weight kg
TSHK 681 F001	Heating/cooling or heating & cooling; 2-pipe	230 V~	0,18
TSHK 682 F001	Heating & cooling; 4-pipe	230 V~	0,18

	TSHK 681	TSHK 682
Mains switch, on/off	●	(●)
Mode switch	–	OFF
Fan speeds		
Display	°C digital	°C digital
Wiring diagram	A09186	A09476

Power supply [1]	± 10%, 50...60 Hz
Switch rating	3 (2) A, 230 V~
Ventilator	6 (3) A, 230 V~
Setting range	5...30 °C; resolution 0,5°C
Actual-value display	0...40 °C; resolution 0,1°C
P-band Xp	3 K
Hysteresis[1]	approx. ± 0,1...0,5 K
Shortest switching period	approx. 18 min (E = 0,5)

Time behaviour in air:	**Dead time**	**Time constant**
still	2 min	20 min
moving (0,2 m/s)	1 min	15 min
Ambient temperature	0...55 °C	
Degree of protection	IP 30 (EN 60529)	
Protection class	II (IEC 60730)	
Wiring diagram	see table	
Dimension drawing	M09206	
Fitting instructions	MV 505726	
Operating instructions	BA 505763	

Accessories

0362237 001* Room sensor in housing (75×75 mm), for ext. temperature measurement (max. 50 m)
0362238 001* Cable sensor, 4 m long, of PVC, for external temperature measurement (max. 50 m)
0362239 001* Intermediate cover plate in pure white; fits various recessed junction boxes

*) Dimension drawing or wiring diagram are available under the same number

1) The device is electronically made to pulse. The control factor falls to nought at the 'heating' output as the temperature rises and rises at the 'cooling' output to E = 1. The pulsing causes a small temperature deviation of ± 0,1...0,5 K, depending on the time constant of the room.

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→ PDS 21.201

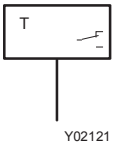
TLC: Thermostat with room sensor, for industrial use

How energy efficiency is improved
Demand-led controlling and monitoring without auxiliary energy.

Areas of application
For controlling and monitoring the temperature, especially suitable for equipment that is subject to vibrations and for halls, large rooms and industrial premises.

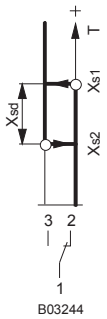
Features
- Temperature range: 0 to 45 °C setting
- Contact rating: 1 mA, 6 V to 10 A, 400 V
- Gold-plated silver contacts
- Upper and lower switching points can be set independently
- Sealable
- 8 min. time constant at 0.5 m/s

Technical description
- Light-alloy housing with transparent cover
- Splash-proof
- Ambient temperature: -40 to +55 °C
- IP 54 with accessories



Type	Setting range °C	Smallest switching difference [1] K	Weight kg
TLC 7B17 F001	0...45	1,0...2,2	0,65

Contact rating		Transport and storage temp.	–40...55 °C
as silver contacts [2] for higher loading		Perm. ambient temp.	–40...55 °C
max.	10(2) A, 400 V~	Degree of protection	IP 44 (EN 60529)
	25 W, 250 V=	Protection class	I (IEC 60730)
min.	100 mA, 24 V		
as gold contacts [3] for lower loading		Wiring diagram	A01497
max.	200 mA, 50 V	Dimension drawing	M259248
min.	1 mA, 6 V	Fitting instructions	MV 23157
Time constant			
at 0,15 m/s	12 min		
at 0,5 m/s	8 min		



Variants (otherwise as F001)

TLC 7B17 F021 Degree of protection IP 67 (EN 60529). Cover of aluminium, with inspection window and seal. Cable screw fitting Pg 13,5.

Accessories

0044529 000 Plug spanner for the setting screws
0233310 000 Aluminium cover with window (with accessory 0259299 000 = IP 54)
0259189 000* Bracket for off-wall mounting
0259299 000 Cable screw fitting Pg 13,5
0259409 000* Bracket (for 3-point fixing when used with 0259189)
0259735 000 Sheath for sensor (for TLC 7B17 only)

*) Dimension drawing or wiring diagram are available under the same number

1) The small values apply to the high setting points, the large values to the low ones.
2) If under inductive load, take RC circuit into account.
3) If the contacts are ever loaded higher than 200 mA and 50 V, the gold plating will be damaged. The contacts are then classed only as silver contacts, since they lose the properties of gold contacts.

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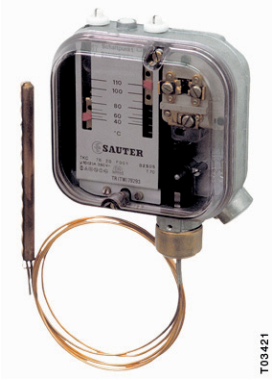
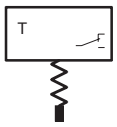
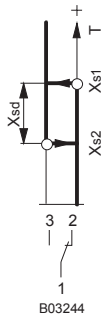
→ PDS 21.221

TKC: Thermostat with remote sensor, for industrial use







How energy efficiency is improved

Controlling and monitoring as required, without auxiliary energy.

Areas of application

For controlling and monitoring the temperature of liquids and gases in baths, tanks, pipelines, air ducting and heating chambers. Especially suitable for equipment that is subject to vibrations.

Features

- Temperature range 0 to 295 °C
- -40 to +320 °C permissible sensor temperature
- Contact rating: 1 mA , 6 V to 10 A, 400 V
- Gold-plated silver contacts
- Upper and lower switching points can be set independently
- Sealable
- 20 sec. time constant in water at 0.25 m/s

Technical description

- Light-alloy housing with transparent cover
- Splash-proof
- Ambient temperature: -40 to +70 ° C
- IP 67 with accessories
- 1.5, 3 or 6 m capillary tube length

Type	Setting range °C	min. switching difference [1] K	Permissible sensor temp. °C	Sensor cartridge mm	Weight kg
TKC 7B17 F001	0...45	1,8...2,5	–40...65	180	0,8
TKC 7B20 F001	40...110	1,6...5,0	–40...135	125	0,8
TKC 7B23 F001	60...140	2,0...4,5	–40...165	125	0,8
TKC 7B26 F001	100...180	1,8...5,0	–40...205	125	0,8
TKC 7B32 F001	160...250	2,5...6,5	–40...275	125	0,8
TKC 7B35 F001	210...295	2,5...5,0	–40...320	125	0,8

Contact rating		Time constant in air 0.5 m/s	120 s
as silver contacts [2] for higher loading			
max.	10(2) A, 400 V~	Permissible ambient temp.	–40...70 °C
	25 W, 250 V=	Degree of protection	IP 44 (EN 60529)
min.	100 mA, 24 V	Protection class	I (IEC 60730)
as gold contacts [3] for lower loading			
max.	200 mA, 50 V	Wiring diagram	A01497
min.	1 mA, 6 V	Dimension drawing	M259247
Time constant in water 0,25 m/s		Fitting instructions	MV 23155
without/ with sheath	20 s/ 30 s		

Variants (otherwise as F001)

TKC 7B17 . . . 32 F003	Capillary tube 3 m long
TKC 7B17 . . . 32 F005	Capillary tube 6 m long
TKC 7B17, 7B20 F501	Aluminium cover with inspection glass; IP 67; cable screw fitting Pg 13,5; 1,5 m
TKC 7B20, 7B26 F111	Limiter; locks when temperature rises; capillary tube 1,5 m

Accessories

0044529 000	Plug spanner for the setting screws
0036787 000*	Brass R½ screw fitting with stuffing box; 12 bar, 180 °C
0144313 000*	Stainless steel R½ screw fitting with stuffing box; 12 bar, 180 °C
0233310 000	Aluminium cover with window (with accessory 0259299 000 = IP 54)
0259189 000*	Bracket for off-wall mounting
0259299 000	Cable screw fitting Pg 13,5
0259409 000*	Bracket (for 3-point fixing when used with 0259189)
0303212 000*	Rubber grommet as an inlet for the capillary tube in air ducts; T < 50 °C
0364140 000*	Bushing for tension relief, for thermostats with capillary tube
0364244 . . .	LW 15 pockets, R½, of brass; see chapter 29
0364258 . . .	LW 15 pockets, G½ A; of stainless steel; see chapter 29
0364346 . . .	LW 15 pockets, G½ A; of brass; see chapter 29

*) Dimension drawing or wiring diagram are available under the same number

1) The small values apply to the high setting points, the large values to the low ones.
2) If under inductive load, take RC circuit into account.
3) If the contacts are ever loaded higher than 200 mA, 50 V, the gold plating will be damaged. The contacts are then classed only as silver contacts, since they lose the properties of gold contacts.

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→ PDS 21.610

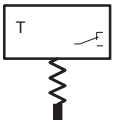
RAK: Universal thermostat

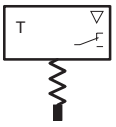
How energy efficiency is improved
Demand-led controlling, monitoring and limiting, without auxiliary energy.

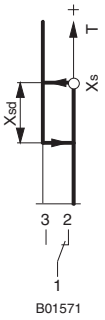
Areas of application
For controlling and monitoring the temperature of liquids in baths, tanks, pipelines and ducts. Thanks to modular design, can be used as controller, monitor, limiter or safety limiter.

Features
- Temperature range: -10 to +230 °C
- Sealable
- Classified as Cat. IV according to DGRL 97/23/EC
- 15 secs. time constant in water
- Thermostat with remote sensor
- Clamp-on thermostat
- Stem-type thermostat with and without protective tube
- Double thermostat e.g. as TW and STB

Technical description
- Two-part housing made of plastic, lower part black, upper part yellow, including inspection window
- 0,8, 1 and 1,6 m capillary tube length
- Also for flue gas pipes







Type		Setting range °C	Switching difference K	Capillary tube mm	Sensor cartridge mm	Max. temp. of sensor °C
As a temperature controller-monitor (TR, TM); with LW 7 pocket, brass, 100 mm; as per DIN 3440						
RAK 582.4/3773		5...30	4	800	68	200
RAK 582.4/3770		-10...50	4	1600	68	180
RAK 582.4/3728		15...95	4	800	68	200
RAK 582.4/3754		40...120	4	1600	68	200
RAK 582.4/3726		50...130	4	800	68	200
RAK 582.4/3729	3) 5)	80...160	4	1600	68	200
RAK 582.4/3753	3) 5)	150...230	4	1000	68	280
As a safety temperature limiter (STB), classified in PED 97/23/EC as per Cat. IV; with LW 7 pocket, brass, 100 mm; as per DIN 3440; intrinsically safe; with mechanical lock.						
RAK 13.5050S		130/120/110/100/95 1)	20	800	68	170
As a temperature limiter (TB); with mechanical lock; with LW 7 pocket, brass, 100 mm; as per DIN 3440						
RAK 584.4/3782		20...60	10	800	68	200
RAK 584.4/3783		50...130	10	800	68	220

Max. contact rating 2)		
Terminal 1-2 TW, TB		10 (2.6) A 250 V~
Terminal 11-12 STB		10 (6) A 250 V~
Terminal 1-4 TW		4 (0.6) A 250 V~
Min. contact rating		500 mA 40 V
Time constant in water		
without pocket		< 15 s
with LW 7 pocket		< 45 s
Calibrated at	TW, TB	23 ± 2 °C (T_U 23)
	STB	37 ± 2 °C (T_U 37)
Influence of head temperature		
depends on type		0,20...0,60 K/K
Weight		0,22 kg
Transport and storage temp.		-25...55 °C
Permissible ambient temp. (head)		0...50 °C (T50)
as clamp-on sensor (water temp.)		max. 120 °C

Degree of protection		IP 54 (EN 60529)
Protection class		I (IEC 60730)
DIN register number		
Not classified in the PED		RAK 584.4 and 582.4
Classified in the PED 97/23/EG		
as per Cat. IV:		RAK 13.50 . . S
Test marking 4)		ID: 0000006982
Wiring diagram	TW	A10391
	STB	A10396
	TB	A10394
Dimension drawing		M05633
Fitting instructions		MV 505803

RAK 13.50 . .

1) Settings (via catches) are irreversible
2) If under inductive load, take RC circuit into account.
3) Pocket included; stainless-steel pockets should be used above 130 °C; see chapter 29, pocket LW 7 Niro
4) Certificates can be downloaded from www.tuv.com
5) Distance piece 100 mm for temperatures > 130 °C included

Accessories see next page >>>

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→ PDS 21.610

Accessories

0364433 001* Indicator lamp: 250 V~ for showing the switching status on the monitor
0364435 001 Assembly kit for clamp-on and double thermostat with 2 plugs for maintaining degree of protection IP 54, plus retaining strap for fitting to pipes of ½ "…3" (for RAK as a clamp-on thermostat: T < 120 °C)

As stem-type thermostat: (see chapter 29 for further details on pockets)
0364439 . . . LW 7 pockets; of brass; R½; for one sensor cartridge
0364440 . . . LW 15 pockets; of brass; R½, for 2-3 sensor cartridges
0210240 010* Distance piece 100 mm

As thermostat with remote sensor:
0296724 000* Sensor holder for wall mounting
0303212 000* Rubber grommet for capillary-tube guide in air ducts; T < 50 °C
0364140 000* Tension-relief piece for fitting in protective tubes.
0364432 001* Fixing bracket for wall or duct mounting
0364434 001* Supporting coil for sensor, for direct fitting in air ducts
0036787 000* Grommet for capillary tube, with packing box; R½, brass, 12 bar, 180 °C

*) Dimension drawing or wiring diagram are available under the same number

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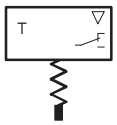
→ PDS 21.91

RAM9C1: Clamp-on thermostat for use as temperature controller



How energy efficiency is improved
Demand-led controlling, monitoring and limiting without auxiliary energy.

Areas of application
Clamp-on thermostat for the control and regulation of liquid media, in particular in heating systems.

Properties
- Bimetal thermostat
- Setpoint knob with scale for external adjustment
- Change-over contacts
- Includes spring-loaded strap retainer for pipework max. 80 mm
- Includes sachet of heat-conducting paste

Technical description
- Plastic housing
- Change-over contacts on plastic base
- Max. contact rating 16 (4) A / 250 V~
- Screw terminals for max. 1,5 mm²
- Cable clamping sleeve Pg11
- Degree of protection IP40
- Without test mark

Type	Setting range °C	Switching difference K	Weight kg
RAM 9C1 F002	0...90	6+/-2	0,16

Max. switching capacity per contact	16 (4) A 250 V~ 6 (1) A 400 V~	Housing material	ABS UL94 V0
		Basic material	Galvanised steel
Tolerance	Min. temperature +/- 5 °C Max. temperature +/- 8 °C at 90°C +0 -8°C	Temperature resistance of conductors	T 130
		Max. temperature at thermostat head	T 85
Max. permissible temperature of housing	80 °C		
Max. permissible temperature of sensor	110 °C	Degree of protection	IP 40
		Model	1B
Transport and storage temperature	–15...55 °C	Protection class	I

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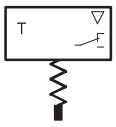
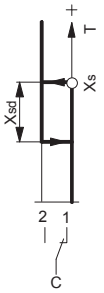
→ PDS 21.92

RAM9C3: Clamp-on thermostat for use as temperature limiter





How energy efficiency is improved
Demand-led controlling, monitoring and limiting without auxiliary energy.

Areas of application
This clamp-on temperature limiter is particularly suitable for guaranteeing the safety of under-floor heating systems.

Properties
- Complies with DTU 65-8 for under-floor heating systems
- With manual reset
- Internal adjustment
- Change-over contacts
- Includes spring-loaded strap retainer for pipework max. 80 mm
- Includes sachet of heat-conducting paste

Technical description
- Plastic housing
- Change-over contacts on plastic base
- Max. contact rating 16 (4) A / 250 V~
- Screw terminals for max. 1,5 mm²
- Cable clamping sleeve Pg11
- Degree of protection IP40
- Without test mark

Type	Setting range °C	Switching difference K	Weight kg
RAM 9C3 F002	30...70	+0/ -6	0,18

Max. switching capacity per contact	16 (4) A 250 V~ 6 (1) A 400 V~	Housing material	ABS UL94 V0
		Basic material	Galvanised steel
[1)] Tolerance	Min. temperature +0/- 6 °C Max. temperature +6/-0 °C at 100 +0 -8°C	Temperature resistance of conductors	T130
		Max. temperature at thermostat head	T85
Max. permissible temperature of housing	80 °C	Degree of protection	IP 40
Max. permissible temperature of sensor	85 °C	Model	1B
Transport and storage temperature	–15...55 °C	Protection class	I

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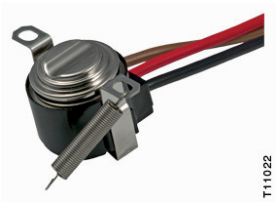
→ PDS 21.93

RAM100: Thermostat for reversal of direction of travel (change-over)



Areas of application

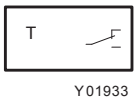
Automatic reversal of direction of travel (summer/winter) for valves in 2-pipe systems.

Properties

- Sensing of media temperature at valve mouth
- Spring for pipe mounting made of stainless steel
- Housing made of polycarbonate and stainless steel

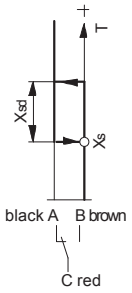
Technical description

- Sensor: bimetal disc
- Adjusted for detecting cooling agent < 15 °C ± 4 K
- Adjusted for detecting heating agent > 30 °C ± 4 K
- Change-over contacts
- Supplied with 3 cables, length 0,5 m, cross-section 2,5 mm² with spring for pipe mounting



Type	"Heating" change-over point °C	"Cooling" change-over point °C	Deviation K	Weight kg
RAM100 F001	30	15	±4	0,095

Moving parts	Copper alloy	Max. contact rating	3 (1) A 250 V~
Cover	Polycarbonate	Min. contact rating	500 mA 40 V
Electrical contact	Silver alloy	Temperature >30 °C	Contact closed C and B
Fastening	Steel, stainless	Temperature <15 °C	Contact closed C and A
Cable cross-section	2,5 mm²		
Cable length	1.5 m	Storage and transport temperature	–15...60 °C
Sensing surface	Copper	Max. housing temperature	60 °C
Max. tube diameter	25 mm²		
		Degree of protection	IP 65
		Protection class	II as per EN 60730



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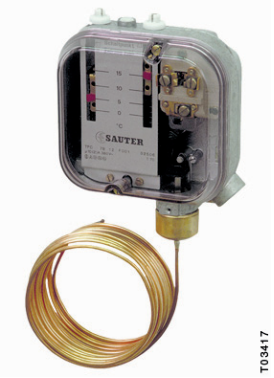
→ PDS 22.010

TFC: Frost-protection monitor with capillary-tube sensor

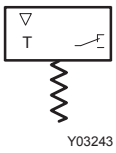


How energy efficiency is improved
Demand-led monitoring without external energy.

Areas of application
For monitoring the temperature in heating coils (air side), water drains and ducts. Especially suitable for equipment that is subject to vibrations.

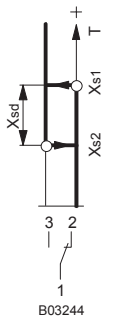
Features
- Temperature range: 0 to15 °C
- Contact rating: 1 mA, 6 V to 10 A, 400 V
- Gold-plated silver contacts
- Upper and lower switching points can be set independently
- Sealable
- 2 sec. time constant in water at 0.5 m/s
- 6 m copper capillary tube

Technical description
- Light-alloy housing with transparent cover
- Splash-proof
- Ambient temperature: 0 to +70 ° C
- IP 54 with accessories



Type	Setting range °C	Min. switching difference [1] K	Permissible sensor temp. °C	Weight kg
TFC 7B12 F001	0...15	2...3	–40...180	0,9

Contact rating		Perm. ambient temp.	0...70 °C [4]
as silver contacts [2] for higher loading		Degree of protection	IP 44 (EN 60529)
max.	10(2) A, 400 V~ 25 W, 250 V=	Protection class	I (IEC 60730)
min.	100 mA, 24 V	Wiring diagram	A01497
as gold contacts [3] for lower loading		Dimension drawing	M259249
max.	200 mA, 50 V	Fitting instructions	MV 23158
min.	1 mA, 6 V		
Time constant			
in air 0,3 m/s	35 s		
in water 0,5 m/s	2 s		



Accessories
0044529 000 Plug spanner for the setting screws
0233310 000 Aluminium cover with window (with accessory 0259299 000 = IP 54)
0259189 000* Bracket for off-wall mounting
0259299 000 Cable screw fitting Pg 13,5
0259409 000* Bracket (for 3-point fixing when used with 0259189)
0303167 000* Five holders for capillary tube

*) Dimension drawing or wiring diagram are available under the same number

1) The small values apply to the high setting points, the large values to the low ones.
2) If under inductive load, take RC circuit into account.
3) If the contacts are ever loaded higher than 200 mA, 50 V, the gold plating will be damaged. The contacts are then classed only as silver contacts, since they lose the properties of gold contacts.
4) The head of the instrument must be fittes at a place which is warmer than that of the sensor.

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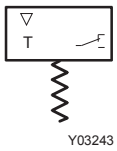

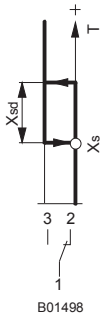

→ PDS 22.030

TFL 201: Frost-protection monitor/limiter with capillary-tube sensor

How energy efficiency is improved
Demand-led, large-scale monitoring of installation parts as required, without auxiliary energy.

Areas of application
Temperature monitoring in air heaters, water pipes and air ducting. Especially suitable for compact applications.

Features
- Temperature range: -5 to +15 °C
- Contact rating: 4 mA, 6 V to 10 A, 250 V
- Gold-plated silver contacts
- Switching point and switching difference can be adjusted
- Sealable
- 2 sec. time constant in water at 0.5 m/s
- 1.5, 3 or 6 m copper capillary tube

Technical description
- Transparent cover made of impact-resistant thermoplastic
- Ambient temperature: -5 to +70 ° C
- IP 65
- Active from 10 cm capillary length in switching temperature
- Standard housing-mounted plug with cable connector for cables of 6 to 10 mm in diameter

Type	Function	Setting range °C	Switching difference (Average values) K	Permissible sensor temp. °C	Weight kg
TFL 201 F001	X_{Sd} = fixed	–5...15	2,0	–20...200	0,47
TFL 201 F011	X_{Sd} = variable	–5...15	2...6	–20...200	0,47
TFL 201 F021	limiter	–5...15	2,0	–20...200	0,47

Contact rating		Factory setting	5 °C
as silver contacts [1]	10(3) A, 250 V~ 50 W, 250 V=	Tolerance of switching difference	max. ± 1 K
min.	100 mA, 24 V	Perm. temp. at head of instrument [4]	–5...70 °C
as gold contacts [2]	160 mA, 50 V	Degree of protection	IP 65 (EN 60529)
min.	4 mA, 6 V	Protection class	I (IEC 60730)
Time constant		Wiring diagram, monitor	A01497
in air 0,3 m/s	35 s	limiter	A05218
in water 0,5 m/s	2 s	Dimension drawing	M09981
		Fitting instructions	MV 505752
Active length of capillary tube [3]	min. 10 cm	Declaration on materials	MD 22.030

Variants (otherwise as standard version)

TFL 201 F101 Capillary tube, 1,5 m long; with 3 holders, X_{sd} = fixed

TFL 201 F601 Capillary tube, 6,0 m long; with 5 holders, X_{sd} = fixed

Accessories
0296936 000* Bracket for rail: top-hat rail EN 50022, 35 × 7,5 or 35 × 15

0303167 000* Five additional holders for capillary tube

*) Dimension drawing or wiring diagram are available under the same number

1) If under inductive load, take RC circuit into account.
2) If the contacts are ever loaded higher than 160 mA, 50 V, the gold plating will be damaged. The contacts are then classed only as silver contacts, since they lose the characteristics of gold contacts.
3) The monitor always reacts to the coldest place (minimum length is 10 cm).
4) The head of the instrument must be fitted at a place which is warmer than that of the sensor.

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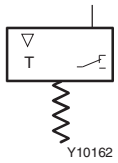
→ PDS 22.040

TFL 611: Continuous frost monitor with capillary sensor

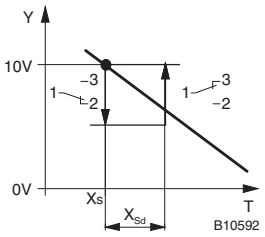
How energy efficiency is improved
Demand-led, large-scale monitoring of installation parts with fully active sensor.

Areas of application
Temperature monitoring in air/water heat exchangers and air ducting with constant frost-protection control, frost-protection switch and temperature transmission. For applications on the air side of installations.

Features
- Measuring range: 0 to 15 °C
- Frost point can be adjusted
- Contact rating: 5 mA, 5 V to 6 A, 250 V
- Start-up function
- LED display indicating risk of frost
- Selectable block on switching on again
- < 40 s. time constant with moving air
- 2 or 6 m copper capillary tube



Technical description
- Two-part plastic housing
- Ambient temperature: -15 to +60 °C
- Controlled housing heating to safeguard measured variable
- IP 42
- Active from 25 cm capillary length in switching temperature



Type		Capillary tube	Setting range X_S °C	Switching diff. X_{Sd} K	Permissible sensor temp. °C	Weight kg
TFL 611 F200	1)	2 m	1...10	2	–15...110	0,34
TFL 611 F600	1)	6 m	1...10	2	–15...110	0,41

Power supply	24 V~, ± 20%	Active capillary length 3)	min. 250 mm
Power consumption	6 VA	Factory setting	5 °C
Measuring range of sensor	0...15 °C / 0…10 V=	Temp. at head of instrument 4)	–15...60 °C
Control signal output	0...10 V=, max. ± 1 mA	Degree of protection	IP 42 (EN 60529)
Max. length of cable at 1,5 mm²	300 m	Protection class	II (IEC 60730)
Control signal input	0...10 V=, max. ± 0,1 mA		
Contact rating		Wiring diagram	A10390
maximum 2)	6(4) A, 250 V~	Dimension drawing	M10422
minimum	5 mA, 5 V~=	Fitting instructions	MV 505954
Time constant			
in still air	90 s		
in moving air	40 s		

Accessories
0292146 001* Set for duct fitting consisting of: 5 capillary-tube holders, 1 depth adjustable flange
0303167 000* 5 capillary-tube holders
0374534 001* Depth adjustable flange

*) Dimension drawing or wiring diagram are available under the same number

1) The accessory 0292146 001 for duct fitting must be ordered separately.
2) If under inductive load, take RC circuit into account.
3) The monitor always reacts to the coldest place (minimum length is 250 mm).
4) The head of the instrument is frost protected for ambient temperatures up to max. -15 °C by a heating system.

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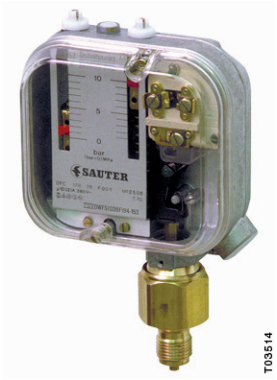
→ PDS 23.115

DFC 17B, 27B: Heavy-duty pressure switch

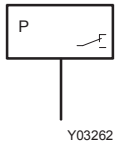


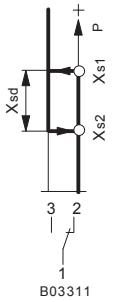
How energy efficiency is improved
Demand-led controlling and monitoring; no external energy source required.

Areas of application
For regulating and monitoring pressures in liquids, gases and vapours. Especially suitable for equipment that is subject to vibrations.

Features
- Pressure range: -1 to +80 bar
- Contact rating: 1 mA, 6 V to 10 A, 400 V
- Up to 110 °C media temperature
- Gold-plated silver contacts
- Upper and lower switching points can be set independently
- Sealable
- Complies with DGRL 97/23/EC, Cat. IV

Technical description
- Light-alloy housing with transparent cover
- Splash-proof
- Ambient temperature: -40 to +70 °C
- IP 54 or IP 67 available
- Brass sensor or stainless-steel for aggressive media





Type	Setting range bar	Min. switching diff. bar	Max. sensor values bar	°C	Weight kg
Pressure sensor of brass for non-aggressive media					
DFC 17B30 F001	0...0,4	0,035	10	70	1,7
DFC 17B36 F001	0...1,5	0,04	10	70	1,7
DFC 17B39 F001	–1,0...1,5	0,08	10	70	1,8
DFC 17B54 F001	0...2,5	0,14	16	70	1,2
DFC 17B58 F001	0...6,0	0,18	16	70	1,2
DFC 17B59 F001	–1,0...5,0	0,20	16	70	1,2
DFC 17B76 F001	0...10	0,5	40	70	1,1
DFC 17B77 F001	10...20	0,6	40	70	1,1
DFC 17B78 F001	0...16	0,5	40	70	1,1
DFC 17B79 F001	16...32	0,8	42	70	1,1
DFC 17B96 F001	0...25	1,7	100	70	1,0
DFC 17B97 F001	25...50	2,0	100	70	1,0
DFC 17B98 F001	0...40	1,8	100	70	1,0
DFC 17B99 F001	40...80	2,4	105	70	1,0
Pressure sensor of stainless steel for aggressive media					
DFC 27B26 F002	–1,0...2,5	0,3	21	110	0,9
DFC 27B43 F002	0,5...6,0	0,3	21	110	0,9
DFC 27B46 F002	1,0...10	0,3	21	110	0,9
DFC 27B52 F002	2,0...16	0,3	21	110	0,9

Contact rating	
as silver contacts [1] for higher loading	
max.	10(2) A, 400 V~ (25 W), 250 V=
min.	100 mA, 24 V
as gold contacts [2] for lower loading	
max.	200 mA, 50 V
min.	1 mA, 6 V
Permissible vacuum loading	–1,0 bar
Type B30; B36; B54	–0,7 bar
Permissible ambient temp.	–40...70 °C

Degree of protection	IP 44 (EN 60529) IP 54 [3], IP 67 [4]	
Protection class	I (IEC 60730)	
Test marking [5]		
DWFS (SDBF)	ID: 0000006018	
DWFS (SDB)	ID: 0000006019	
DB (SDBF)	ID: 0000006017	
PED	Cat. IV	
	DFC 17	**DFC 27**
Wiring diagram	A01499	A01499
Dimension drawing	M259344	M259344
Fitting instructions	MV 2275	MV 2284

1) If under inductive load, take RC circuit into account
2) If the contacts are ever loaded higher than 200 mA, 50 V, the gold plating will be damaged. The contacts are then classed only as silver contacts, since they lose the properties of gold contacts
3) IP 54 with 0233310 000
4) IP 67 is availabe as a variant on request
5) Certificates can be downloaded from www.tuv.com

Variants and accessories see next page >>>

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→ PDS 23.115

Variants (otherwise as standard version)

DFC 17B76 F021	Degree of prot. IP 67; alu. cover with inspection glass; cable screw fitting Pg 13,5
DFC 27B26 F062	Degree of prot. IP 67; alu. cover with inspection glass; cable screw fitting Pg 13,5
DFC 27B46 F062	Degree of prot. IP 67; alu. cover with inspection glass; cable screw fitting Pg 13,5
DFC 17B54 F211	Limiter; locks mechanically when pressure falls
DFC 17B58 F211	Limiter; locks mechanically when pressure falls
DFC 17B78 F211	Limiter; locks mechanically when pressure falls

Accessories

0044529 000	Plug spanner for the setting screws.
0192222 000*	Cap nut with soldering nipple.
0259239 000*	Adaptor G½ to $^{7}/_{18}$" 20-UNF-2A for connecting copper tubing of Ø 6 mm, brass.
0311572 000*	Screw connection for connecting copper tubes of Ø 6 mm, brass.
0035465 000	Throttling screw for damping pressure surges; brass.
0214120 000	Throttling screw for damping pressure surges; stainless steel.
0192700 000*	1 m of capillary tubing for damping pressure surges; copper.
0114467 000*	1 m of capillary tubing for damping pressure surges; steel.
0233310 000	Aluminium cover with window (with accessory 0259299 000 = IP 54)
0292018 001*	Damping screw for arresting pressure surges in low-viscosity media. Stainless steel.
0259189 000*	Bracket for off-wall mounting (already supplied with DFC 17 B 30 - 59).
0259409 000*	Bracket (for 3-point fixing when used with 0259189).
0259299 000	Cable screw fitting Pg 13,5.
0292019 001	Setpoint setting per switching point according to customer's specification (± 3% of the setting range).
0292019 002	Sealed set screw for each switching point (with accessory 0292019/001 only)
0381141 001*	Sealing ring of copper for G½"

*) Dimension drawing or wiring diagram are available under the same number

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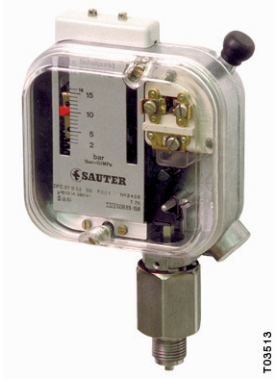
→ PDS 23.118

DFC 27B . . W/B: Heavy-duty pressure monitor/limiter

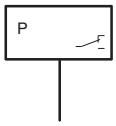


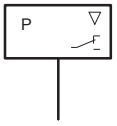
How energy efficiency is improved
Demand-led controlling and monitoring, without auxiliary energy.

Areas of application
For controlling and monitoring pressures in liquids, gases and vapours. Especially suitable for equipment that is subject to vibrations.

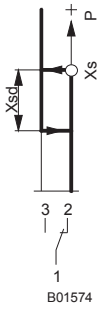
Features
- Pressure range: 0.5 to 40 bar
- Contact rating: 1 mA, 6 V to 10 A, 400 V
- Up to 110 °C media temperature
- Gold-plated silver contacts
- Fixed switching difference, no hysteresis setting necessary
- Sealable
- Complies with DGRL 97/23/EC, Cat. IV

Technical description
- Light-alloy housing with transparent cover
- Splash-proof
- Ambient temperature: -40 to +70 °C
- IP 44 or IP 54 as alternative
- Brass sensor





Type	Setting range bar	Switching difference bar	Max. sensor values bar	°C	Weight kg
Pressure monitor					
DFC 27B43W F001	0.5...6	0,3	21	110	0,9
Safety pressure limiter with locking facility on rising pressure [1]					
DFC 27B43B F001	0,5...6	0,3	21	110	0,9
DFC 27B52B F001	2,0...16	0,6	21	110	0,9
DFC 27B58B F001	2,0...25	1,5	63	110	0,9
DFC 27B67B F001	3,0...40	2,0	63	110	0,9



Contact rating		
as silver contacts [2] for higher loading		
max.		10(2) A, 400 V~
		25 W, 250 V=
min.		100 mA, 24 V
as gold contacts [3] for lower loading		
max.		200 mA, 50 V
min.		1 mA, 6 V
Permissible vacuum loading		-0,7 bar
DFC 27B52		-1,0 bar

Permissible ambient temp.		-40...70 °C
Degree of protection		IP 44 (EN 60529)
		IP 54 [5]
Protection class		I (IEC 60730)
Test marking [6]		
Monitor DWFS (SDB) [4]		ID: 0000006021
Limiter SDB		ID: 0000006020
PED		Cat. IV
Wiring diagram:	monitor	A01499
	limiter	A01503
Dimension drawing		M259344
Fitting instructions		MV 2288

Accessories
0044529 000 Plug spanner for the setting screws
0214120 000 Throttling screw of stainless steel for damping pressure surges
0114467 000* 1 m of capillary tubing for damping pressure surges; steel
0233310 000 Aluminium cover with window (with accessory 0259299 000 = IP 54)
0259189 000* Bracket for off-wall mounting
0259409 000* Bracket (for 3-point fixing when used with 0259189)
0259299 000 Cable screw fitting Pg 13,5
0292018 001* Damping screw of stainless steel for arresting pressure surges in low-viscosity media
0292019 001 Setpoint setting according to customer's specification (± 3% of the setting range)
0292019 002 Setting screw sealed (with accessory 0292019 001 only)
0381141 001* Sealing ring of copper for G ½"

*) Dimension drawing or wiring diagram are available under the same number

1) Reset is possible only after the pressure has fallen by the switching difference
2) If under inductive load, take RC circuit into account
3) If the contacts are ever loaded higher than 200 mA, 50 V, the gold plating will be damaged. The contacts are then classed only as silver contacts, since they lose the properties of gold contacts
4) As a safety pressure limiter when an external electric locking facility is connected
5) IP 54 with 0259299 000
6) Certificates can be downloaded from www.tuv.com

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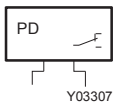
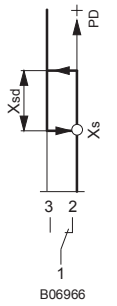
→ PDS 23.402

DSD: Differential-pressure switch





How energy efficiency is improved

Demand-led controlling and monitoring, without auxiliary energy.

Areas of application

For controlling and monitoring pressures in liquids, gases and vapours, as well as for monitoring the flow of heating pumps. Especially suitable for equipment that is subject to vibrations.

Features

- Pressure range: 0.2 to 16 bar
- Contact rating: 4 mA, 5 V to 10 A, 250 V
- Up to 110 °C media temperature
- Gold-plated silver contacts
- Adjustable switching difference
- Sealable
- Mechanical service life: > 1x 106 switching cycles

Technical description

- Light-alloy housing with transparent cover made of impact-resistant thermoplastic
- Ambient temperature: -20 to +70 °C
- IP 65
- Standard housing-mounted plug with cable connector for cables of 6 to 10 mm in diameter

Type	Range	Switching difference	Max. sensor values		Weight
	bar	bar	bar	°C	kg
Differential-pressure switch with variable switching difference					
DSD 137 F001	0,2...1,0	0,20...1,4	6	110	0,63
DSD 140 F001	0,4...2,5	0,40...1,6	10	110	0,63
DSD 143 F001	0,5...6,0	0,45...2,2	12	110	0,63
DSD 152 F001	1,0...16	0,60...3,4	25	110	0,63
Differential-pressure switch with fixed, small switching difference					
DSD 134 F101	0,05...0,4	0,04	6	110	0,63

Contact rating:-		Ambient temperature	–20...70 °C
as silver contacts [1]	10(3) A, 250 V~	Degree of protection	IP 65 (EN 60529)
	50 W, 250 V=	Protection class	I (IEC 60730)
minimum	100 mA, 24 V		
as gold-plated contacts [2]	160 mA, 50 V	Wiring diagram	A01499
minimum	4 mA, 5 V	Dimension drawing	M06967
Permissible vacuum loading	–0,7 bar	Fitting instructions	MV 505424
DSD 152	–1,0 bar		

Accessories

0190403 005* Brass connector with cap nut (*Serto* system), 2 pieces required
0259984 000* Bracket for 3-point fixing
0292110 001* Two throttle screws, Rp 1/8, for arresting pressure surges; stainless steel.
0296936 000* Fixing bracket for top-hat rails EN 60715, 35 × 7,5 or 35 × 15

*) Dimension drawing or wiring diagram are available under the same number

1) If under inductive load, take RC circuit into account
2) If the contacts are loaded with more than 160 mA, 50 V, the gold plating suffers irreparable damage. They then lose the properties of gold contacts, and operate thenceforth as silver contacts

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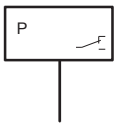
→ PDS 23.755

DSA: Pressure switches

How energy efficiency is improved
Demand-led controlling and monitoring, without auxiliary energy.

Areas of application
For controlling and monitoring pressures in liquids, gases and vapours. Especially suitable for applications in compact installations, for pipe or wall mounting.

Features
- Pressure range: 0.5 to 10 bar
- Contact rating: 4 mA, 5 V to 10 A, 250 V
- Up to 70 °C media temperature
- Gold-plated silver contacts
- Upper switching point can be adjusted
- Fixed switching difference, no hysteresis setting necessary
- Sealable



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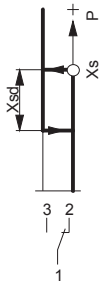
Technical description
- Ambient temperature: -20 to +70 °C
- IP 65
- Brass sensor
- Standard housing-mounted plug with cable connector for cables of 6 to 10 mm in diameter
- Plastic housing with transparent cover made of impact-resistant thermoplastic
- Pressure connection G½"A



B01574

Type	Setting range	Switching difference [3] (averages)	Max. pressure	Max. sensor temp.	Weight
	bar	bar	bar	°C	kg
Pressure sensor of brass for non-aggressive media; X_S = upper switching point					
DSA 140 F002	0,5...2,5	0,25	12	70	0,5
DSA 143 F002	0,5...6	0,30	16	70	0,5
DSA 146 F002	1...10	0,40	20	70	0,4

Contact rating		Ambient temperature	–20...70 °C
as silver contacts [1]	10 (4) A, 250 V~	Degree of protection	IP 65 (EN 60529)
	50 W, 250 V=	Protection class	I (IEC 60730)
minimum	100 mA, 24 V		
as gold contacts [2]	400 mA, 24 V; 10 VA	Wiring diagram	A01499
minimum	4 mA, 5 V	Dimension drawing	M07815
Permissible vacuum loading	–0,7 bar	Fitting instructions	MV 505560
DSA 146	–1,0 bar	Declaration on materials	MD 23.755

Accessories
0035465 000 Brass throttling screw for damping pressure surges.
0114467 000* Steel capillary tube (1 m) for arresting pressure surges.
0192222 000* Cap nut with solder connector.
0192700 000* Copper capillary tube (1 m) for arresting pressure surges.
0214120 000 Stainless-steel throttling screw for damping pressure surges.
0259239 000* Brass adaptor (G½ to 7/16" 20-UNF-2A) for copper pipes of ∅ 6 mm.
0292001 000 Setpoint as per customer's specifications (± 3% of setting range, but at least ± 0,2 bar).
0292004 000 Sealed setpoint screw (with accessory 0292001 only).
0292018 001* Throttling screw for damping pressure surges in low-viscosity media.
0292150 001* Fixing bracket for wall mounting.
0296936 000* Fixing bracket for rails (top-hat rail EN 60715, 35 × 7,5 or 35 × 15); with accessory 0292150 only).
0311572 000* Brass screw fitting for copper pipes of ∅ 6 mm.
0381141 001* Copper gasket for G½".

*) Dimension drawing or wiring diagram are available under the same number

1) See technical notes: *RC circuit under inductive load*
2) If the contacts are ever loaded at more than the value stated above, the gold plating will be destroyed. They then lose the properties of gold contacts and can thereafter be used only as silver contacts
3) See technical notes: 'Influence of switching difference'

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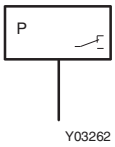
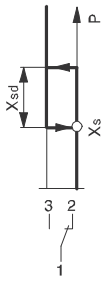
→ PDS 23.760

DSB, DSF: Pressure monitors and pressure switches





How energy efficiency is improved

Demand-led controlling and monitoring, without auxiliary energy.

Areas of application

For controlling and monitoring pressures in liquids, gases and vapours according to VdTÜV100/1 and DIN 3398/4. Especially suitable for applications in compact installations, for fitting onto pipes or walls.

Features

- Pressure range: -1 to +40 bar
- Contact rating: 4 mA, 5 V to 10 A, 250 V
- Up to 110 °C media temperature
- Gold-plated silver contacts
- Switching point can be adjusted
- Adjustable switching difference
- Sealable
- Complies with DGRL 97/23/EC, Cat. IV.

Technical description

- Ambient temperature: -20 to +70 °C
- IP 65
- Brass sensor or stainless steel for aggressive media
- Standard housing-mounted plug with cable connector for cables of 6 to 10 mm in diameter
- Plastic housing with transparent cover made of impact-resistant thermoplastic
- Pressure connection G½"A

Type	Setting range bar	Variable switching difference [4] (averages) bar	Max. pressure bar	Max. sensor temp. °C	Weight kg
Pressure sensor of brass for non-aggressive media; X_S = lower switching point					
DSB 138 F001	0...1,6	0,25...0,65	12	70	0,5
DSB 140 F001	0...2,5	0,25...0,75	12	70	0,5
DSB 143 F001	0...6	0,3...1,6	16	70	0,5
DSB 146 F001	0...10	0,8...3,7	30	70	0,4
DSB 152 F001	6...16	1...4	30	70	0,4
DSB 158 F001	0...25	1...7,5	60	70	0,4
DSB 170 F001	5...40	1,4...7,5	60	70	0,4
Pressure sensor of stainless steel for aggressive media; X_S = lower switching point					
DSF 125 F001	–1...1,5	0,25...0,75	12	110	0,5
DSF 127 F001	–1...5	0,3...1,5	16	110	0,5
DSF 135 F001	0...0,6	0,12...0,60	12	110	0,5
DSF 138 F001	0...1,6	0,25...0,7	12	110	0,5
DSF 140 F001	0...2,5	0,25...0,75	12	110	0,5
DSF 143 F001	0...6	0,3...1,5	16	110	0,5
DSF 146 F001	0...10	0,8...3,0	18	110	0,5
DSF 152 F001	0...16	1,2...3,8	60	110	0,3
DSF 158 F001	0...25	1,5...8,0	60	110	0,3
DSF 170 F001	15...40	1,7...8,2	60	110	0,3

Contact rating		Degree of protection	IP 65 (EN 60529)
as silver contacts [1]	10(4) A, 250 V~ 50 W, 250 V=	Protection class	I (IEC 60730)
		Test marks [5]	DWFS (SDBFS) [3] ID: 0000006024
minimum	100 mA, 24 V	DIN CERTO: DIN 3398-4	3C03705
as gold contacts [2]	400 mA, 24V; 10 VA	PED	Cat. IV
minimum	4 mA, 5 V		
Permissible vacuum loading	–1,0 bar	Wiring diagram	A01499
DSB 138; 140; 143	–0,7 bar	Dimension drawing	M07815
		Fitting instructions	MV 505560
Ambient temperature	–20...70 °C	Declaration on materials	MD 23.760

1) See technical notes: *RC circuit under inductive load*
2) If the contacts are ever loaded at more than the value stated above, the gold plating will be destroyed. They then lose the properties of gold contacts and can thereafter be used only as silver contacts
3) As a safety pressure limiter when an external electric locking facility is connected
4) See technical notes: 'Influence of switching difference'
5) Certificates can be downloaded from www.tuv.com

Accessories see next page >>>

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→ PDS 23.760

Accessories

0035465 000	Brass throttling screw for damping pressure surges.
0114467 000*	Steel capillary tube (1 m) for arresting pressure surges.
0192222 000*	Cap nut with solder connector.
0192700 000*	Copper capillary tube (1 m) for arresting pressure surges.
0214120 000	Stainless-steel throttling screw for damping pressure surges.
0259239 000*	Brass adaptor (G½ to 7/16" 20-UNF-2A) for copper pipes of ∅ 6 mm.
0292001 000	Setpoint as per customer's specifications (± 3% of setting range, but at least ± 0,2 bar).
0292002 000	Switching difference set to customer's specifications (± 5% of setting range, but at least ± 0,5 bar, with accessory 0292001 only).
0292004 000	Sealed setpoint screw (with accessory 0292001 only).
0292018 001*	Throttling screw for damping pressure surges in low-viscosity media.
0292150 001*	Fixing bracket for wall mounting.
0296936 000*	Fixing bracket for rails (top-hat rail EN 60715, 35 × 7,5 or 35 × 15); with accessory 0292150 only).
0311572 000*	Brass screw fitting for copper pipes of ∅ 6 mm.
0381141 001*	Copper gasket for G½".

*) Dimension drawing or wiring diagram are available under the same number

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→ PDS 23.770

DSL, DSH: Pressure limiters of special construction

How energy efficiency is improved

Demand-led controlling and monitoring as required, without auxiliary energy.

Areas of application

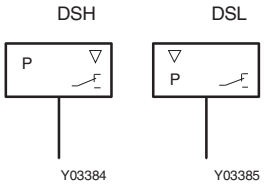
For controlling and monitoring pressures in liquids, gases and vapours according to VdTÜV100/1 and DIN 3398/4. Especially suitable for applications in compact installations, for fitting onto pipes or walls.

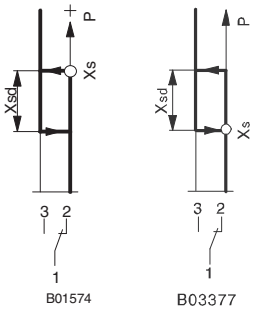
Features

- Pressure range: -1 to +40 bar
- Contact rating: 4 mA, 5 V to 10 A, 250 V
- Up to 110 °C media temperature
- Gold-plated silver contacts
- Fixed switching difference, no hysteresis setting necessary
- Sealable
- Complies with DGRL 97/23/EC, Cat. IV.

Technical description

- Ambient temperature: -20 to +70 °C
- IP 65
- Brass sensor or stainless steel for aggressive media
- Standard housing-mounted plug with cable connector for cables of 6 to 10 mm in diameter
- Plastic housing with transparent cover made of impact-resistant thermoplastic
- Pressure connection G½"A





Type	Setting range	Min. change for reset [1]	Max. pressure	Max. sensor temp.	Weight
	bar	bar	bar	°C	kg
Locks on falling pressure (SDBF); pressure sensor of brass for non-aggressive media					
DSL 140 F001	0...2,5	+0,4	12	70	0,5
DSL 143 F001	0...6	+0,5	16	70	0,5
DSL 152 F001	6...16	+1,2	30	70	0,4
Locks on rising pressure (SDB); pressure sensor of stainless steel for aggressive media					
DSH 127 F001	–1...5	–0,4	16	110	0,5
DSH 143 F001	0,5...6	–0,45	16	110	0,5
DSH 146 F001	1...10	–0,8	18	110	0,5
DSH 152 F001	2...16	–1,5	60	110	0,3
DSH 158 F001	5...25	–1,8	60	110	0,3
DSH 170 F001	15...40	–2,0	60	110	0,3

Contact rating			Degree of protection		IP 65 (EN 60529)
as silver contacts [2]	10(4) A, 250 V~ 50 W, 250 V=		Protection class		I (IEC 60730)
minimum	100 mA, 24 V		Test marks [4]		
as gold contacts [3]	400 mA, 24 V; 10 VA			DSL	SDBF ID: 0000006022
minimum	4 mA, 5 V			DSH	SDB ID: 0000006023
Permissible vacuum loading	–1,0 bar		DIN CERTO:	DIN 3398-4	3C03705
DSL 140, 143; DSH 143	–0,7 bar			PET	Cat. IV
			Connection diagram		A01503
Ambient temperature	–20...70 °C		Dimension drawing		M07815
			Fitting instructions		MV 505560
			Declaration on materials		MD 23.770

1) Averages
2) See technical notes: *RC circuit under inductive load*
3) If the contacts are ever used above 160 mA and 50 V, the gold plating will be destroyed. They then they lose the properties of gold contacts and can thereafter be used only as silver contacts
4) Certificates can be downloaded from www.tuv.com

Accessories see next page >>>

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→ PDS 23.770

Accessories

0035465 000 Brass throttling screw for damping pressure surges.
0114467 000* Steel capillary tube (1 m) for arresting pressure surges.
0192222 000* Cap nut with solder connector.
0192700 000* Copper capillary tube (1 m) for arresting pressure surges.
0214120 000 Stainless-steel throttling screw for damping pressure surges.
0259239 000* Brass adaptor (G½ to 7/16" 20-UNF-2A) for copper pipes of Ø 6 mm.
0292001 000 Setpoint as per customer's specifications (± 3% of setting range, but at least ± 0,2 bar).
0292004 000 Sealed setpoint screw (with accessory 0292001 only).
0292018 001* Throttling screw for damping pressure surges in low-viscosity media.
0292150 001* Fixing bracket
0296936 000* Fixing bracket for rails (top-hat rail EN 60715, 35 × 7,5 or 35 × 15); with accessory 0292150 only.
0311572 000* Brass screw fitting for copper pipes of Ø 6 mm.
0381141 001* Copper gasket for G½".

*) Dimension drawing or wiring diagram are available under the same number

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→ PDS 23.91

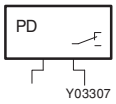
DDL: Monitor for fine differential pressure

Areas of application

For monitoring the air stream in an air duct, e.g. for filter monitoring.

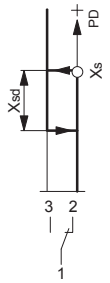
Properties

- 0,2…20 mbar differential pressure setting range
- Gold contacts for 24 V~/= and 250 V~
- Very easy to install
- Integrated cord grip
- High level of setting accuracy
- Switching points are long-term stable



Technical description

- Housing made of IP54 polycarbonate
- Sensor: silicone membrane is free of gas emissions
- Upper switching point can be adjusted
- Setpoint can be seen externally
- Scope of supply: monitor with fixing bracket, connector and 2 m PVC hose



Type	Switching range KPa	Switching range mbar	Switching difference mbar	Weight kg
DDL 103 F001	0,02…0,3	0,2...3	approx. 0,2	0,1
DDL 105 F001	0,05...0,5	0,5...5	approx. 0,3	0,1
DDL 110 F001	0,1...1,0	1,0...10	approx. 0,5	0,1
DDL 120 F001	0,50...2,0	5,0...20	approx. 1,0	0,1
DDL 150 F001	1,0...5,0	10...50	approx. 2,5	0,1

Permissible contact rating	max. 5(0,8) A, 250 V~ min. 10 mA, 24 V~/=	Permissible ambient temperature	–30 to 85 °C
		Permissible media temperature	–30 to 85 °C
Cable inlet	Pg11	Degree of protection	IP54 (EN 60529)
max. permissible operating pressure	50 mbar	Wiring diagram	A05723
Pressure connections	ø6,2 mm	Dimension drawing	M05724
		Fitting instructions	MV 505529

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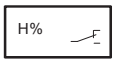
→ PDS 24.012

HSC 120: Room humidistat

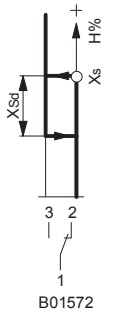
How energy efficiency is improved
Enables equipment to be switched as required in order to control humidity.

Areas of application
Monitoring and controlling relative air humidity in rooms by controlling fans, drying units and air humidifiers.

Features
- Variable relative humidity as setpoint based on printed scale in % rH
- Measurement is effected using a sensor made of stabilised synthetic textile tape
- HSC 120 range available with setpoint adjuster on front or inside
- Versions with safety plug for direct control of humidifiers and dehumidifiers without integrated humidity controller



Technical description
- Housing of pure-white, flame-retardant thermoplastic (RAL 9010)
- Micro-switch with fixed switching difference X_{Sd}
- Screw terminals for wires of up to 1.5 mm²
- Switching capacity: up to 5 A



Type	Remarks	Cable	Setpoint %rh	Weight kg
HSC 120 F001	External setpoint adjuster	none	30...90	0,090
HSC 120 F010	Internal setpoint adjuster	none	30...90	0,090
HSC 120 F020	With earthed plug for humidification	1,5 m	30...90	0,260
HSC 120 F021	With earthed plug for de-humidification	1,5 m	30...90	0,260

Contact rating		Permissible ambient temp.		0...40 °C
max	5 (3) A, 250 V~	no dew formation		–25...40 °C
min.	100 mA, 24 V	Degree of protection		IP 20 (EN 60529)
		Protection class		II (IEC 60730)
Time constant (v = 0.2 m/s)	approx. 5 min	Wiring diagram	F001/F010	A03377
Switching difference	6 %rh		F020	A05252
Setting accuracy	± 5 %rh		F021	A05251
Temperature influence	+0,5 %rh/K	Dimension drawing		M05363
Humidity calibration at	55 %rh, 23 °C	Fitting instructions	F001	MV 505403
Long-term stability	approx. –1,5 %rh/a		F010	MV 505647
			F020/F021	MV 505404

Accessories
0362225 001* Intermediate cover plate for wall mounting onto recessed junction boxes

*) Dimension drawing or wiring diagram are available under the same number

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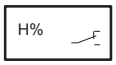
→ PDS 24.015

HSC 101: Build-in humidistat (packaging unit: 50 pce)

T04562



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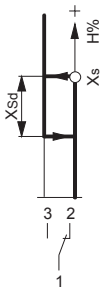

B01572

How energy efficiency is improved

Enables switching of equipment as required to control humidity.

Areas of application

Monitoring and controlling relative air humidity by means of controlling fans, drying units and air humidifiers, for integration into a housing or device.

Features

- Adjustment of switching point via setpoint adjustment axis
- Suitable for integration applications in protection class II
- Measurement is effected using a sensor made of stabilised synthetic textile tape
- Fixing via screw hole and fixing hole (tapped blind hole)

Technical description

- Base-plate made of thermoplastic
- Micro-switch with single-pole change-over contacts and fixed switching difference
- Electrical connection: AMP terminals, 2.8 mm
- Switching capacity: up to 5 A

Type	Setting range %rh	Switching difference %rh	Weight kg
HSC 101 F001	25...95	6	0,03

Contact rating	5 (3) A, 250 V~	Permissible ambient temp. 2)	0...40 °C
minimum	100 mA, 24 V	Degree of protection 3)	IP 00 (EN 60529)
Time constant (v = 0,2 m/s)	approx. 3 min	Protection class 3)	0 (IEC 60730)
Setting accuracy 1)	± 5 %rh		
Temperature influence	+0,5 %rh/K	Wiring diagram	A03377
Humidity calibrated at	55 %rh, 23 °C	Dimension drawing	M02468
Long-term stability	–1,5 %rh/a	Fitting instructions	MV 505361

1) Substantial improvement possible by readjustment in the field
2) Temperatures below freezing point (max. –30 °C) are acceptable as long no dewing occurs
3) The corresponding electrical regulations must be fulfilled by the manner of built in

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→ PDS 24.022

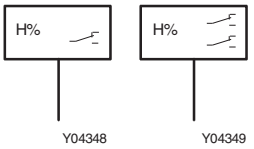
HBC: Humidistats for duct mounting

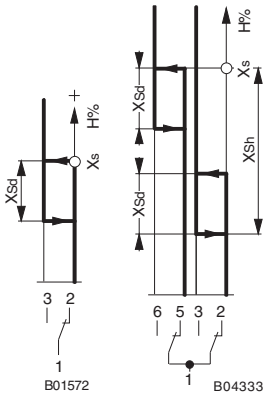
How energy efficiency is improved
Enables switching of equipment as required for humidity regulation.

Areas of application
Monitoring and controlling relative air humidity by controlling fans, drying units and air humidifiers. For incorporation into ventilation duct or wall mounting.

Features
- Temperature-compensated humidity sensor
- Variable relative humidity as setpoint based on printed scale in % rH
- Devices UL-tested
- Housing lid made of thermoplastic, lead-sealable
- Housing and sensor tube made of thermoplastic reinforced with glass fibre
- HBC 112 offers the option of 3-point control or min./max. monitoring
- Fitting bracket with seal for duct and wall mounting

Technical description
- With single-pole change-over contacts and fixed switching difference X_{Sd}
- Underside of housing with 30 mm ø sensor tube made of thermoplastic reinforced with glass fibre
- HBC 112 for 3-point control or min. and max. monitoring and internally adjustable switching range X_{Sh}
- Screw terminals for wires of up to 1.5 mm²
- Cable inlet for Pg 11
- Switching capacity: up to 5 A





Type	Setpoint range XS %rh	Switching diff. XSd %rh	Switching range XSh %rh	Number of switches	Weight kg
HBC 111 F001	15...95	4	–	1	0,33
HBC 112 F001	15...95	4	6...25	2	0,35

Contact rating:	maximum	5 (3) A, 250 V~
	minimum	100 mA, 24 V
Temperature influence		compensated
Long-term stability		–1,5 %rh/a
Setting accuracy		± 5 %rh
Humidity calibration at		55 %rh, 23 °C
Time constant (v = 0.2 m/s)		approx. 3 min
Permissible air speed		10 m/s

Permissible ambient temp.		0...70 °C
without dew formation		–25...70 °C
Degree of protection		IP 30 (EN 60529)
Protection class		II (IEC 60730)
UL File		E75924
Wiring diagram	HBC 111	A01500
	HBC 112	A04334
Dimension drawing		M04347
Fittings instructions		MV 505321
Operating instructions		BA 505435

Accessories
0303538 001 Set for increasing the degree of protection to IP 55 (housing cover incl. transparent cap for setpoint knob; seal; one Pg 11 cable screw fitting; one Pg 11 plug)
0370560 011 One Pg 11 cable screw fitting

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→ PDS 29.001

Protective tubes

How energy efficiency is improved
Accessory for sensors that makes it possible to use energy as needed.

Areas of application
For the incorporation of sensor cartridges, immersion sensors, temperature detectors, temperature controllers and thermostats in pipes and tanks.

Features
- Tested with 1.5 times nominal pressure (PN)
- Made of brass and stainless steel

Technical description
- Versions with cylindrical pipe thread (G½"), and cone-shaped (R½") sealing in thread

Tube	Length mm	Material	Thread	PN bar	Tmax °C
Protective tubes LW 7, internal Ø 7 mm, external Ø 9 mm					
0364439 060	60	Brass	R ½	16	200
0364439 120	120	Brass	R ½	16	200
0364439 150	150	Brass	R ½	16	200
0364439 225	225	Brass	R ½	16	200
0364439 300	300	Brass	R ½	16	200
0364345 120	120	Brass	G½ A	16	200
0364345 225	225	Brass	G½ A	16	200
0364345 300	300	Brass	G½ A	16	200
0364345 450	450	Brass	G½ A	16	200
0226811 060	60	Stainless steel	G½ A	25	325
0226811 120	120	Stainless steel	G½ A	25	325
0226811 225	225	Stainless steel	G½ A	25	325
0226811 300	300	Stainless steel	G½ A	25	325
0226811 450	450	Stainless steel	G½ A	25	325
0226811 600	600	Stainless steel	G½ A	25	325
Protective tubes LW 15, internal Ø 15 mm, external Ø 16 mm; Including pressure spring [1]					
0364440 120	120	Brass	R ½	16	200
0364346 120	120	Brass	G½ A	16	200
0364346 225	225	Brass	G½ A	16	200
0364346 300	300	Brass	G½ A	16	200
0364346 450	450	Brass	G½ A	16	200
0364258 120	120	Stainless steel	G½ A	25	325
0364258 225	225	Stainless steel	G½ A	25	325
0364258 450	450	Stainless steel	G½ A	25	325
0364258 600	600	Stainless steel	G½ A	25	325

Material:		**Thread**:	
Brass Cu Zn 37	W- Nr. 2.0321	R ½	ISO 7/1 thread-sealing
Stainless steel	W- Nr. 1.4435	G½ A	ISO 228/1 flat sealing [2]

Accessories
0311835 000* Tension-relief for cable detector EGT 35 and EGT 45
0312520 000* Universal tension-relief for cable detectors and thermostats with capillary tube
0364140 000* Bushing for tension-relief
0364144 . . . Pressure spring for detectors in protective tubes LW 15 with L=120; 225; 300; 450
0364263 000* Counter flange, G½, of steel (material no. 1.0110); copper flat sealing
0364264 000* Counter flange, G½, of stainless steel (material no. 1.4435); flat sealing of copper and Teflon (for aggressive media)

*) Dimension drawing or wiring diagram are available under the same number

1) For 2 or 3 sensors Ø 6.5 mm; e.g. combinations with thermostat and sensor cartridges.
2) For welding bushing with flat sealing (accessory)

Dimension drawing and accessories see next page >>>

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Dimension drawings

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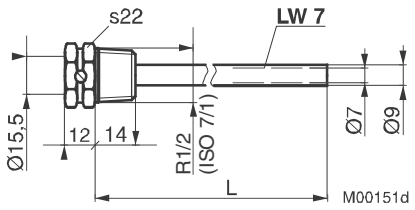

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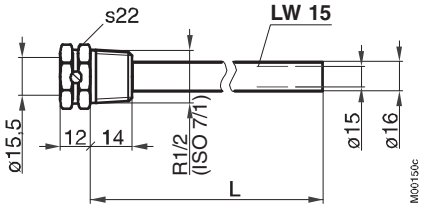

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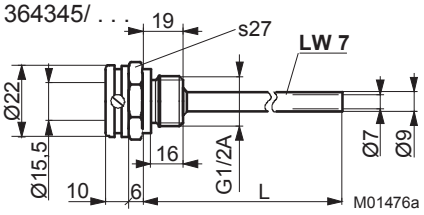

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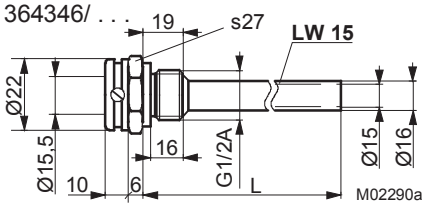

Accessories

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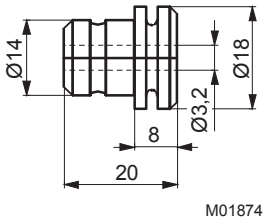

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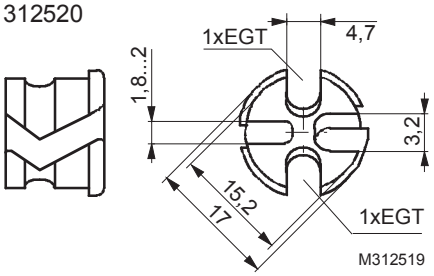

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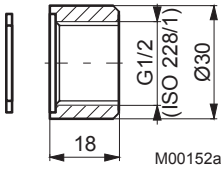

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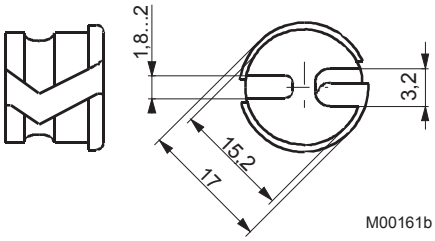

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3 Sensors Transducers

31	**Temperature**	Temperature transducers Transducer for radiation temperature
32	**Flow, VAV**	Fine-differential-pressure transducers Air-flow transducers Dynamic-pressure sensor for measuring the air flow
33	**Pressure, differential pressure**	Pressure transducers Transducer for differential pressure
34	**Humidity**	Room transducers for relative humidity and temperature Duct transducers for relative humidity and temperature Duct transducers for absolute humidity and enthalpy Dew point (monitors, transducers)
36	**Temperature (sensors)**	Nickel sensors Platinum sensors NTC sensors
37	**Other variables**	Sash sensor Transducers for indoor air quality Transducers for CO^2 and temperature Occupancy detector Black-bulb (radiant) temperature sensor
39	**Protective tubes (pockets)**	Table of pockets Accessories Dimension drawings for pockets

→ PDS 31.005

EGT 130: Room-temperature transducer

How energy efficiency is improved

Measurement of room temperature for energy-efficient control of HVAC systems and monitoring energy consumption.

Areas of application

Temperature recording for heating and air-conditioning systems in dry rooms, e.g. residential, office and business premises.

Features

- Active measured value acquisition
- Cable inlet at rear
- Suitable for direct wall mounting
- Connection of an external Ni1000 temperature sensor possible

Technical description

- Nickel thin-film sensor as per DIN 43760
- Housing made of pure white flame-retardant thermoplastic (RAL 9010)
- Screw terminals for wire of up to 1.5 mm²

Type	Range	Output	Power supply	Weight kg
EGT 130 F001	0...50 °C	0...10 V	24 V~/=	0,1

Power supply 24 ~/=	± 20%	Degree of protection	IP 30 (EN 60529)
Power consumption	1 VA	Wiring diagram	A07598
Output signal	0...10 V, load > 5 kΩ	Dimension drawing	M07634
Time constant	12 min	Fitting instructions	MV 505571
Permissible ambient temp.	0...50 °C		
Permissible amb. humidity	0...95 %rh		

Accessories

0303124 000* Recessed junction box
0313347 001* Intermediate cover plate for 76 × 76 mm

*) Dimension drawing or wiring diagram are available under the same number

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→ PDS 31.91

EGS 130: Transducer for radiation temperature

Areas of application
Detection of the radiation temperature in a room, e.g. for radiant ceiling heating systems.

Properties
- Output 0...10 V
- Power supply 24 V~/=

Technical description
- Measuring range 0...50 °C
- Sensor: one Ni1000 thin-film sensor
- Housing 76 x 76 mm made of pure white thermoplastic with black dome and black plug-in baseplate
- Connection terminals 4x 1,5 mm²
- Scope of supply: transducer and instructions

Type	Measuring range	Output	Mains voltage	Weight kg
EGS 130 F701	0...50 °C	0...10 V	24 V~/=	0,1

Power supply 24 V~/=	± 20%	Degree of protection	IP 30 (EN 60529)
Power consumption	1 VA	Wiring diagram	A07598
Output signal	0...10 V load 5 kΩ	Dimension drawing	M09638
Time constant	12 min	Fitting instructions	MV 505905
Permissible ambient temperature	0...50 °C		
Permissible ambient humidity	0...95 %rH		

Accessories
0303124 000* Recessed junction box
0313347 001* Intermediate cover plate for 76 × 76 mm
0313626 001* Surface junction box, black for 76 x 76 mm

*) Dimension drawing or wiring diagram available under same number

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→ PDS 32.010

SDU: Fine-differential-pressure transducer

How energy efficiency is improved

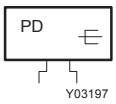
Enables the accurate recording of duct pressures for the optimisation of energy consumption in ventilation systems.

Areas of application

Measurement of the smallest air currents and pressure differentials in air-conditioning and environmental applications, as well as in laboratories and clean room areas.

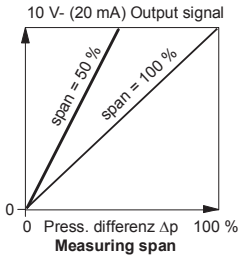
Features

- Static membrane pressure transmitter
- Capacitive acquisition of data
- Accurate recording of differential pressures up to 10 mbar (1000 Pa)
- Adjustable measuring spans for optimal adaptation of measuring range to the application
- Automatic current/voltage switching



Technical description

- Power supply 24 V~
- Four measuring ranges:
  - 0 to 100 Pa
  - 0 to 200 Pa
  - 0 to 400 Pa
  - 0 to 1000 Pa
- Linearity 2% in relation to output signal



Type	Measuring range Δπ [1] Pa	mbar	Voltage	Weight kg
SDU 101 F001	0...100	0...1	24 V~	0,8
SDU 101 F002	0...200	0...2	24 V~	0,8
SDU 101 F003	0...400	0...4	24 V~	0,8
SDU 101 F004	0...1000	0...10	24 V~	0,,8

Supply pressure 24 V~	+15/-–20%, 50...60 Hz	Permissible pressure	
Power consumption	2 VA	Usable range pstat	± 3 kPa
		Low-pressure connections	± 5 kPa
Setting range		Permissible amb. temp.	0...40 °C
measuring span	50...100% Δπ	Permissible amb. humidity	< 90 %rh
		Degree of protection	IP 44 (EN 60529)
Outputs			
Actual-value signal [2]	0(2)...10 V, Load > 500 Ω	Wiring diagram	A01117
Linearity	2% of 10 V	Dimension drawing	M01104
		Fitting instructions	MV 505119

1) Factory setting, can be reduced by half using the adjuster „span“
2) At a load of < 500 Ω, the unit changes over automatically to 0...20 mA or 4...20 mA.
Factory setting: 0...10 V; output is protected against short circuits and excess voltage up to 24 V~

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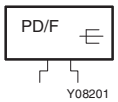
→ PDS 32.020

SVU: Air-flow transducer



How energy efficiency is improved

Enables the demand-led control of air volume in laboratory fume cupboards.

Areas of application

Accurate and long-term stable recording of air influx speeds to laboratory fume cupboards with a time constant of < 100 ms. Especially suitable for laboratory fume cupboards with horizontal or vertical sliding front doors.

Features

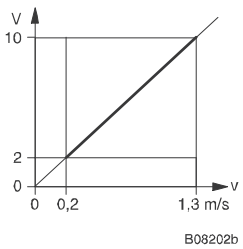
- Reliable recording of a change in the direction of flow
- Integrated filter unit to prevent contamination of the sensor
- Dynamic pressure sensor using thin-film design
- Quick and easy installation in laboratory fume cupboards

Technical description

- Power supply 24 V~
- Measuring range 0 to1 Pa
- Linearity 2% in relation to output signal

Type	Measuring span m/s	Pressure difference Pa	Feature	Power supply	Weight kg
SVU 100 F005	0...1,3 1)	approx. 0...1	linear to v [m/s] 2)	24 V~	0,13

SVU 100 F005



Power supply 24 V~	–15% / + 20% , 50...60 Hz	Ambient temperature	5–55 °C
Power consumption	1 VA	Ambient humidity	< 90 %rh
		Degree of protection	IP 40 (EN 60529) with terminal cover
Output signal 3)	0...10 V; load > 500 Ω		
Linearity	2%	Wiring diagram	A08204
Time constant	< 1 s	Dimension drawing	M08203
Air throughput	3 cm^3/min (at 1m/s)	Fitting instructions	MV 505812

1) Recommend measuring span: 0,2...1,3 m/s (output 2...10 V)
2) Stated flow speed is based on ϱ = 1,2 kg/m^3
3) Output is protected against short circuits and excess voltage up to 24 V~.

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→ PDS 32.021

EGP 100: Transducer for differential pressure

Advantages for greater energy efficiency

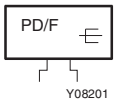
Enables the accurate measurement of duct pressures in order to optimise the consumption of energy in ventilation systems.

Areas of use

For measuring low air flows and differential pressures in air-conditioning, medicinal and environmental applications and in laboratories and clean rooms. Optimised for applications such as: the monitoring of filters, room or duct pressure, fluid levels in liquids and the activation of frequency converters for fan control.

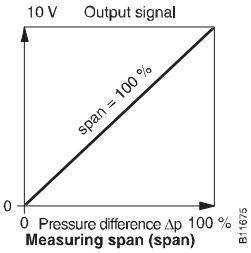
Features

- Accurate measurement of the positive, negative or differential pressures of gases
- Static double-diaphragm pressure sensor using capacitance
- Can be fitted in any position
  Can be used in dusty conditions or in air polluted with chemicals (no ATEX approval)
- Calibration certificate ex factory
- Variable zero point and filter time constant in order to suppress pressure surges in the system
- Housing can be sealed
- Can be fitted to walls or top-hat rails (EN 60715)
- Lid can be opened without having to use special tools



Technical description

- Power supply: 24 V~/= (protected against short circuits and incorrect polarity)
- Measuring range: 1.5 mbar (0…150 Pa) or 3 mbar (0…300 Pa)
- Continuous output signal in the range 0...10 V
- Electrical connection via screw-type terminals for cable of up to 1,5 mm²
- M16 cable fitting
- Pressure connection for measuring tubes of ø 6 mm diameter
- Housing of PC/ABS-FR



Type	Measuring range (100%)		Power supply	Pneumatic connection	Weight
	Pa	mbar		mm	kg
EGP 100 F301	0...150	0...1,5	24 V~/=	6,2	0,17
EGP 100 F401	0...300	0...3,0	24 V~/=	6,2	0,17

Power supply	24 V~/= ± 20%	Perm. excess pressure	±10 kPa
Power consumption		Operating pressure pstat	±3 kPa [1]
24 V~	1,0 VA		
24 V=	0,4 W	Perm. ambient temperature	0...60 °C
		Perm. media temperature	0…70 °C
Parts immersed in media	PC/ABS Blend, MQ, CuSn6, FR4	Perm. Ambient humidity	5...95% rh w/o condensation
Output signal	0...10 V, load > 10 kΩ		
Variable time constant	0,05…2 sec.	Degree of protection	IP 65
Influence of position [2]	±1% FS [3] @ 150 Pa ±0,75% FS @ 300 Pa	Protection class	III IEC 60730-1
Reproducibility	0,2% FS	Wiring diagram	A10521
		Dimension drawing	M10490
Linearity	1% FS pressure linear	Fitting instructions	P100001631
Zero-point stability	< 0,3% FS	Material/environmental-declaration	MD 32.021

Accessories

0010240 300	Connection set, 6 mm, complete
Certificat 001	Manufacturer's test certificate M as per DIN 55350-18 (with test values), for each type of device
Certificat 999	Testing of a further unit of the same type (> 2 pcs) as per DIN 55350-18-M

1) The zero point should be reset if the permissible operating pressure is exceeded.
2) The sensor is calibrated ex works for vertical mounting. The influence of the mounting position must be taken into account if the unit is not fitted in the vertical position.
3) Full Span

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→ PDS 32.040

XAFP100: Dynamic-pressure sensor for measuring the air flow

T10941

How energy efficiency is improved
Efficient measuring of air volumes for demand-led ventilation in ventilation and air-conditioning systems.

Areas of application
Dynamic-pressure sensor for measuring differential-pressure signals accurately and inexpensively in ventilation and air-conditioning systems. Used in combination with an air damper and a VAV controller, it provides the efficient regulation of applications for the demand-led ventilation of offices, laboratories, fume cupboards or clean rooms. Used in combination with a root-extracting differential-pressure sensor, air flows can be reliably measured and monitored.

Features
- Can be used in air ducts from DN 80 to DN 400
- Optimised flow profile for accurate measurement of differential-pressure signals
- Can be used in atmospheres with aggressive substances

Technical description
- Lenght 396 mm; should be shortened according to needs on site
- Materials used for dynamic-pressure sensor: PA 6; PE seal
- Tubes of PU including fitting accessories

Typ	Function	Lenght
XAFP100F001	Dynamic-pressure sensor	396 mm

Dimensions B x H x L (mm)	65 x 40 x 396	Dynamic-pressure sensor	
Material		electric	UL7468
Dynamic-pressure sensor	PA6	inflammability	UL 94, IEC 60695-2-12, IEC 60695-2-13
Seal	PE		
Tubing	PU	Seal	physiologically harmless
Areas of use (mm)	D_N 80 to D_N 400	Fitting instructions	P100003790
		Material declaration	MD32.040
Measuring tolerance under standard conditions	< 3% see section entitled "Engineering and fitting notes"	Dimension drawing	M11433
Operating temperature	0…50 °C		
Humidity	< 85% rh no condensation		

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→ PDS 32.91

DDLI, DDLU: Differential pressure transducer

Areas of application

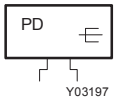
Detecting fine differential pressures in an air duct

Properties

- Calibrated, temperature-compensated sensor signal
- Output 0...10 V= or 4...20 mA
- Quick, easy installation
- Alternative version with LCD display in pascals

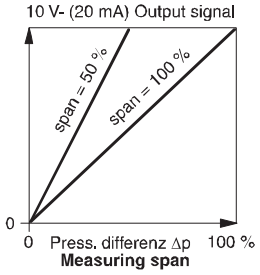
Technical description

- Method of measurement: ceramics-based technology
- Housing made of IP54 polycarbonate
- Scope of supply: transducer, connecting kit with 2 m PVC hose and connector



Model with current output	Model with voltage output	Measuring range Δπ		Max. permissible operating pressure	Weight
		Pa	mbar	mbar	kg
DDLI 103 F001	**DDLU 103 F001**	0...300	0...3	50	0,090
DDLI 105 F001	**DDLU 105 F001**	0...500	0...5	100	0,090
DDLI 110 F001	**DDLU 110 F001**	0...1000	0...10	200	0,090
DDLI 125 F001	**DDLU 125 F001**	0...2500	0...25	200	0,090
with digital display					
DDLI 103 F101	**DDLU 103 F101**	0...300	0...3	50	0,180
DDLI 105 F101	**DDLU 105 F101**	0...500	0...5	100	0,180
DDLI 110 F101	**DDLU 110 F101**	0...1000	0...10	200	0,180
DDLI 125 F101	**DDLU 125 F101**	0...2500	0...25	200	0,180

Power supply	13,5...33 V= 24 V~ +/- 15%	Cable inlet	Pg11
Outputs		Pressure connections	Ø 6,2 mm
DDLI	4...20 mA (load < 400 Ω)		
DDLU	0...10 V load > 10 kΩ	Permissible ambient temperature	0...70 °C
Current consumption		Permissible media temperature	0...70 °C
DDLI	< 30 mA		
DDLU	< 10 mA	Degree of protection	IP 54 (EN 60529)
Linearity	<+/- 1%		
Dyn. behaviour		Wiring diagram	A05723
Response time	< 10 ms	Dimension drawing	M05724
Load alternation	< 10 Hz	Fitting instructions	MV 505900



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→ PDS 33.051

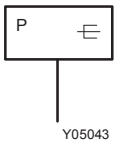
DSU: Pressure transducer

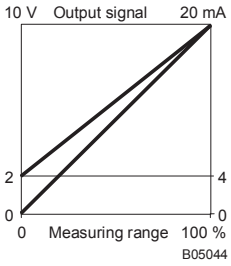
How energy efficiency is improved
Simplest conversion of pressures into proportional standard signal.

Areas of application
For measuring pressures in liquids, gases and vapours. Non-wearing measurement procedure by means of contact-free inductive signal conversion.

Features
- Pressure range: 0 to 25 bar
- Standard signal 0(2) to 10 V or 0(4) to 20 mA.
- Up to 110 °C and up to 40 bar maximum sensor values
- 24 V~/=, ± 20% supply voltage

Technical description
- Light-alloy housing with transparent cover made of impact-resistant thermoplastic
- Ambient temperature: -20 to +70 °C
- IP65
- Standard housing-mounted plug with cable connector for cables from 6 to 10 mm in diameter
- Pressure connection G½"A
- Extensive range of accessories





Type	Measuring range bar	Max. sensor values bar	°C	Weight kg
Brass pressure sensor for non-aggressive media				
DSU 101 F001	0...1,0	1.5	70	0,6
DSU 103 F001	0...2,5	4	70	0,6
DSU 106 F001	0...6,0	10	70	0,6
DSU 110 F001	0...10	16	70	0,6
DSU 116 F001	0...16	25	70	0,6
DSU 125 F001	0...25	40	70	0,6
Stainless-steel pressure sensor for aggressive media				
DSU 201 F001	0...1,0	1.5	110	0,6
DSU 203 F001	0...2,5	4	110	0,6
DSU 206 F001	0...6,0	10	110	0,6
DSU 210 F001	0...10	16	110	0,6
DSU 216 F001	0...16	25	110	0,6
DSU 225 F001	0...25	40	110	0,6

Power supply 24 V ~/=	± 20%, 50...60 Hz	Perm. ambient temp.	–20...70 °C
Power consumption	approx. 1 VA	Degree of protection	IP 65 (EN 60529)
Output signal [1]	0...10 V, load > 500 Ω	Protection class	III (EN 61140)
switchable to	2...10 V, load > 500 Ω		
Linearity	approx. 1%	Wiring diagram	A05045
Hysteresis	approx. 1%	Dimension drawing	M05046
Temperature coefficient	~0.03%/K	Fitting instructions	MV 505364
Permissible vacuum loading	–1,0 bar		
Type 101; 103; 106	–0,7 bar		
Type 201; 203; 206	–0,7 bar		

Accessories
0035465 000 Brass throttle screw for damping pressure surges
0214120 000 Stainless-steel throttle screw for damping pressure surges
0192700 000* 1 m of copper capillary tubing for damping pressure surges
0114467 000* 1 m of stainless-steel capillary tubing for damping pressure surges
0192222 000* Cap nut with solder connector
0311572 000* Brass screw fitting for copper tubing of Ø 6 mm
0259239 000* Brass reduction piece G½ onto 7½ " 20 UNF-2A for copper tubing of Ø 6 mm
0259983 000* Fixing bracket for rail mounting: C-rail EN-50022-C20 and C30
0296936 000* Fixing bracket for rail: top-hat rail EN 60715, 35 × 7,5 or 35 × 15
0259984 000* Bracket for 3-point fixing
0292018 001* Damping screw for damping pressure surges in low-viscosity media

*) Dimension drawing or wiring diagram are available under the same number

1) At a load of < 500 Ω, the transducer switches automatically to 0...20 mA (or 4...20 mA).
Factory setting is 0...10 V. Output is protected against short circuits and over-voltage up to 24 V~.

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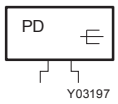
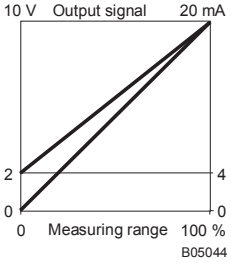
→ PDS 33.061

DSDU: Transducer for differential pressure

T07385



Y03197



B05044

How energy efficiency is improved

Simplest conversion of pressure differences into proportional standard signal.

Areas of application

For measuring pressure differentials in liquids, gases and vapours. Non-wearing measurement procedure by means of contact-free inductive signal conversion.

Features

- Pressure differential measuring range: 0 to 6 bar
- Standard signal 0(2) to 10 V or 0(4) to 20 mA
- Up to 110 °C and up to 10 bar maximum sensor values
- 24 V~/=, ± 20% supply voltage

Technical description

- Light-alloy housing with transparent cover made of impact-resistant thermoplastic
- Ambient temperature: -20 to +70 °C
- IP65
- Standard housing-mounted plug with cable connector for cables from 6 to 10 mm in diameter
- Extensive range of accessories

Type	Measuring range Δp bar	Max. sensor values bar	°C	Weight kg
DSDU 100 F020	0...0,5	6	110	0,6
DSDU 101 F020	0...1	6	110	0,6
DSDU 103 F020	0...2,5	6	110	0,6
DSDU 106 F020	0...6	10	110	0,6

Power supply 24 V ~/=	± 20%, 50...60 Hz	Perm. ambient temp.	–20...70 °C
Power consumption	approx. 1 VA	Degree of protection	IP 65 (EN 60529)
Output signal [1]	0...10 V, load > 500 Ω	Protection class	III (EN 61140)
switchable to	2...10 V, load > 500 Ω		
Linearity	approx. 1%	Wiring diagram	A05045
Hysteresis	approx. 1%	Dimension drawing	M06967
Temperature coefficient	~0,03%/K	Fitting instructions	MV 505407
Permissible vacuum loading	–0,7 bar		

Accessories

0190403 005* Brass connector with cap nut (Serto system), 2 pieces required
0292110 001* Two Rp $^1/_8$ throttle screws for arresting pressure surges; stainless steel.
0296936 000* Bracket for rail: top-hat rail EN 60715, 35 × 7.5 or 35 × 15
0259984 000* Bracket for 3-point fixing

*) Dimension drawing or wiring diagram are available under the same number

1) At a load of < 500 Ω, the transducer switches automatically to 0...20 mA (or 4...20 mA). Factory setting is 0...10 V. Output is protected against short circuits and over-voltage up to 24 V~.

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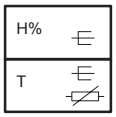
→ PDS 34.005

EGH 130: Room transducer for relative humidity and temperature



Y07596

How energy efficiency is improved

Accurate recording of room temperature and relative humidity for energy-efficient control of HVAC systems and monitoring of energy consumption.

Areas of application

Measurement of relative humidity and temperature in residential and business premises.

Features

- Humidity measurement using fast, capacitive sensors
- Active measured value acquisition
- Cable inlet at rear
- Suitable for wall mounting

Technical description

- Housing made of pure white fire-retardant thermoplastic (RAL 9010)
- Conversion of values acquired into standard signal 0...10 V
- Screw terminals for wires up to 1,5 mm²

Type	Humidity: Range %rh	Humidity: Output for 0...100 %rh	Temperature: Range °C	Temperature: Output [1] for 0...50 °C	Weight kg
EGH 130 F001	5...95	0...10 V	0...50	0...10 V	0.1

Power supply 24 V~/=	± 20%	Permissible ambient temp.	0...50°C
Power consumption	approx. 0,8 VA	Ambient humidity	5...95 %rh
Output signal	0...10 V, load > 5 kΩ	Degree of protection	IP 30 (EN 60529)
Resistance curve	DIN 43760 (Ni1000)	Protection class	III (IEC 60730)
Temperature effect	–0,15 %rh/K		
Time constant in air (0.2 m/s)		Wiring diagram	A07597
Humidity	approx. 18 s	Dimension drawing	M07634
Temperature	approx. 12 min	Fitting instructions	MV 505572
		Declaration on materials	MD 34.005

Accessories

0303124 000* Recessed junction box
0313347 001* Intermediate cover plate for 76 × 76 mm

*) Dimension drawing or wiring diagram are available under the same number

1) The output can be changed to Ni1000 (by cutting 2 wire bridges)

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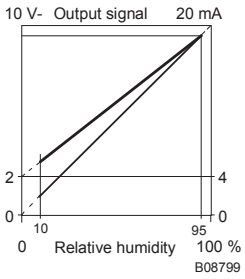
→ PDS 34.032

EGH 120: Room transducer for relative humidity



How energy efficiency is improved
Accurate recording of relative humidity for energy-efficient control of HVAC systems and reduction of energy consumption.

Areas of application
Measurement of relative humidity in residential and business premises.

Features
- Measurement using fast, capacitive sensor
- Active measured value acquisition
- Cable inlet at rear
- Suitable for wall mounting

Technical description
- Housing made of pure white fire-retardant thermoplastic (RAL 9010)
- Conversion of values recorded into a constant standard signal 0(2)...10 V or 0(4)...20 mA
- Screw terminals for wires up to 1,5 mm²

Type	Humidity range %rh	Humidity output for 0...100 %rh	Voltage	Weight kg
EGH 120 F001	10...95	0(2)...10 V [1]	24 V~/=	0,1

Power supply 24 V~/=	± 20%	Permissible ambient temperature	0...40 °C
Power consumption	approx. 0,8 VA	Permissible ambient humidity	5...95 %rh
Output signal [1]	0(2)...10 V, load > 500 Ω	Degree of protection	IP 30 (EN 60529)
Temperature influence	± 0,05 %rh/K, compensated	Protection class	III (IEC 60730)
Time constant in air (0.2 m/s) humidity	approx. 18 s	Wiring diagram	A02160
		Dimension drawing	M00981
		Fitting instructions	MV 505307

Accessories
0297441 000* Intermediate cover plate, pure white, for various recessed junction boxes.
0369573 001* Surface junction box
0303124 000* Recessed junction box (with 0297441 only)

*) Dimension drawing and wiring diagram are available under the same number

1) When the load is < 500 Ω, the unit switches over automatically to 0 to 20 mA (or 4 to 20 mA)

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→ PDS 34.033

EGH 110...112: Duct transducer for relative humidity and temperature

How energy efficiency is improved

Accurate recording of air humidity for energy-efficient control of HVAC systems and monitoring energy consumption.

Areas of application

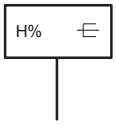
Measurement of relative humidity and temperature in air ducting.

Features

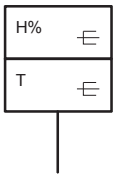
- Measurement using fast, capacitive sensor
- Active measured value acquisition
- Insensitive to flow speeds and normal contamination
- EGH 111 and EGH 112 offer temperature measurement using an Ni1000 temperature detector

Technical description

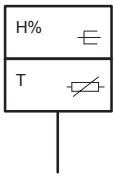
- Housing lid made of yellow thermoplastic
- Accuracy ±10% rH (re-adjustable)
- EGH 110 automatically converts the output signal from 0(2)...10 V to 0(4)...20 mA with a load of < 500 Ω
- 30 mm ø sensor tube made of black, glass-fibre-reinforced thermoplastic
- Immersion depth: 40 to 156 mm



Y03114



Y02197



Y02196

Type	Humidity range %rh	Humidity output for 0...100 %rh	Temperature range °C	Temperature output	Weight kg
EGH 110 F002	0...95	0(2)...10 V [1]	–	–	0,43
EGH 111 F002	10...95	0...10 V	–20...70	Ni1000	0,43
EGH 112 F002	10...95	0...10 V	0...50	0...10 V	0,43

Power supply	
EGH 112	24 V, ± 20%, 50...60 Hz
EGH 110, 111	24 V~/=, ± 20%
Power consumption	approx. 1,5 VA
Output signal	
EGH 110 [1]	0(2)...10 V, Load > 500 Ω
EGH 111, 112	0...10 V, Load > 5 kΩ
Resistance curve	DIN 43760 (Ni1000)
Temperature influence	
EGH 110, 112	± 0,05 %rh/K
EGH 111	–0,15 %rh/K
Time constant in air (3 m/s)	
humidity	approx. 24 s
temperature	approx. 2 min
Max. flow speed	10 m/s

Permissible amb. temp		– 20...70 °C
	EGH 110	– 20...80 °C
Permissible amb. humidity		5...95 %rh
	EGH 110	0...100 %rh without condensation
Degree of protection (head)		IP 40 (EN 60529)
with Pg 11 screw fitting Pg 11		IP 54
Protection class		III (IEC 60730)
Wiring diagram	EGH 110	A03116
	EGH 111	A02167
	EGH 112	A02168
Dimension drawing		M02200
Fitting instructions	EGH 110	MV 505248
	EGH 111, 112	MV 505249

Variants

EGH 111 F001 Cover in pure white (RAL 9010)
EGH 112 F001 Cover in pure white (RAL 9010)

Accessories

0370560 011 Cable screw fitting Pg 11, of plastic, for cable Ø 9...11 mm

1) When the load is < 500 Ω, the unit switches over automatically to 0...20 mA (or 4...20 mA)

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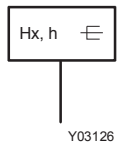
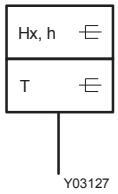
→ PDS 34.036

EGE: Duct transducer for absolute humidity and enthalpy





How energy efficiency is improved

Accurate recording of air humidity for energy-efficient control of HVAC systems and monitoring energy consumption.

Areas of application

Measurement of absolute humidity and enthalpy in air ducting.

Features

- Measurement is effected using fast, capacitive sensor
- Active measured value acquisition
- Insensitive to flow speeds and normal contamination
- EGE 112 offers temperature measurement using an Ni1000 temperature detector

Technical description

- Housing lid made of yellow thermoplastic
- 30 mm ø sensor tube made of black, glass-fibre-reinforced thermoplastic
- Screw terminals for wires up to 1,5 mm²
- Immersion depth: 40 to 156 mm.
- Linear output signal 0(2)...10 V or 0(4)...20 mA
- Fixing bracket supplied with seal for duct and wall mounting

Type	Humidity range g/kg	Enthalpy range kJ/kg	Temperature range °C	Voltage	Weight kg
EGE 110 F002	0...20	0...100	–	24 V~	0,46
EGE 112 F002	0...20	0...100	–20...50	24 V~	0,44

Power supply 24 V~	± 20%, 50...60 Hz	Permissible ambient temp.	–20...70 °C
		at meter tube	–20...80 °C
Power consumption	approx..1,5 VA	Permissible ambient humidity	5...100 %rh
Output signal [1]	0(2)...10 V, Load > 500 Ω	Degree of protection (head)	IP 40 (EN 60529)
		with Pg 11 screw fitting	IP 54
Temp. influence x	± 0,02 g/kg per K	Protection class	III (IEC 60730)
Temp. influence h	± 0,05 kJ/kg per K		
Time constant in air (3 m/s)	55 s	Wiring diagram EGE 110	A03129
		EGE 112	A02199
Max. flow speed	10 m/s	Dimension drawing	M02200
		Fitting instructions	MV 505330

Accessories

0370560 011 Cable screw fitting Pg 11, of plastic, for cable Ø 9...11 mm
0369585 001 Housing cover, complete, pure white

1) Switches over automatically to 0...20 mA (or 4...20 mA) when the load is < 500 Ω.

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→ PDS 34.042

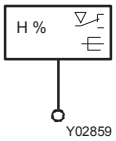
EGH 102: Dew-point monitor and transducer

How energy efficiency is improved
Effective protection against humidity damage and excessive cooling.

Areas of application
Protection against dew formation on chilled beams. Control system for a regulating unit using a holding relay, which interrupts the flow of cold water or raises the temperature of the cooling water.

Features
- Measurement is effected by a spring-loaded dew-point sensor
- Active measured value acquisition
- Versions with external sensor

Technical description
- Housing made of pure-white, flame-retardant thermoplastic (RAL 9010)
- Holding relay with change-over contact
- Screw terminals for wire of up to 1,5 mm²
- Cable inlet for Pg 11
- Strap retainer for 10 to 100 mm ø pipe and heat-conducting paste are included in supply



Type	Switching point %rh	Sensor	Measuring range %rh	Power supply	Weight kg
EGH 102 F001	95 ± 4	on housing	70…85	24 V~/=	0,1
EGH 102 F101	95 ± 4	with cable	70…85	24 V~/=	0,1

Power supply 24 V~/=	± 20%	Exposure to dew		max. 30 min
Switching difference	fixed, approx. 5 %rh	Ambient temperature		5...60 °C
Power consumption	max. 1 VA	Degree of protection		IP 40 (EN 60529)
Change-over contacts [1]	1A, 24 V~/=			
Output signal		Wiring diagram		A09353
approx. 70...85 %rh	0...10 V, load > 10 kΩ	Dimension drawing	F001	M07664
Response time in still air:-			F101	M10454
80 to 99 %rh	max. 3 min	Fitting instructions	F001	MV 505732
99 to 80 %rh	max. 3 min		F101	MV 506037

1) When driving relays, contactors etc. with cos φ < 0,3, the use of an RC section in parallel to the coil is recommended. This reduces pitting of the contacts and prevents high-frequency interference impulses.

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→ PDS 36.016

EGT 301: Outside-temperature detector

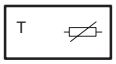
T05083

How energy efficiency is improved
Accurate detection of temperature for energy-efficient control of HVAC systems and monitoring energy consumption.

Areas of application
Outside temperature measurement, e.g. for weather-compensated heating systems.

Properties
- Particular protection against dust and humidity
- Passive measured value acquisition
- Cable inlet at rear or from underneath

Technical description
- Measurement is effected with a nickel thin-film sensor as per DIN 43760
- Housing made of pure white, fire-retardant thermoplastic (RAL 9010)
- Cable inlet at rear, screw terminals for wires up to 1,5 mm²
- Surface or recessed junction boxes can be used



Y04579

Type	Nominal value at 0°C	Measuring range °C	Weight kg
EGT 301 F021	200 Ω	–50...80	0.1
EGT 301 F051	500 Ω	–50...80	0.1
EGT 301 F101	1000 Ω	–50...80	0.1

Resistance values as per		DIN 43760	Degree of protection	IP 54 (EN 60529)
Tolerance at 0 °C		± 0,4 K		
Mean temp. coefficient		0.00618 K^{-1}	Wiring diagram	A01632
Self-warming		0.2 K/mW	Dimension drawing	M04686
Time characteristic in air	**Dead time**	**Time const.**	Fitting instructions	MV 505377
still	1.5 min	10 min		
moving (1 m/s)	1 min	6 min		

Accessories
0313346 001* Module 0-10 V for Ni1000; R>5 kΩ; 24 V~ ± 20%;
MV 505513; A08091; IP 00 (IP 42 when fitted in housing);
4 temp. ranges: –50...0 °C; –50...50 °C; 0...50 °C; 0...100 °C

0370560 011 Cable screw fitting Pg 11; of thermoplastic; for cable Ø 9...11 mm

*) Dimension drawing or wiring diagram are available under the same number

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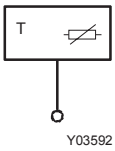
→ PDS 36.021

EGT 311: Clamp-on temperature detector



How energy efficiency is improved

Accurate detection of temperature for energy-efficient control of HVAC systems and monitoring energy consumption.

Areas of application

Quick and easy temperature measurement on pipelines.

Properties

- Passive measured value acquisition
- Includes strap retainer for 10 to 100 mm ø pipe and heat-conducting paste

Technical description

- Measurement is effected with a nickel thin-film sensor as per DIN 43760
- Cable inlet Pg 11. Screw terminals for wires up to 1,5 mm²

Type	Nominal value at 0°C	Measuring range °C	Weight kg
EGT 311 F021	200 Ω	–30...130	0.1
EGT 311 F101	1000 Ω	–30...130	0.1

Resistance values as per	DIN 43760	Max. temp. at head	80 °C
Tolerance at 0 °C	± 0,4 K	Degree of protection	IP 42 (EN 60529)
Mean temp. coefficient	0.00618 K^{-1}		
Self-warming	0.1 K/mW	Wiring diagram	A01632
Time characteristic (water 1 m/s) 1)		Dimension drawing	M07664
Dead time	1 s	Fitting instructions	MV 505496
Time constant	9 s		

Accessories

0313346 001* Module 0-10 V for Ni1000; 24 V~; MV 505513; A08091, IP 00 (IP 42 when fitted in housing) 4 temp. ranges: –50...0 °C; –50...50 °C; 0...50 °C; 0...100 °C

*) Dimension drawing or wiring diagram are available under the same number

1) With heat-conducting paste

Table of resistance of nickel for Ni 100 in ohm according to DIN 43760

°C	0	-1	-2	-3	-4	-5	-6	-7	-8	-9
-30	**84,1**	83,6	83,1	82,6	82,1	**81,6**	81,1	80,6	80,1	79,6
-20	**89,3**	88,8	88,3	87,7	87,2	**86,7**	86,2	85,7	85,2	84,7
-10	**94,6**	94,0	93,5	93,0	92,5	**91,9**	91,4	90,9	90,3	89,8
0	**100,0**	99,5	98,9	98,4	97,8	**97,3**	96,7	96,2	95,7	95,1
°C	0	-1	-2	-3	-4	-5	-6	-7	-8	-9
°C	0	1	2	3	4	5	6	7	8	9
0	**100**	100,5	101,1	101,7	102,2	**102,8**	103,3	103,9	104,4	105
10	**105,6**	106,1	106,7	107,2	107,8	**108,4**	108,9	109,5	110,1	110,7
20	**111,2**	111,8	112,4	113	113,5	**114,1**	114,7	115,3	115,9	116,5
30	**117,1**	117,7	118,2	118,8	119,4	**120,0**	120,6	121,2	121,8	122,4
40	**123,0**	123,6	124,2	124,8	125,4	**126,0**	126,7	127,3	127,9	128,5
50	**129,1**	129,7	130,3	131,0	131,6	**132,2**	132,8	133,5	134,1	134,7
60	**135,3**	136,0	136,6	137,2	137,9	**138,5**	139,2	139,8	140,4	141,1
70	**141,7**	142,4	143	143,7	144,3	**145,0**	145,6	146,3	146,9	147,6
80	**148,3**	148,9	149,6	150,2	150,9	**151,6**	152,2	152,9	153,6	154,3
90	**154,9**	155,6	156,3	157,0	157,7	**158,3**	159,0	159,7	160,4	161,1
100	**161,8**	162,5	163,2	163,9	164,6	**165,3**	166,0	166,7	167,4	168,1
110	**168,8**	169,5	170,2	170,9	171,6	**172,4**	173,1	173,8	174,5	175,2
120	**176,0**	176,7	177,4	178,2	178,9	**179,6**	180,4	181,1	181,8	182,6
130	**183,3**	184,1	184,8	185,6	186,3	**187,1**	187,8	188,6	189,4	190,1
°C	0	1	2	3	4	5	6	7	8	9

Resistance calculation for:
Ni 200 (Ohm-value x 2)
Ni 500 (Ohm-value x 5)
Ni 1000 (Ohm-value x 10)

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→ PDS 36.027

EGT 330...335: Room-temperature sensor

How energy efficiency is improved

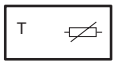
Accurate detection of room temperature for energy-efficient control of HVAC systems and monitoring energy consumption.

Areas of application

Temperature detection for heating and air conditioning systems in dry rooms, for example residential, office and business premises.

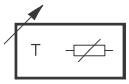
Properties

- Passive measured value acquisition
- Temperature detection in dry rooms
- Versions with setpoint adjuster, presence button and status LED
- Parameterise with SAUTER EY3600 or a SAUTER Flexotron controller (EGT 332)
- Integrated resistor (EGT 333) which, in combination with Equitherm controllers, corrects the setpoint with or without room temperature influence



Technical description

- With nickel thin-film sensor as per DIN 43760
- Housing made of pure white, fire-retardant thermoplastic (RAL 9010)
- Cable inlet at rear, screw terminals for wires up to 1,5 mm²



Type	Nominal value at 0 °C	Adjuster	Remarks	Measuring range °C	Weight kg
EGT 330 F021	200 Ω	–	–	–20...60	0.1
EGT 330 F051	500 Ω	–	–	–20...60	0.1
EGT 330 F101	1000 Ω	–	–	–20...60	0.1
EGT 332 F101	1000 Ω	2,5 kΩ	for Flexotron [2] +DDC	–20...60	0.1
EGT 333 F101	1000 Ω [1]	± 4 K	for Equitherm+RDT7 . .	–20...60	0.1
With occupancy key, 3 LEDs					
EGT 335 F101	1000 Ω	2,5 kΩ	for DDC	–20...60	0.1

Resistance values as per	DIN 43760	Degree of protection	IP 30 (EN 60529)
Tolerance at 0 °C	± 0.4 K		
Average temp. coefficient	0.00618 K-1	Wiring diagram	
Self-heating	0.17 K/mW	EGT 330	A01632
		EGT 332, 335	A06951
Time behaviour in still air		EGT 333	A06952
Dead time	50 s	Dimension drawing	M07634
Time constant	18 min	Fitting instructions	MV 505479
		EGT 333	MV 505530

Accessories

0303124 000* Recessed junction box
0313347 001* Intermediate cover plate for 76 × 76
0369829 100 Neutral housing, pure white

*) Dimension drawing or wiring diagram are available under the same number

1) 1000 Ω when correction knob is in middle position
2) Not for flexotron 100

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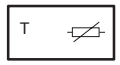
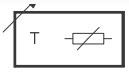
→ PDS 36.029

EGT 336, 338: Room temperature sensor





How energy efficiency is improved

Exact room temperature measurement for energy-efficient control of HVAC systems and energy consumption monitoring.

Areas of application

For room temperature measurement and setpoint adjustment for heating and air-conditioning systems in dry rooms.

Features

- Measurement of room temperature
- Room control panel with many functional, design and colour variants
- Device insert with transparent front, fits into frame with 55 x 55 mm aperture
- Frames must be ordered as accessories

Technical description

- Nickel thin-film sensor in accordance with DIN IEC 43760
- Cable entry at rear, plug-in connection terminals for 0.12...0.5 mm² wire (0.4...0.8 mm ø)

Type	Nominal value at 0 °C	Adjuster	Feature	Measuring range °C	Weight kg
EGT 336 F021	200 Ω	–	–	-20...60	0.1
EGT 336 F051	500 Ω	–	–	-20...60	0.1
EGT 336 F101	1000 Ω	–	–	-20...60	0.1
EGT 338 F101	1000 Ω	10 kΩ	for flexotron [2] + DDC	-20...60	0.1
EGT 338 F601	1000 Ω [1]	± 4 K	for equitherm + RDT 7 . .	-20...60	0.1

Resistance values as per	DIN 43760
Tolerance at 0 °C	± 0.4 K
Average temp. coefficient	0.00618 K-1
Self-heating	0.17 K/mW
Time behaviour in still air	
Dead time	50 s
Time constant	12 min

Degree of protection	IP 30 (EN 60529)
Wiring diagram	
EGT 336	A10516
EGT 338 F101	A10517
EGT 338 F601	A10518
Dimension drawing	
EGT 336	M10487
EGT 338	M10488
Fitting instructions	
EGT 336	P100001967
EGT 338 F101	P100001968
EGT 338 F601	P100002537
Declaration on materials and the environment	MD36.029

Accessories

0940240 101 Single frame, including mounting plate (for flush mounting, 10 pcs.)
0940240 201 Double frame, including mounting plate (for flush mounting, 10 pcs.)
0940240 301 Single baseplate (for wall mounting, 10 pcs.)
0940240 401 Double baseplate (for wall mounting, 10 pcs.)
0940240 501 Single cable cover (for surface-mounted cabling, 10 pcs.)
0940240 601 Double cable cover (for surface-mounted cabling, 10 pcs.)
0940240 701 Single mounting plate (for external frame, 10 pcs.)
0940240 801 Double mounting plate (for external frame, 10 pcs.)
0949241 301 Transparent cover (10 pcs.)

1) 1000 Ω with adjuster knob in central position
2) Not for flexotron 100

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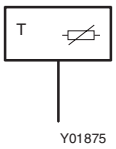
→ PDS 36.036

EGT 346...348: Stem-type temperature sensor



How energy efficiency is improved

Accurate detection of duct temperature for energy-efficient control of HVAC systems and monitoring energy consumption.

Areas of application

Temperature measurement of liquids and gases in ventilation systems, water networks and air ducting.

Properties

- Passive measured value acquisition
- Can be used in pipes and tanks with optional LW7 protective tubes (pockets)
- Cable entry with cord grip

Technical description

- Measurement is effected with a nickel thin-film sensor as per DIN 43760
- Housing made of yellow and black flame-retardant thermoplastic (RAL 9010)
- Cable clamping sleeve Pg 11
- Screw terminals for wires up to 1,5 mm²
- Immersion stem made of 6.5 mm ø copper (without protective tube)
- Active length 15 mm

Type	Stem mm	Nominal value at 0°C	Measuring range °C	Weight kg
EGT 346 F021	120	200 Ω	–30...130	0.07
EGT 346 F101	120	1000 Ω	–30...130	0.07
EGT 347 F021	225	200 Ω	–30...130	0.08
EGT 347 F101	225	1000 Ω	–30...130	0.08
EGT 348 F021	450	200 Ω	–30...130	0.10
EGT 348 F101	450	1000 Ω	–30...130	0.10

Resistance values as per	DIN 43760	
Tolerance at 0 °C	± 0,4 K	
Mean temp. coefficient	0.00618 K^{-1}	
Self-warming (in air)	0.25 K/mW	
Time characteristic:		
in air, without prot. Tube	**Dead time**	**Time const.**
still	18 s	330 s
moving (3 m/s)	9 s	60 s
in water, with prot. tube [1)]	**Dead time**	**Time const.**
still	7 s	28 s
moving (0,4 m/s)	6 s	27 s

Max. temp. at head	80 °C
Degree of protection	IP 42 (EN 60529)
Wiring diagram	A01632
Dimension drawing	M08527
Fitting instructions	MV 505497

Accessories

0364439 . . .	Protective tube LW 7, brass; see chapter 39
0226811 . . .	Protective tube LW 7, inox; see chapter 39
0368840 000*	Holder for fitting stem on wall
0368839 000*	Holder for fitting stem in air duct
0313220 001	Heat-conducting paste, in a tube of 20 g
0313282 001	Clamp D = 15 mm / 7 mm, for fitting sensor into protective tube; separate delivery
0313346 001*	Module 0-10 V for Ni1000; R>5 kΩ; 24 V~ ± 20%; MV 505513; A08091; IP 00 (IP 42 when fitted in housing); 4 temp. ranges: –50...0 °C; –50...50 °C; 0...50 °C; 0...100 °C

*) Dimension drawing or wiring diagram are available under the same number

1) With heat-conducting paste

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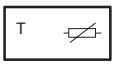
→ PDS 36.044

EGT 354, 356: Cable-type temperature sensor



Y04579

How energy efficiency is improved
Accurate detection of temperature for energy-efficient control of HVAC systems and monitoring energy consumption.

Areas of application
Temperature measurement in rooms, air ducting, on surfaces, in pipelines and tanks

Properties
- Passive measured value acquisition
- Especially suitable for direct connection to systems with short distance between controller and sensor
- Highly versatile sensor
- Can be used in pipelines and tanks with optional LW7 protective tubes

Technical description
- Measurement is effected with a nickel thin-film sensor as per DIN 43760
- 5 mm ø connecting cable, normal version 1 m long, fixed permanently to sensor
- Conductor cross-section 2× 0,5 mm²

Type	Nominal value at 0°C	Measuring range °C	Weight kg
For normal temperatures: PVC cable			
EGT 354 F021	200 Ω	–20...100	0.12
EGT 354 F051	500 Ω	–20...100	0.12
EGT 354 F101	1000 Ω	–20...100	0.12
or higher temperatures: cable with silicon coating			
EGT 356 F021	200 Ω	–40...180	0,12
EGT 356 F051	500 Ω	–40...180	0,12
EGT 356 F101	1000 Ω	–40...180	0,12

Resistance values	DIN 43760		Degree of protection	IP 55 (EN 60529)
Tolerance at 0°C	± 0,4 K			
Mean temp. coefficient	0.00618 K^{-1}		Wiring diagram	A01632
Self-warming	0.11 K/mW		Dimension drawing	M05322
Time characteristic:			Fitting instructions	MV 505423
clamped on pipe [1]	**Dead time**	**Time constant**		
water (0.4 m/s)	approx. 7 s	23 s		
with LW 7 pocket [2]	**Dead time**	**Time constant**		
water (0.4 m/s)	approx. 3 s	11 s		

Variants

EGT 354 F103	1000 Ω with 3 m of cable, PVC
EGT 354 F110	1000 Ω with 10 m of cable, PVC
EGT 354 F120	1000 Ω with 20 m of cable, PVC
EGT 356 F103	1000 Ω for higher temperatures; with 3 m of cable, silicon
EGT 356 F110	1000 Ω for higher temperatures; with 10 m of cable, silicon
EGT 356 F120	1000 Ω for higher temperatures; with 20 m of cable, silicon
EGT 356 F303	200 Ω with 3 m of cable

Accessories

0364345 . . .	LW 7 pockets, G½ A; of brass; see chapter 39
0364439 . . .	LW 7 pockets, R½, of brass; see chapter 39
0364244 . . .	LW 15 pockets, R½, of brass; see chapter 39
0364346 . . .	LW 15 pockets, G½ A; brass; for up to 3 sensors Ø 6,5 mm; see chapter 39
0364258 . . .	LW 15 pockets, G½ A; of stainless steel; for up to 3 sensors Ø 6,5 mm; see chapter 39
0313275 . . .	PVC cable: special length for EGT 354 on request
0313300 . . .	Silicon cable: special length for EGT 356 on request
0311835 000*	Tension-relief piece for fitting the sensor into protective tube LW 7; for use up to 100 °C
0312520 000*	Universal tension-relief piece for cable sensors and thermostats with capillary tube; for use up to 180 °C
0313214 001*	Fixing kit for all applications (comprises holder, heat-conducting paste, metal strap)
0313220 001	Heat-conducting paste

*) Dimension drawing or wiring diagram are available under the same number

1) As a clamp-on sensor with holder and heat-conducting paste
2) With heat-conducting paste

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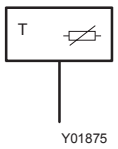
→ PDS 36.045

EGT 355: Cable-type temperature detector with immersion stem



Y01875

How energy efficiency is improved

Accurate detection of temperature for energy-efficient control of HVAC systems and monitoring energy consumption.

Areas of application

Temperature measurement in rooms, air ducting and on surfaces, also suitable for use in painting businesses. Use in pipelines and tanks possible with optional LW7 protective tubes.

Properties

- No components containing silicone
- Universal, direct integration without protective tube using stainless steel immersion stem
- Passive measured value acquisition
- Especially suitable for direct connection to systems with short distance between controller and sensor
- Stem lengths of 90, 160 and 300 mm

Technical description

- Measurement is effected with a nickel thin-film sensor as per DIN 43760
- Sensor element cast in stainless steel immersion tube ø 6,5 mm
- Active length 20 mm
- Vulcanised silicone connection cable, ø 8 mm, 1,5 m long

Type	Nominal value at 0°C	Measuring range °C	Length of stem mm	Weight kg
EGT 355 F101	1000 Ω	–30...130	300	0.1
EGT 355 F900	1000 Ω	–30...130	90	0.1
EGT 355 F901	1000 Ω	–30...130	160	0.1

Resistance values as per		DIN 43760
Tolerance at 0 °C		± 0.4 K
Mean temp. coefficient		0.00618 K^{-1}
Self-warming (in air)		0.14 K/mW
Resistance to compression		PN 16
Time characteristic in air	**Dead time**	**Time const.**
still	5 s	300 s
moving (3 m/s)	2 s	60 s

Time charact. in water	**Dead time**	**Time const.**
still	0,5 s	12 s
flowing (0.4 m/s)	0,4 s	9 s
Degree of protection	IP 42 (EN 60529)	
Wiring diagram	A01632	
Dimension drawing	M02130	
Fitting instructions	MV 8268	

Accessories

0312134 000* Brass screw fitting R ¼ (ISO 7/I) for immersion
0312135 000* Stainless-steel screw fitting R ¼ (ISO 7/I) for immersion (DIN material no. 1.4401)

*) Dimension drawing or wiring diagram are available under the same number

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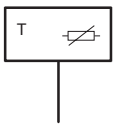
→ PDS 36.065

EGT 392...395: Stem-type temperature sensor for higher temperatures



Y01875

How energy efficiency is improved

Accurate detection of duct temperature for energy-efficient control of HVAC systems and monitoring energy consumption.

Areas of application

Measurement of higher temperatures in liquids and gases, in ventilation systems and water networks, as well as air ducting. Use in pipelines and tanks possible with optional LW15 protective tubes.

Properties

- Die-cast aluminium housing
- High protection class (Protection class IP54)
- Passive measured value acquisition
- Suitable for building into air ducting without protective tube

Technical description

- Measurement is effected with a nickel thin-film sensor as per DIN 43760
- 9 mm ø copper immersion stem (without protective tube)
- Active length 15 mm
- Cable clamping sleeve Pg11
- Connection terminals for conductor cross-section 2× 1,5 mm²

Type	Stem mm	Nominal value at 0°C	Measuring °C	Weight kg
EGT 392 F021	120	200 Ω	–40...155	0,2
EGT 392 F101	120	1000 Ω	–40...180	0,2
EGT 393 F101	225	1000 Ω	–40...180	0,25
EGT 395 F101	450	1000 Ω	–40...180	0,3

Resistance values as per	DIN 43760	
Tolerance at 0 °C	± 0,4 K	
Mean temp. coefficient	0,00618 K^{-1}	
Self-warming (in air)	0,25 K/mW	
Time characteristic:		
air, without prot. tub	**Dead time**	**Time const.**
still	20 s	530 s
moving (3 m/s)	11 s	63 s
water, with prot. Tube [1]	**Dead time**	**Time const.**
still	8 s	31 s
moving (0.4 m/s)	7 s	30 s

Max. temp. at head	80 °C
Max. temp. of media	–60...195 °C (approx. 15 min)
Degree of protection	IP 54 (EN 60529)
Wiring diagram	A01632
Dimension drawing	M368750
Fitting instructions	MV 8261

Variants

EGT 393 F904 As F101, but for direct fitting without pocket
dimension drawing M368989, fitting instructions MV 8267

Accessories

0364258 . . . LW 15 pockets of stainless steel; see chapter 39
0364346 . . . LW 15 pockets of brass; see chapter 39
0368839 000* Fixing flange for duct mounting
0368840 000* Fixing bracket for wall mounting
0313220 001 Heat-conducting paste

*) Dimension drawing or wiring diagram are available under the same number

1) With heat-conducting paste

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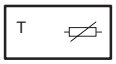
→ PDS 36.101

EGT 401: Outside-temperature detector with platinum measuring element

T05083



Y04579

How energy efficiency is improved
Accurate detection of outside temperature for energy-efficient control of HVAC systems and monitoring energy consumption.

Areas of application
Outside temperature measurement, e.g. for weather-compensated heating systems.

Properties
- Particular protection against dust and humidity (Protection class IP54)
- Pure white thermoplastic housing
- Passive measured value acquisition
- Cable infeed at rear or from underneath

Technical description
- Measurement is effected with a platinum thin-film sensor as per EN 60751
- Screw terminals forwires up to 1,5 mm²

Type	Nominal value at 0°C	Measuring range °C	Weight kg
EGT 401 F101	1000 Ω	–50...80	0.1

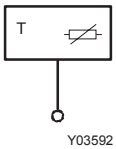
Resistance values as per	EN 60751, Class B		Degree of protection	IP 54 (EN 60529)
Tolerance at 0 °C	± 0,3 K			
Mean temp. coefficient	0,00385 K^{-1}		Wiring diagram	A01632
Self-warming	0,2 K/mW		Dimension drawing	M04686
Time characteristic in air	**Dead time**	**Time const.**	Fitting instructions	MV 505377
still	1,5 min	10 min		
moving (1 m/s)	1 min	6 min		

Accessories
0370560 011 Cable screw fitting Pg 11; of thermoplastic; for cable Ø 9...11 mm

→ PDS 36.106

EGT 411: Clamp-on temperature detector with platinum measuring element

T09061



Y03592

How energy efficiency is improved
Accurate detection of temperature for energy-efficient control of HVAC systems and monitoring energy consumption.

Areas of application
Temperature measurement on pipelines.

Properties
- Flame-retardant black and yellow thermoplastic housing
- Passive measured value acquisition
- Strap retainer for pipe ø 10 to 100 mm
- Heat conducting paste included in scope of supply

Technical description
- Measurement is effected with a spring-loaded, platinum thin-film sensor as per EN 60751
- Cable clamping sleeve Pg11
- Screw terminals for wires up to 1,5 mm²

Type	Nominal value at 0°C	Measuring range °C	Weight kg
EGT 411 F101	1000 Ω	-30...130	0.1

Resistance values as per	EN 60751, Class B	Max. temp. at head	80 °C
Tolerance at 0 °C	± 0,3 K	Degree of protection	IP 42 (EN 60529)
Mean temp. coefficient	0.00385 K^{-1}		
Self-warming	0,1 K/mW	Wiring diagram	A01632
Time characteristic (water 1 m/s) [1]		Dimension drawing	M07664
Dead time	1 s	Fitting instructions	MV 505496
Time constant	9 s		

1) With heat-conducting paste

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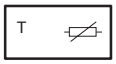
→ PDS 36.111

EGT 430: Room-temperature sensor with platinum measuring element



Y04579

How energy efficiency is improved

Accurate detection of room temperature for energy-efficient control of HVAC systems and monitoring energy consumption.

Areas of application

Temperature detection for heating and air conditioning systems in dry rooms, e.g. residential, office and business premises.

Properties

- Passive measured value acquisition
- Temperature detection in dry rooms
- Cable infeed at rear

Technical description

- Platinum thin-film sensor as per EN 60751
- Housing made of pure white, fire-retardant thermoplastic (RAL 9010)
- Screw terminals forwires up to 1,5 mm²

Type	Nominal value at 0 °C	Measuring range °C	Weight kg
EGT 430 F011	100 Ω	–20...60	0,1
EGT 430 F101	1000 Ω	–20...60	0,1

Resistance values as per	EN 60751, class B	Degree of protection	IP 30 (EN 60529)
Tolerance at 0 °C	± 0,3 K		
Average temp. coefficient	0,00385 K^{-1}	Wiring diagram	A01632
Self-heating	0,17 K/mW	Dimension drawing	M07634
Time behaviour in still air		Fitting instructions	MV 505479
Dead time	50 s		
Time constant	18 min		

Accessories

0303124 000* Recessed junction box
0313347 001* Intermediate cover plate 76 × 76 mm

*) Dimension drawing or wiring diagram are available under the same number

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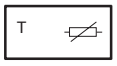
→ PDS 36.112

EGT 436: Room temperature sensor with platinum measuring element



How energy efficiency is improved
Exact room temperature measurement for energy-efficient control of HVAC systems and energy consumption monitoring

Areas of application
Room temperature measurement for heating and air-conditioning systems in dry rooms such as residential, office and business rooms.

Properties
- Passive measurement recording
- Temperature measurement in dry rooms
- Cable inlet at rear
- Frames must be ordered as accessories

Technical description
- Platinum thin-film sensor in accordance with EN 60751
- Housing made from pure white (RAL 9010) flame-resistant thermoplastic
- Screw terminals for electric cables up to 1,5 mm²

Type	Nominal value at 0 °C	Measuring range °C	Weight kg
EGT 436 F011	100 Ω	-20...60	0,1
EGT 436 F101	1000 Ω	-20...60	0,1

Resistance values as per	EN 60751, class B	Degree of protection	IP 30 (EN 60529)
Tolerance at 0 °C	± 0,3 K		
Average temp. coefficient	0,00385 K^{-1}	Wiring diagram	A01632
Self-heating	0,17 K/mW	Dimension drawing	M10487
Time behaviour in still air		Fitting instructions	P100001967
Dead time	50 s	Declaration on materials and the environment	MD 36.112
Time constant	18 min		

Accessories

0940240 101	Single frame, incl. mounting plate (for flush mounting, 10 pcs.)
0940240 301	Single baseplate (for wall mounting, 10 pcs.)
0940240 501	Single cable cover (for surface-mounted cabling, 10 pcs.)
0940240 701	Single mounting plate (for external frame, 10 pcs.)

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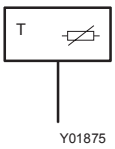
→ PDS 36.121

EGT 446, 447: Stem-type temp. detector with platinum measuring element



How energy efficiency is improved

Accurate detection of duct temperature for energy-efficient control of HVAC systems and monitoring energy consumption.

Areas of application

For measuring the temperature in ventilation systems or in pipelines and tanks with LW7 protective tube.

Properties

- Passive measured value acquisition
- Can be used in pipelines and tanks with optional LW7 protective tubes
- Cable entry with tension-relief bushing

Technical description

- Platinum thin-film sensor as per EN 60751
- Housing made of yellow and black flame-retardant thermoplastic (RAL 9010)
- Cable clamping sleeve Pg 11
- Screw terminals for wires up to 1.5 mm²
- Immersion stem made of 6,5 mm ø copper (without protective tube)
- Active length 15 mm

Type	Stem mm	Nominal value at 0 °C	Measuring range °C	Weight kg
EGT 446 F011	120	100 Ω	–30...130	0,07
EGT 446 F101	120	1000 Ω	–30...130	0,07
EGT 447 F011	225	100 Ω	–30...130	0,08
EGT 447 F101	225	1000 Ω	–30...130	0,08

Resistance values as per	EN 60751, Class B		Max. temp. at head	80 °C
Tolerance at 0 °C	± 0,3 K		Degree of protection	IP 42 (EN 60529)
Mean temp. coefficient	0,00385 K^{-1}			
Self-warming (in air)	0,25 K/mW		Wiring diagram	A01632
Time characteristic:			Dimension drawing	M08527
in air, without prot. Tube	**Dead time**	**Time const.**	Fitting instructions	MV 505497
still	18 s	330 s		
moving (3 m/s)	9 s	60 s		
in water, with prot. tube 1)	**Dead time**	**Time const.**		
still	7 s	28 s		
moving (0,4 m/s)	6 s	27 s		

Accessories

0364439 . . . LW 7 pockets; of brass; R½; see Section 39
0226811 . . . LW 7 pockets; of stainless steel; G½ A; see Section 39
0368840 000* Holder for fitting stem on wall
0368839 000* Holder for fitting stem in air duct
0313220 001 Heat-conducting paste, in a tube of 20 g

*) Dimension drawing or wiring diagram are available under the same number

1) With heat-conducting paste

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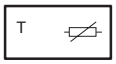
→ PDS 36.126

EGT 456: Cable-type temp. detector with platinum measuring element



Y04579

How energy efficiency is improved

Accurate detection of temperature for energy-efficient control of HVAC systems and monitoring energy consumption.

Areas of application

Temperature measurement in rooms, air ducting, on surfaces, in pipelines and tanks

Properties

- Passive measured value acquisition
- Especially suitable for direct connection to systems with short distance between controller and sensor
- Highly versatile sensor
- Can be used in pipelines and tanks with optional LW7 protective tubes

Technical description

- Platinum thin-film sensor as per EN 60751
- 5 mm ø connecting cable, normal version 1 m long, fixed permanently to sensor
- Conductor cross-section 2× 0,5 mm²

Type	Nominal value at 0°C	Measuring range °C	Weight kg
EGT 456 F011	100 Ω	–40...180	0,12
EGT 456 F101	1000 Ω	–40...180	0,12

Resistance values	EN 60751, Class B		Degree of protection	IP 55 (EN 60529)
Tolerance at 0 °C	± 0,3 K			
Mean temp. coefficient	0,00385 K^{-1}		Wiring diagram	A01632
Self-warming	0,11 K/mW		Dimension drawing	M05322
Time characteristic:			Fitting instructions	MV 505423
clamped on pipe [1]	**Dead time**	**Time constant**		
water (0,4 m/s)	ca. 7 s	23 s		
with LW 7 pocket [2]	**Dead time**	**Time constant**		
water (0,4 m/s)	ca. 3 s	11 s		

Accessories

0364345 . . . LW 7 pockets,G½A; brass; for max. 3 sensors Ø 6,5 mm; see chapter 39
0364439. . . LW 7 pockets, R½, of brass; see chapter 39
0364346 . . . LW 15 pockets, G½ A; brass; for up to 3 sensors Ø 6,5 mm; see chapter 39
0364258 . . . LW 15 pockets, G½ A; of stainless steel; for up to 3 sensors Ø 6,5 mm; see chapter 39
0311835 000* Tension-relief piece for fitting the sensor into protective tube LW 7
0312520 000* Universal tension-relief piece for cable sensors and thermostats with capillary tube
0313214 001 Fixing kit for all applications (comprises holder, heat-conducting paste, metal strap)
0313220 001 Heat-conducting paste
0313300 . . . Silicon cable: special length for EGT 456 on request

*) Dimension drawing or wiring diagram are available under the same number

1) As a clamp-on sensor with holder and heat-conducting paste
2) With heat-conducting paste

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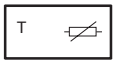
→ PDS 36.180

EGT 636: Room temperature sensor with NTC-measuring-element



Y04579

How energy efficiency is improved
Exact room temperature measurement for energy-efficient control of HVAC systems and energy consumption monitoring

Areas of application
Room temperature measurement for heating and air-conditioning systems in dry rooms such as residential, office and business rooms.

Properties
- Passive recording of room temperature
- Room operating unit with a wide range of different functions, designs and colours
- Device insert with transparent front, fits into frame with 55 x 55 mm cut-out
- The frames must be ordered as accessories
- Cable inlet at rear

Technical description
- NTC (Negative Temperature Coefficient Thermistor) sensor
- Housing made from pure white (RAL 9010) flame-resistant thermoplastic
- Screw terminals for electric cables up to 1,5 mm²

Type	Nominal value at 25 °C	Measuring range °C	Weight kg
EGT 636 F101	10 kΩ	-20...60	0,1

Resistance values as per	IEC 60539	Degree of protection	IP 30 (EN 60529)
Tolerance at 0 °C	± 1%		
		Wiring diagram	A01632
Self-heating	0,45 K/mW	Dimension drawing	M10487
Time behaviour in still air		Fitting instructions	P100001967
Dead time	50 s	Declaration on materials	MD 36.180
Time constant	12 min	and the environment	

Accessories

0940240 101	Single frame, incl. mounting plate (for flush mounting, 10 pcs.)
0940240 301	Single baseplate (for wall mounting, 10 pcs.)
0940240 501	Single cable cover (for surface-mounted cabling, 10 pcs.)
0940240 701	Single mounting plate (for external frame, 10 pcs.)

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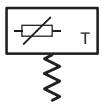
→ PDS 36.91

EGT 361- 366: Average temperature detector



Areas of application
For determining the average temperature in air ducting.

Properties
- Nickel sensor according to DIN 43760
- Deviation at 0°C : ± 0,4 K
- Active along entire length

Technical description
- Measuring range: -30 to 70 °C
- Sensor: nickel wire, in the case of the EGT 361 the 4 sensors are distributed along the entire
- length
- Copper conductor with plastic sleeve
- Connection via 2, 3 or 4 cables in IP54 wiring box
- Included in the supply: sensors, brackets, wiring box, screws, cable entry and installation instructions

Type	Nominal value at 0 °C	Length m	Number of brackets	Weight kg
EGT 361 F101	1000 Ω	1,5	3	0.25
EGT 363 F101	1000 Ω	3	4	0.35
EGT 366 F101	1000 Ω	6	5	0.52
EGT 366 F021	200 Ω	6	5	047

Permissible ambient temperature	-40…80 °C	Wiring diagram	A01632
Connecting cable	Length 0.5 m / 2 x 0,75 mm²		
Reaction time	T 0.5 approx. 30 s with V = 1 m/s (air)		
Measuring current	approx. 1 mA	Fitting instructions	P100003287
Control voltage	1000 V=		

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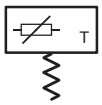
→ PDS 36.92

EGT 466: Average temperature detector



Areas of application
For determining the average temperature in an air duct

Properties
- Pt characteristic
- Accuracy class B (EN 60751)
- Active along the entire length

Technical description
- Measuring range: -30...70 °C
- Sensor: 10 Pt thin-film sensors distributed along the entire length
- Cu core with plastic sleeving
- 2-, 3- or 4-conductor connection in IP54 plastic housing
- Scope of supply: sensors, brackets, junction box, screws, cable entry and instructions

Type	Nominal value at 0°C	Length m	Number of brackets	Weight kg
EGT 466 F011	100 Ω	6	5	0,41
EGT 466 F101	1000 Ω	6	5	0,41

Ambient temperature	-40 to 80 °C	Wiring diagram	A01632
Connection instructions	0,5 m long / 2 x 0,75 mm2		
Response time	T 0,5 approx. 30 s with V = 1 m/s (air)		
Measuring current	approx. 1 mA	Fitting instructions	P100003287
Test voltage	1000 V=		

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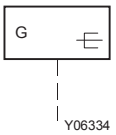
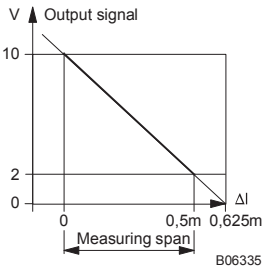
→ PDS 37.100

SGU: Sash sensor





How energy efficiency is improved
Enables the demand-led volume flow control of laboratory fume cupboards.

Areas of application
Infinitely variable measurement of position of vertical sashes on laboratory fume cupboards.

Properties
- Non-wearing and accurate detection of sash position of < 1 mm
- Enables fast and oscillation-free volume flow control
- Easy to fit, especially on sash counterweight
- Quick changing of spring element to adapt measuring range

Technical description
- Power supply 24 V~
- Measuring range
  - 500 mm for bench-mounted fume cupboards
  - 1000 mm for free-standing fume cupboards
- Linearity 2% of output signal

Type	Measuring span	Weight kg
SGU 100 F001	0,5 m [1]	0.32

Power supply 24 V~	± 20%, 50...60 Hz	Ambient temperature	0...55 °C
Power consumption	1 VA	Ambient humidity	< 90 %rh
Output signal [2]	2...10 V, load > 500 Ω	Degree of protection	IP 20 (EN 60529)
Linearity	2%	Protection class	I (EN 60730)
		Wiring diagram	A06337
		Dimension drawing	M06338
		Fitting instructions	MV 505452

Accessories
0297832 001 Extension spring for man-sized (walk-in) fume cupboards with sliding-door movement of 2 m; measuring span: 1 m.

1) Measuring span of 1 m with accessory 0297832 001
2) Protected against short circuits and excess voltage up to 24 V~

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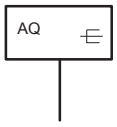

Y04425

Y02201

→ PDS 37.016

EGQ 110, 120: Transducers for indoor air quality

How energy efficiency is improved

Enables the demand-led control of ventilation systems and reduces energy consumption

Areas of application

Measurement of relative mixed gas concentration, e.g. tobacco smoke, kitchen smells or body odour. Demand-led ventilation control in building services, e.g. in restaurants and office buildings.

Properties

- Active measured value acquisition
- Versions for room air and ducting
- EGQ 120 Suitable for direct wall mounting
- Modification of measuring span of output signal by means of trim potentiometer

Technical description

- Measurement is effected with a VDMA 24772 semi-conductor mixed gas sensor as per VDMA 24772
- EGQ 110: 30 mm ø sensor tube made of black, glass fibre-reinforced thermoplastic
- EGQ 110: Recording of gas mixture concentration using semi-conductor sensor element
- EGQ 110: Immersion depth 40 to 166 mm
- EGQ 120: Housing made of pure white, fire-retardant thermoplastic (RAL 9010)
- Screw terminals for wires max. 2,5 mm²

Type	Measurement taken in	Output	Power	Weight kg
EGQ 110 F001	duct	0...10 V	24 V~/=	0.28
EGQ 120 F001	room	0...10 V	24 V~/=	0.10

Power supply 24 V~/= [1]	± 20%
Power consumption	approx. 2.5 VA
Permissible load	> 5 kΩ
Time constant in air (0.5 m/s)	
EGQ 110 / EGQ 120	100 s / 60 s
Max. air speed	15 m/s
Ambient temperature	–20...70 °C
EGQ 120	0...40 °C
Ambient humidity	5...95 %rh

Degree of protection EGQ 110	
(at head of instrument)	IP 40 (EN 60529)
with Pg 11 cable screw fitting	IP 54
Degree of protection EGQ 120	IP 30
Protection class	III (IEC 60730)

	EGQ 110	EGQ 120
Wiring diagram	A04427	A04427
Dimension drawing	M02200	M07634
Fitting instructions	MV 505363	MV 505499

Accessories

0303124 000* Recessed junction box
0313187 001* Filter, complete, as a replacement unit, for EGQ 110
0313347 001* Intermediate cover plate for 76 × 76 for EGQ 120
0370560 011 Cable screw fitting Pg 11, of plastic, for cable Ø 9...11 mm for EGQ 110

*) Dimension drawing or wiring diagram are available under the same number

1) Should be permanently connected to the power supply, and not be used for safety applications.

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→ PDS 37.037

EGQ 212, 222: Transducers for CO_2 and temperature

Y05773

Y02717

How energy efficiency is improved

Enables the demand-led control of ventilation systems and reduces energy consumption; the EGQ222F001 has a dual-beam reference measuring method, which is both non-drifting and long-term stable, thereby providing accurate measurement.

Areas of application

Selective measurement of dioxide concentration and room air temperature in rooms

Features

- Active device for measured value acquisition
- Versions for room air and ducting
- EGQ222: suitable for direct wall mounting
- EGQ212: fixing bracket with seal for duct mounting included in supply

Technical description

- Measurement is effected using an infra-red spectroscopic sensor as per VDMA 24772
- EGQ212: 30 mm ø sensor tube made of black, glass fibre-reinforced thermoplastic
- EGQ212: immersion depth 40…166 mm
- EGQ222: housing made of pure white, fire-retardant thermoplastic (RAL 9010), 76 x 76 mm
- Screw terminals for wires max. 2.5 mm²

Type	Fitted in	CO_2 range	Temp. range	Voltage	Weight kg
EGQ 212 F001	duct	0...2000 ppm	0...50 °C	24 V~/=	0.3
EGQ 222 F001	room	0...2000 ppm	0...50 °C	24 V~/=	0.3

Power supply EGQ212	24 V~/= ± 20%
Power supply EGQ222	24 V~/= ± 10%
Power consumption	< 3 W
Ready for operation	within 2 min
Range:	
CO_2	0…2000 ppm
Temperature	0…50 °C
Accuracy:	
CO_2 (T = constant) [1]	± 20 ppm
Temperature	± 0.3 °C
Output singnals:	
CO_2 (0...2000 ppm)	0...10 V, load > 2 kΩ
Temperature (0...50 °C)	0...10 V, load > 2 kΩ
Measuring cycle EGQ212	60 s
Measuring cycle EGQ222	1 s

Permissible ambient temp.	0...50 °C
Permissible ambient humidity	0...95 %rh no condensation
Degree of protection: EGQ 212 (at head)	IP 54 (EN 60529)
EGQ 222	IP 30

	EGQ 212	**EGQ 222**
Wiring diagram	A05842b	A04674d
Dimension drawing	M04347d	M07634b
Fitting instructions	MV 505877	MV 505878

Accessories

0303124 000* Recessed junction box
0313347 001* Intermediate cover plate for 76 × 76 for EGQ 222
0370560 011 Cable screw fitting (Pg 11), of plastic, for cable of Ø 9...11 mm for EGQ 212

*) Dimension drawing or wiring diagram are available under the same number

1) At temperatures of 0...50 °C, the tolerance is ± 5% of the displayed value, i.e. at least ± 50 ppm.

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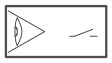
→ PDS 37.91

EGA200: Occupancy detector



Areas of application
For detecting the movement of personnel within the range of detection.

Properties
- For wall mounting
- Angle of detection 200° in 15 zones
- Range approx. 12 m
- Adjustable response threshold (light value)
- Two rubber cable entries at the rear of the unit

Technical description
- Housing 98 × 102 × 96 mm in white thermoplastic
- Sensor: passive infra-red sensor (PIR)
- Terminals for max. cable cross section of 1.5 mm²
- Scope of supply: occupancy detector with installation guide

Type	Switch-off time	Power	Weight kg
EGA 200 F002	5 s - 5 min	220 V~	0.165

Power supply	220...240 V 50 Hz	Installation height	approx. 2.5...3 m
Power consumption	up to 1.8 VA	Output relay	5 (1) A 250 V~
Range of detection		Ambient humidity	-20...70% rh
Range	approx. 12 m	Degree of protection	IP44 (EN 60529)
Angle of detection	200°, 15 zones	Permissible ambient temperature	0...40 °C
Mechanical orientation		Storage and transport temperature	-10...50 °C
Angle of inclination	approx. 45°		
Rotation angle	approx. 20°		

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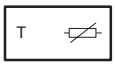
→ PDS 37.92

EGS 100: Black-bulb (radiant) temperature sensor



Y04579

Areas of application

Detection of radiation and room temperature in a room, e.g. for radiant ceiling heating systems.

Properties

- Ni or NTC characteristic

Technical description

- Measuring range: -20 to 70 °C
- Sensor: 2 thin-film sensors in series
- Housing 76 x 76 mm of pure white thermoplastic with black dome and black plug-in baseplate
- Connection terminals 2x 1,5 mm²
- Scope of supply: sensor and instructions

Type	Nominal resistance value	Measuring range °C	Weight kg
EGS 100 F702	10 kΩ (at 25°C)	-20...70	0,1
EGS 100 F703	1000 Ω (at 0°C)	-20...70	0,1

Resistance values	
F702	2x 5 KΩ NTC (in series)
F703	2x 500 Ω (in series)
	Ni1000 as per DIN 43760
Tolerance	
F702 at 25 °C	±1%
F703 at 0 °C	±0,4 K
Self-warming	0,2 K/mW

Time response in stationary air	
Dead time	5 s
Time constant	18 min
Degree of protection	IP 30 (EN 60529)
Wiring diagram	A 01632
Dimension drawing	M 09638
Fitting instructions	MV 505818

Accessories

0303124 000* Recessed junction box
0303174 000* Intermediate cover plate
0313626 001* Surface junction box, black 76 x 76 mm

*) Accessories/dimension drawing available under same number

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→ PDS 39.001

Protective tubes

How energy efficiency is improved
Accessory for sensors that makes it possible to use energy as needed.

Areas of application
Pipelines and tanks for the incorporation of sensor cartridges, immersion stems, temperature controllers and thermostats.

Properties
- Tested with 1,5 times nominal pressure (PN)
- Made of brass or stainless steel

Technical description
- Versions with cylindrical pipe thread (G½"), or cone-shaped (R½") sealing in thread

Tube	Length mm	Material	Thread	PN bar	Tmax °C
Protective tubes LW 7, internal Ø 7 mm, external Ø 9 mm					
0364439 060	60	Brass	R½	16	200
0364439 120	120	Brass	R½	16	200
0364439 150	150	Brass	R½	16	200
0364439 225	225	Brass	R½	16	200
0364439 300	300	Brass	R½	16	200
0364345 120	120	Brass	G½ A	16	200
0364345 225	225	Brass	G½ A	16	200
0364345 300	300	Brass	G½ A	16	200
0364345 450	450	Brass	G½ A	16	200
0226811 060	60	Stainless steel	G½ A	25	325
0226811 120	120	Stainless steel	G½ A	25	325
0226811 225	225	Stainless steel	G½ A	25	325
0226811 300	300	Stainless steel	G½ A	25	325
0226811 450	450	Stainless steel	G½ A	25	325
0226811 600	600	Stainless steel	G½ A	25	325
Protective tubes LW 15, internal Ø 15 mm, external Ø 16 mm; including pressure spring [1]					
0364440 120	120	Brass	R½	16	200
0364346 120	120	Brass	G½ A	16	200
0364346 225	225	Brass	G½ A	16	200
0364346 300	300	Brass	G½ A	16	200
0364346 450	450	Brass	G½ A	16	200
0364258 120	120	Stainless steel	G½ A	25	325
0364258 225	225	Stainless steel	G½ A	25	325
0364258 450	450	Stainless steel	G½ A	25	325
0364258 600	600	Stainless steel	G½ A	25	325

Material		**Thread**	
Brass Cu Zn 37	Mat. no. 2.0321	R½	ISO 7/1 thread-sealing
Stainless steel	Mat. no. 1.4435	G½ A	ISO 228/1 flat sealing [2]

Accessories
0311835 000* Tension-relief for cable detector EGT 35 and EGT 45
0312520 000* Universal tension-relief for cable detectors and thermostats with capillary tube
0364140 000* Bushing for tension-relief
0364144 . . . Pressure spring for detectors in protective tubes LW 15 with L=120; 225; 300; 450
0364263 000* Welding flange, G½, of steel (material no. 1.0110); copper flat sealing
0364264 000* Welding flange, G½, of stainless steel (material no. 1.4435); flat sealing of copper and Teflon (for aggressive media)

*) Dimension drawing and wiring diagram are available under the same number

1) For 2 or 3 sensors Ø 6,5 mm; e.g. combinations with thermostat and sensor cartridges.
2) For welding flange with flat sealing (accessory)

Dimension drawings and accessories see next page >>>

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Dimension drawings

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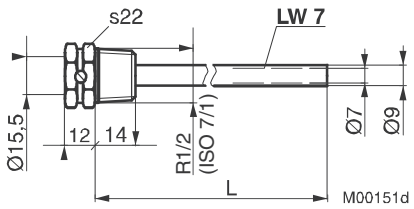

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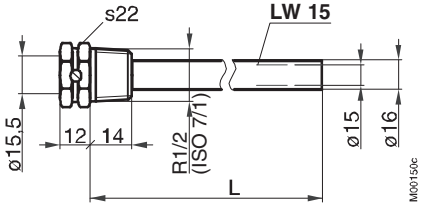

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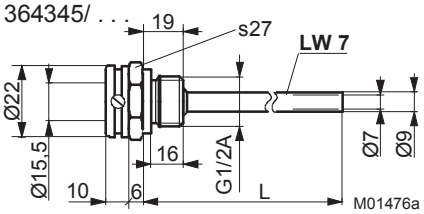

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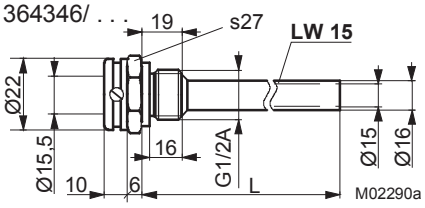
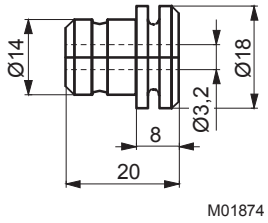


Accessories

311835



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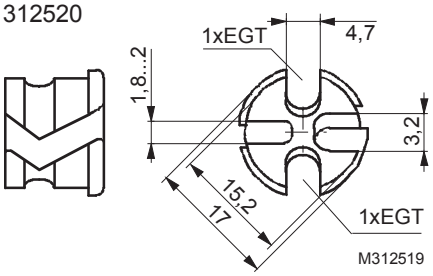

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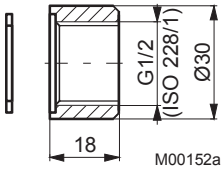

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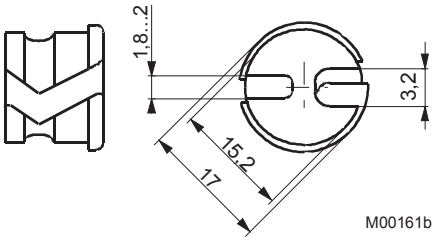

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4 Electronics
Stand-alone controllers

43	**Intelligent unitary control: equiflex® and VAV**	Room-temperature controllers Duct-temperature controllers VAV controllers Room-pressure controllers
44	***equitherm*® heating controllers**	Heating controller with analogue operation Communicative heating controller with digital user interface Heating controller for local and district heating Heating controllers with boiler-temperature control facility Remote-control unit Electronic multiplier/converter
45	**Intelligent unitary control for underfloor heating**	Room thermostats, wireless Room thermostats, wired Remote-control units, wireless Remote-control units, wired Radio receiver for control signals Electric distributors
46	***flexotron*® controllers for ventilation and a/c**	Compact controllers and ancillaries DDC compact controllers Auxiliary units Controller sets

→ PDS 43.030

NRT 101: Electronic room-temperature controller with time program

How energy efficiency is improved

ECO meter for display of instantaneous energy consumption and integrated time-switch for individual programming of presence and absence times.

Areas of application

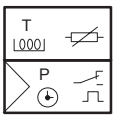
Individual single room, dwelling and zone control for activation of a thermal drive, electric heating system, cooling unit or to release a burner.

Properties

- Recording of room temperature with choice of integrated or external temperature detector
- Large LCD display and operation via buttons make it easy to program times and temperatures
- Modern design
- Weekly and annual switching program with 3 temperature levels
- Automatic changeover between summertime and wintertime

Technical description

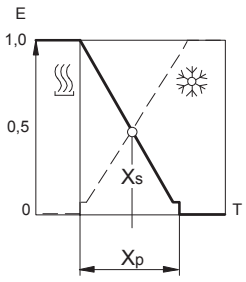
- Housing made of flame-retardant, pure white thermoplastic (RAL9010)
- 2-point or pulse-pause control
- Version with pilot clock output
- Hours run meter
- Suitable for fitting on walls or recessed junction boxes
- Electrical connection in base with screw terminals for wires up to 2,5 mm²
- Rear cable infeed
- Electronics in snap-on housing



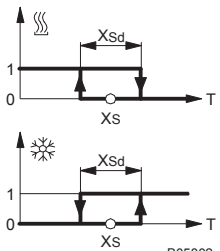
Y05253

Type	Control behaviour	Pilot timer	Voltage	Weight kg
NRT 101 F002	P, 2-pt.	no	2× 1,5 V	0.25
NRT 101 F012	P, 2-pt.	no	110...230 V~	0.27
NRT 101 F111	P, 2-pt.	yes	110...230 V~	0.28

Time-switch:			
1 weekly program	max. 42 switching commands	Accuracy	± 1 s/d at 20 °C
Min. switching interval	10 minutes	Back-up power supply	> 6 h (super cap, 20 °C after 10 hrs' charging)
1 calendar program	max. 6 switching commands		
Min. switching interval	1d	When batteries are being changed	> 5 min
		Parameters	non-volatile
Power supply F002	Two 1.5 V LR6 batteries 1)	Degree of protection	IP 30 (EN 60529)
F012, F111	± 15%, 50...60 Hz	Protection class	II (IEC 60730)
Power consumption	< 1 VA		
Setting range °C	8...38	Conformity	EN 12098 and CE
Switching rating	5(2) A, 24...250V~	EMC immunity	EN 61000-6-1, 2
F111	5(2) A, not pot.-free	EMC irradiation	EN 61000-6-3, 4
Switch rating of timer F111	5(2) A, 24...250V~	Safety	EN 60730-1
when low voltage	0,2 A, < 60 V	Quality	ISO 9001
As 2-point controller	switching diff. X_{Sd} = 0,4...8 K		
With P-behaviour	switching period 4...30 min	Wiring diagram	
P-band X_p	1...20 K	F002	A05259
min. pulse	30 s	F012	A05260
Control factor E	shown in 10 levels	F111	A08464
Direction of operation	heating or cooling		
Temperature levels	reduced/normal/comfort	Dimension drawing	M04773
Frost-protection temp.	8 °C (when heating is off)		
Overheating protection	38 °C (when cooling is off)	Fitting instructions	
Time constant	22 min	F002	MV 505409
Dead time	2 min	F012	MV 505412
		F111	MV 505644
Perm. ambient temp.	0...50 °C	Operating instructions 2)	
Perm. ambient humidity	5...80 %rh non-condensing	F002	BA 505601
		F012, F111	BA 505602



B06231



B05802

Accessories

-AXT . . . Thermal valve drive; see Section 55
-EGT . . . External temperature sensor Ni1000 (for F012 and F111); see Section 36
0303124 000* Recessed junction box

*) Dimension drawing or wiring diagram are available under the same number

1) Two alkali-manganese batteries: type LR6, AA, AM3 or Mignon (not included)
2) Supplied with each controller; in 5 languages (Ger., Fre., Eng., Ital., Span)

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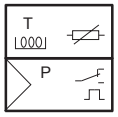
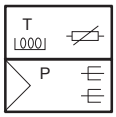
→ PDS 43.034

NRT 105: Electronic fan-coil controller



Y06755



Y06756

How energy efficiency is improved

ECO meter for displaying instantaneous energy consumption and digital input for switching between presence and absence.

Areas of application

Individual single room dwelling and zone temperature control in 2- or 4-pipe systems for heating, cooling or heating/cooling with automatic activation of valves (heating/cooling), as well as 3-stage fan coil.

Properties

- Recording of room temperature with choice of integrated or external temperature detector
- High level of operating convenience thanks to buttons on front and large LCD display
- Modern design

Technical description

- Housing made of flame-retardant, pure white thermoplastic (RAL9010)
- Input for c/o signal
- P-controller with pulse-pause or analogue (0...10 V) output
- 3-stage fan coil activation with parameterisable on/off points for individual stages
- Frost/overheating protection function
- Hours run meter
- Suitable for fitting on walls or recessed junction boxes
- Electrical connection in base with screw terminals for wires up to 2,5 mm²
- Rear cable infeed
- Electronics in snap-on housing

Typ	Range 1) °C	Control behaviour	Power	Weight [kg]
NRT 105 F011	8...37	P, quasi-continuous	110...230 V~	0.27
NRT 105 F061	8...37	P, continuous 0...10 V	24 V~	0.27

F011 (switched)		**F061** (continuous)	
Type of installation	2- and 4-pipe	Type of installation	4-pipe
Outputs for ventilator	relay, 3 step	Outputs for ventilator	relay, 3 step
Outputs for value	relay	Outputs for value	0...10 V, load > 4 kΩ, max. 2.5 mA
max. switch rating		max. switch rating	
Internal sensor (NTC)	2(1.6) A, 250 V~	Internal sensor (NTC)	2(1.6) A, 250 V~
External sensor (Ni1000)	5(3) A, 250 V~	External sensor (Ni1000)	5(3) A, 250 V~
Switching period	4...30 min		
Control factor	shown in 10 levels		
Minimum pulse	30 s		

Tolerance in power supply	± 15%; 50...60 Hz	Degree of protection	IP 30 (EN 60529)	
Power consumption	< 1 VA	Protection class	II (IEC 60730)	
Parameters	non-volatile			
P-band X_p	1...20 K	Conformity	EN 12098 and CE	
Dead zone N/R	0...10 K / 0...12 K	EMC immunity	EN 61000-6-1, 2	
Temperature levels	normal/reduced (N/R)	EMC irradiation	EN 61000-6-3, 4	
Anti-frost temperature	8 °C (heating OFF)	Safety	EN 60730-1	
Anti-overheat temperature	38 °C (cooling OFF)	Quality	ISO 9001	
Range shown, actual temp.	–8...+50 °C			
Time constant	22 min	Documentation:	**F011**	**F061**
Dead time	2 min	Wiring diagrams	A06646	A06647
Ambient temp.	0...50 °C	Dimension drawing	M04773	M04773
Ambient humidity	5...95 %rh non-condensing	Fitting instructions	MV 505484	MV 505489
		Operating instructions 2)	BA 505579	BA 505579

Accessories

-**AXT, AXM**	Valves with thermal or continuous drive; see Sections 55
-**EGT . . .**	External Ni1000 temperature sensor; see Section 36
-**ZDR . . .**	*Memotime* central time-switch; see Section 12
0303124 000*	Recessed junction box

*) Dimension drawing or wiring diagram are available under the same number

1) Depending on parameters P05, P08
2) Supplied with each controller; in five languages (Ger., Fre., Eng., Ital., Span.)

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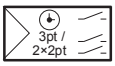
→ PDS 43.036

NRT 107: Air-conditioning controller

T09105



Y09639

How energy efficiency is improved

Analogue input for shifting setpoint depending on outside temperature and integrated time-switch for individual programming of changeover between normal operating mode and operation at reduced temperature.

Areas of application

Room temperature compensated control (heating, cooling, heating/cooling) of individual rooms in 2- or 4-pipe systems with activation of drives, pumps and fans.

Properties

- Detection of room temperature with choice of integrated or external temperature detector
- High level of operating convenience thanks to buttons on front and large LCD display
- Intuitive user interface
- Modern design
- Weekly and annual switching program with 3 temperature levels
- Automatic changeover between summertime and wintertime
- Selection of 8 basic controller models for different applications

Technical description

- Housing made of flame-retardant, pure white thermoplastic (RAL9010)
- Inputs for dew-point monitoring, c/o signal, shifting room temperature setpoint and for flow temperature
- Programmable input incl. for presence/absence detector, window contact, for fault indication and for cooling block
- Choice of P-, PI-control or P-PI cascade control with 2-point, pulse-pause or 3-point outputs
- Outputs for final control elements, pump and pilot clock
- Frost/overheating protection function, pump and valve anti-jamming function
- Suitable for fitting on walls or recessed junction boxes
- Electrical connection in base with screw terminals for wires up to 2.5 mm²
- Rear cable infeed
- Electronics in snap-on housing

Type	Setting range °C	Control characteristic	Power	Weight kg
NRT 107 F031	8...38	P, PI, P+PI	110...230 V~	0.28
NRT 107 F041	8...38	P, PI, P+PI	24 V~	0.28

Time-switch:			
1 weekly programme	max. 42 switch commands	Accuracy	± 1 s/d at 20°C
Shortest switching interval	10 min	Back-up power supply	> 8 h (super cap, 20 °C) (after 1 hour's charging)
1 calendar programme	max. 6 switch commands		
Shortest switching interval	1d	Parameters	captive

Tolerance in power supply	± 15%, 50...60 Hz		Time constant	
Power consumption	< 1,5 VA		Temp. sensor, internal	22 min
Outputs	1 relay, 2 triacs		Permissible ambient temp.	0...50°C
Switch rating	**F031**	**F041**	Ambient humidity	5...95 %rh
Triac [1] 0,3 [0,5] [2] A	230 V~	24 V~	Storage & transport temp.	–25...+65 °C
min. load	10 mA	40 mA	Degree of protection	IP 30 (EN 60529)
Relay 5(2) A	230 V~	50 V≅	Protection class	II (IEC 60730)
Inputs	1 binary, 2 analogue, 1 universal		Conformity	EN 12098 and CE
Binary input	switch current approx. 1 mA		EMC immunity	EN 61000-6-1, 2
Analogue inputs	2 Ni1000		EMC irradiation	EN 61000-6-3, 4
Universal input	binary or 0...10 V		Safety	EN 60730-1
PI-controller	P-band Xp = 2...100 K			
Integral action time	t_n = 15...6000 s		Documentation	**F031** **F041**
Valve running time	30...300 s		Wiring diagram	A08655 A08656
P-controller	Band Xp = 1...20 K		Dimension drawing	M04773 M04773
Period duration	4...30 minutes		Fitting instructions [3]	MV 505782 MV 505783
Operating modes	normal/reduced/off		Abridged operating instr. [3]	BA 505730 BA 505730
			Operating instructions	7 000986 7 000986

1) Corresponds to operation of 6 [8] AXT on the NRT 107 F031 and 3 [5] AXT on the NRT 107 F041
2) If internal room-temperature sensor is inactive
3) Supplied with every unit, in five languages (German, English, French, Italian and Spanish)

Accessories see next page >>>

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→ PDS 43.036

Accessories

-**AV..., AXM**	Motorised valve drive (3-point); see Sections 51 & 55
-**AXT**	Thermal valve drive (pulse-pause); see Section 55
-**EGT ...**	External temperature sensor, Ni1000; see Section 36
0303124 000*	Recessed junction box
0386273 001*	Plug-in power unit; input 230 V~; output 21 V~ (0.34 A); cable 1,8 m; IP 30

*) Dimension drawing or wiring diagram are available under the same number

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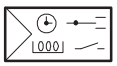
→ PDS 43.038

NRT 114: Electronic heating controller



Y01944

How energy efficiency is improved

Convenient, integrated weekly and annual time switch for programming the system with the option of choosing between 3 temperature levels, whose setpoint temperatures can be adjusted individually, and stand-by mode.

Areas of application

Weather-compensated flow temperature control and room temperature control of individual rooms with auxiliary fixed value control, e.g. for drinking water.

Properties

- Detection of room temperature with choice of integrated or external temperature detector
- High level of operating convenience thanks to buttons on front and large LCD display
- Intuitive user interface
- Modern design
- Weekly and annual switching program with 3 temperature levels
- Automatic changeover between summertime and wintertime
- Selection of 3 basic controller models for different applications

Technical description

- Housing made of flame-retardant, pure white thermoplastic (RAL9010)
- Inputs for outside temperature, flow temperature and room temperature or room user panel
- Programmable input incl. for presence/absence detector, window contact and for fault display
- PI-control with 3-point output signal
- Outputs for final control elements, pump and pilot clock
- Room temperature switching
- Min./max. limitation for flow and return temperature
- Frost/overheating protection function, pump and valve anti-jamming function
- Function heating (floor screed drying function)
- Suitable for fitting on walls or recessed junction boxes
- Electrical connection in base with screw terminals for wires up to 2,5 mm²
- Rear cable infeed
- Electronics in snap-on housing

Type	Setting range °C	Control characteristic	Power supply	Weight kg
NRT 114 F031	8...38	PI, P+PI	110...230 V~	0.28
NRT 114 F041	8...38	PI, P+PI	24 V~	0.28

Time-switch:			
1 weekly program	max. 42 switching commands	Accuracy	± 1 s/d at 20 °C
Min. switching interval	10 minutes	Back-up power supply	> 6 h (super cap, 20 °C) (after 1 hr's charging)
1 calendar program	max. 6 switching commands		
Min. switching interval	1 d	Parameters	non-volatile

Power-supply tolerance	± 15%, 50...60 Hz		Temp. of fixed-value control	
Power consumption	< 1.5 VA		Factory setting	60 °C
Outputs	1 relay, 2 triacs		Anti-frost temperature	3 °C (outside), 8 °C (room)
Switch rating	**F031**	**F041**	Time constant	
Triac 0,3 [0,5] A [1]	230 V~	24 V~	Temp. sensor, internal	22 min
Min. load	10 mA	40 mA		
Relay 5 (2) A	230 V~	≤ 50 V≅	Ambient temperature	0...50 °C
Inputs	1 binary, 3 analogue		Ambient humidity	5...95 %rh
binary input	switching current 1 mA			non-condensating
analogue inputs	2 Ni1000		Storage & transport temp.	–25...+65 °C
	1 Ni1000 or 0...10 V [2]		Degree of protection	IP 30 (EN 60529)
PI controller	P-band X_p = 2...100 K		Protection class	II (IEC 60730)
Integral action time	t_n = 15...6000 s			
P controller	P-band X_p = 1,0...20.0 K		Conformity	EN 12098 and CE
Running time of valve	30...300 s		EMC immunity	EN 61000-6-1, 2
Heating temperature levels	reduced/normal/comfort		EMC irradiation	EN 61000-6-3, 4
Factory setting	17 °C/20 °C/21 °C		Safety	EN 60730-1

1) If internal room-temperature sensor is inactive
2) 0...10 V is equivalent to temperature range –50...+50 °C

Documentation and accessories see next page >>>

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→ PDS 43.038

Documentation	F031	F041
Wiring diagram	A09446	A09447
Dimension drawing	M04773	M04773

	F031	F041
Fitting instructions 3)	MV 505760	MV 505761
Abridged op. instructions 3)	BA 505740	BA 505740
Operating instructions	7 000974	7 000974

Accessories

-**AV…, AXM**	Motorised valve drives (3-point) see Section 51 or 55
-EGS 52/15	Remote-control unit with analogue display see Section 44
-**EGT . . .**	External Ni1000 temperature sensor see Section 36
0303124 000*	Recessed junction box
0313346 001	Module 0-10 V for Ni1000; 24 V~; MV 505513; A08091, IP 00 (IP 42 when fitted in housing) 4 temp. ranges: –50...0 °C; –50...50 °C; 0...50 °C; 0...100 °C
0386273 001*	Plug-in power unit: input 230 V~; output 21 V~ (0,34 A); cable 1,8 m; IP 30

*) Dimension drawing or wiring diagram are available under the same number

3) Supplied with each controller in five languages (Ger., Fre., Eng., Ital., Span.)

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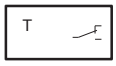
→ PDS 43.070

NRT 210, 220: Electronic room-temperature controller



Y01933

How energy efficiency is improved

Digital input for changing over between presence and absence mode, and setpoint adjuster on device itself.

Areas of application

Individual intelligent unitary control (heating, cooling, heating/cooling) e.g. of 2- or 4-pipe systems in hotels, residential and business premises with activation of thermal valve drives or switching of auxiliary heating or cooling units.

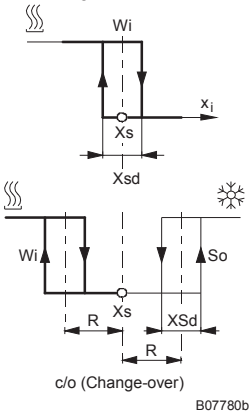
Properties

- Direct detection of room temperature using integrated temperature detector
- Adjustment of temperature setpoint with rotary knob
- Modern design
- NRT 210 for 2-pipe systems
- NRT 220 for 4-pipe systems

Technical description

- Housing made of flame-retardant, pure white thermoplastic (RAL9010)
- Inputs for c/o signal and for changeover between presence and absence mode
- 2-point control with relay outputs
- Versions with 24 V~ or 230 V~ power supply
- Suitable for fitting on walls or recessed junction boxes
- Electrical connection in base with screw terminals for wires up to 1,5 mm²
- Rear cable infeed
- Electronics in snap-on housing

NRT 210



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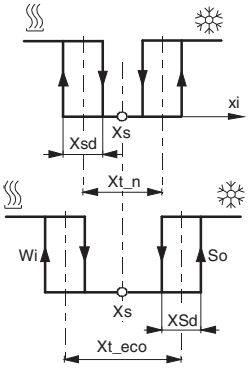
Type	Inputs	Remarks	Function	Power supply V	Weight kg
NRT 210 F011	2	N/R, c/o	H/C, 2-line	230 V~	0.1
NRT 210 F021	2	N/R, c/o	H/C, 2-line	24 V ~/=	0.1
NRT 220 F011	1	N/R	H-C, 4-line	230 V~	0.1
NRT 220 F021	1	N/R	H-C, 4-line	24 V ~/=	0.1

Power supply tolerance		± 15%, 50...60 Hz
Power consumption		< 1 VA
Switch rating	NRT 210	5(2) A; 1 Relay
	NRT 220	2(1.2) A; 2 Relay
Setting range		10...30 °C
Switching difference X_{Sd}		0,5 K
Control mode		2-Pkt
Setpoint shift (R)	NRT 210	± 3 K
Dead zone X_t	NRT 220	normal 1,5 K
		extended 7 K
Time constant		22 min
Dead time		2 min
Storage & transport temp.		–25...+65 °C

Permissible ambient temp.		0...50 °C
Ambient humidity		5...95 %rh
Degree of protection		IP 30 (EN 60529)
Protection class	230 V	II (IEC 60730)
	24 V	III (IEC 60730)
Conformity		EN 12098 and CE
EMC immunity		EN 61000-6-1, 2
EMC irradiation		EN 61000-6-3, 4
Safety		EN 60730-1
Quality		ISO 9001

Documentation:-		**F011**	**F021**
Wiring diagram	NRT 210	A07684	A07685
	NRT 220	A09548	A09549
Dimension drawing		M07635	M07635
Fitting instructions		MV 505523	MV 505523
Declaration of materials used		MD 43.070	MD 43.070

NRT 220



B09547

Accessories

-AXT . . .	Valves with thermal drives, see Sections 55
0303124 000*	Recessed junction box
0313347 001*	Intermediate cover plate in pure white, for various recessed junction boxes

*) Dimension drawing or wiring diagram are available under the same number

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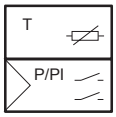
→ PDS 43.019

NRT 300: Electronic controller for air-conditioning (heating/cooling)



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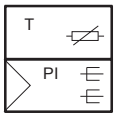

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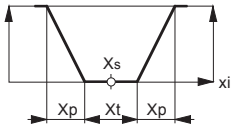
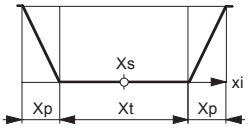


Sequence, dead zone normal



Sequence, dead zone extended
B08429

How energy efficiency is improved
Button on product itself for changeover between presence and absence.

Areas of application
Individual intelligent unitary control and zone control (heating, cooling, heating/cooling) e.g. in air-conditioning systems (2- or 4-pipe systems) of hotels, residential and business premises.

Properties
- Detection of room temperature with choice of integrated or external temperature detector
- LED display
- Savings on energy costs thanks to front-mounted presence/absence button, as well as rotary setting knob
- Modern design
- Air-conditioning controller for 2- and 4-pipe systems

Technical description
- Housing made of flame-retardant, pure white thermoplastic (RAL9010)
- Inputs for c/o signal, changeover between presence and absence, dew-point monitoring and setpoint adjustment
- Choice of P- or PI-control with 2-point, pulse-pause, 3-point or 0...10 V outputs
- SERVice level with adjustable control parameters
- Frost protection function
- Suitable for fitting on walls or recessed junction boxes
- Electrical connection in base with screw terminals for wires up to 1,0 mm²
- Rear cable infeed
- Electronics in snap-on housing

Type [2]	Operating mode	Change-over functions [1]	Output	Power supply	Weight kg
NRT 300 F041	sequence	Xt, c/o, DP	switched	24 V ~/=	0.1
NRT 300 F061	sequence	Xt, c/o, DP	continuous	24 V ~/=	0.1

Power supply	24 V~	±20%; 50...60 Hz
	24 V=	+20%; –15%
Power consumption		approx. 2.5 VA
Control parameters		non-volatile
Setpoint adjuster X_s		10...30°C
Proportional band X_p		2...20 K
Integral action time (as PI controller)		2...20 min or OFF
Period or drive's running time		0,5...20 min
Dead zone X_t	normal	0,4...5 K
	extended	X_t +8 K
Input command variable *w*		0...10 V, R_i = 90 kΩ
Influence of *w*		+1,6 K/V
Outputs:		
F041: contact rating		0.5 A (0.9 A with ext. sensor)
F061: y1, y2 with overflow		0...10 V, load > 5 kΩ > 11 V (load-dependent)

Sensor time constant for air:-	
in room (0,1 m/s)	8 min
in duct (0,5 m/s)	3 min
in duct (3 m/s)	1 min
Ambient temp.	0...50°C
Ambient humidity	5...95 %rh
Degree of protection	IP 30 (EN 60529)
Protection class	III (IEC 60730)
Conformity	EN 12098 and CE
EMC immunity	EN 61000-6-1, 2
EMC irradiation	EN 61000-6-3, 4
Quality	ISO 9001

	F041	F061
Wiring diagram	A08585	A08431
Dimension drawing	M07634	M07634
Fitting instructions	MV 505651	MV 505607

Variants as standard model except:-
Housing without adjuster, on request.
Housing with scale 10...30 °C, on request.

1) Xt = dead zone ON/OFF; c/o = summer/winter change-over; DP = dew point
2) NRT 300 F061 suitable for use as a master controller for up to ten NRT 300s:-
(Slope S = P-band XP. Shift starting point FF = setpoint XS. Operating mode: sequence)

Accessories see next page >>>

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→ PDS 43.019

Accessories

-AXT	Thermal valve drive, see Section 55
-AV…, AXM	Motorised valve drive, see Section 51, 55
-EGH 102	Dew-point monitor, see Section 34
-ZDR	Central time-switch (*Memotime*), see Section 12
0296724 000*	Sensor holder for wall mounting
0368139 000*	Rubber bung as sensor holder in air duct
0303124 000*	Recessed junction box (in conjunction with 313347 only)
0313214 001*	Fixing kit for sensor (holder, bronze spring, strap retainer, heat-conducting paste)
0313347 001*	Intermediate cover plate in pure white, for various recessed junction boxes
0313367 001*	Cable-type sensor (NTC) 1,5 m, for measurements in air duct, max. 70 °C, R_{25} = 10 kΩ
0313367 003*	Cable-type sensor (NTC) 3,0 m, for measurements in air duct, max. 70 °C, R_{25} = 10 kΩ
0313367 010*	Cable-type sensor (NTC) 10 m, for measurements in air duct, max. 70 °C, R_{25} = 10 kΩ
0313367 020*	Cable-type sensor (NTC) 20 m, for measurements in air duct, max. 70 °C, R_{25} = 10 kΩ
0313409 001*	Holder for sensor cartridge in air duct
0313414 001*	Bracket for wall mounting
0386273 001*	Plug-in power unit, input 230 V~, output 21 V~ (0,34 A), 1,8 m of cable, IP 30

*) Dimension drawing or wiring diagram are available under the same number

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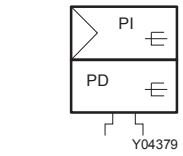
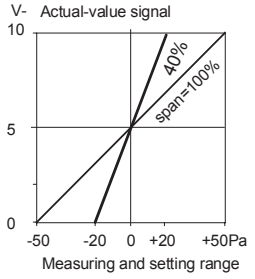
→ PDS 43.125

RLE 150: Room-pressure controller





How energy efficiency is improved

Efficient room pressure control in airtight rooms without pressure compensation openings. Reduces primary energy consumption.

Areas of application

Controlling over- or under-pressures in airtight rooms in laboratories or clean room areas.

Properties

- Static differential pressure detection with capacitive measured value acquisition
- Highly accurate measurement of room pressures in the range ±50 Pa
- Infinitely variable measuring range adjustment
- Available in calibrated version for pharmaceutical applications
- Optimal combination is with RLE 152 volume flow controller

Technical description

- Power supply 24 V~
- Adjustable measuring range
  - ±20...±50 Pa
- PI control algorithm (adjustable)
- Output signal 0...10 V for
  - Actual room pressure value
  - Volume flow controller command variable signal
- Input signal 0...10 V for
  - Remote setpoint adjustment

Type	Setting range span = 100% [1]	Voltage	Weight kg
RLE 150 F100	–50...+50 Pa	24 V~	0.8

Supply voltage 24 V~	+15/–20%, 50...60 Hz	Max. over-pressure	± 5 kPa
Power consumption	2 VA	Operating pressure p_{stat}	± 3 kPa
P-band	50...700%	Permissible ambient temp.	0...40 °C
Reset time	0,5...8 min	Permissible ambient humidity	< 90 %rh
Measuring span	40...100%Δp	Degree of protection	IP 44 (EN 60529)
Linearity	2% of 10 V–		
Remote setpoint adjustment	5 ± 5 V–, R_i = 100 kΩ	Wiring diagrams	A04330
Outputs [2]		Dimension drawing	M01104
Actual-value signal	5 ± 5 V–, load > 5 kΩ	Fitting instructions	MV 505118
Command signal w_3 A, w_3 B	5 ± 5 V–, load > 5 kΩ		

Accessories

0297867 001* Reference pressure container

*) Dimension drawing or wiring diagram are available under the same number

1) Using the adjuster, the span can be reduced to –20...+20 Pa.
2) Protected against short-circuits and over-voltage up to 24 V~.

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→ PDS 43.124

RLE 152: Volume-flow controller, continuous

How energy efficiency is improved

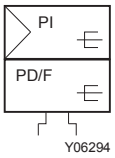
Enables demand-led volume flow control for the optimisation of energy consumption in ventilation systems.

Areas of application

Exhaust air control in laboratory fume cupboards, as well as supply and exhaust air control in laboratory rooms and clean rooms. Hospital wards or operating theatres.

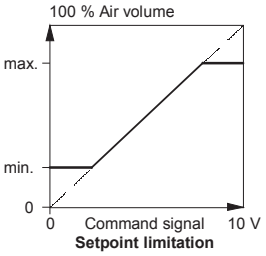
Properties

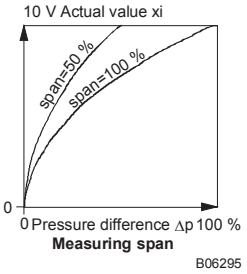
- Static differential pressure detection with capacitive measured value acquisition
- Can be used in areas with dirty or contaminated exhaust air
- Highly accurate measurement of differential pressures with measuring ranges up to 400 Pa
- Infinitely variable adjustment of measuring range for optimal adaptation to particular application
- Available in calibrated version for pharmaceutical applications
- Ideal combination is with RLE 150 F100 or NRT 300
- Fail-safe control in the case of critical applications



Technical description

- Power supply 24 V~
- Adjustable differential pressure measuring ranges
  - 1...100 Pa
  - 2...200 Pa
  - 4...400 Pa
- PI control algorithm
- Output signal 0...10 V for
  - Actual volume flow value
  - Damper drive output signal
- Input signal 0...10 V for
  - Remote setpoint adjustment
- Priority control via switch contacts
- Adjustable zero point





Type	Setpoint range: air volume % $\dot{V}$	Measuring range Δp (span = 100%) Pa	Weight kg
RLE 152 F001	10...100	1...100	0.8
RLE 152 F002	10...100	2...200	0.8
RLE 152 F003	10...100	4...400	0,8

Inputs:-			
Command variable w_1	0...10 V, R_i = 100 kΩ ≙ 0...100% $\dot{V}$	Limitation $\dot{V}_{min}$	0...100% $\dot{V}$ (variable)
		Limitation $\dot{V}_{max}$	0...100% $\dot{V}$ (variable)
Room–pressure signal w_3	5 ± 5 V, load ≥ 100 kΩ	Setpoint shift Δ $\dot{V}$ % [2]	–15…+15
Ext. contacts: Damper 'Closed'	24 V~, 5 mA		
Ext. contacts: Damper 'Open'[1]	24 V~, 5 mA		

Power supply 24 V~	+15/–20%, 50...60 Hz	Permissible pressure:-	
Power consumption	2 VA	operating range p_{stat}	0...3 kPa
Accuracy of root extraction	2% of 100% $\dot{V}$	low-pressure connectors	5 kPa
Measuring span	50...100 % Δp (variable)	Ambient temp.	0...40 °C
		Ambient humidity	< 90 %rh
Outputs:-		Degree of protection	IP 44 (EN 60529)
for actuator	0...10 V, load > 5 kΩ		
actual-value signal	0...10 V, load > 5 kΩ	Wiring diagram	A 10380
P-band	100...900%	Dimension drawing	M01104
Integral action time	2...20 s	Fitting instructions	MV 505936
Control action	A & B		

1) Damper 'Open' until $\dot{V}_{max}$ has been attained
2) Act as minimum limitation for w_3

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→ PDS 43.150

RXE 101: Air-volume adding unit

How energy efficiency is improved

For reliable and energy-efficient room air balancing in laboratories.

Areas of application

Room air balancing by the addition and weighting of up to 6 volume flows in laboratory rooms.

Properties

- Fast analogue addition of volume flows
- PI control loop for simultaneity control of laboratory fume cupboards
- Detection of up to 6 air loads such as laboratory fume cupboards or exhaust room air
- Alarming via potential-free contact
- Quick and easy commissioning without PC for use in small projects

Technical description

- Power supply 24 V~
- Output signal 0...10 V for
  - Supply air command variable signal
  - Simultaneity of laboratory fume cupboards
- Input signal 0...10 V for
  - 6x exhaust room air actual value

Type	Description	Power	Weight kg
RXE 101 F002	For the addition of 6 air volumes	24 V~	0.20

Power supply 24 V~	+15, –20%, 50...60 Hz	Control action	A
Power consumption	approx. 3 VA	Permissible ambient temp.	0...40 °C
Inputs	0...10 V, R_i = 100 kΩ ≙ 0...100% $\dot{V}$	Ambient humidity	< 90 %rh
		Degree of protection	IP 40 (EN 60529), with terminal cover
Output signal [1]	0...10 V, load < 5 kΩ ≙ 0...100% $\dot{V}$	Wiring diagram	A06629
Setpoint (limit $\dot{V}$)	1...10 V (variable)	Dimension drawing	M06630
Contacts, potential-free, alarm	48 V, 0.5 A	Fitting instructions	MV 505457

1) Protected against short circuits and excess voltage up to 24 V~

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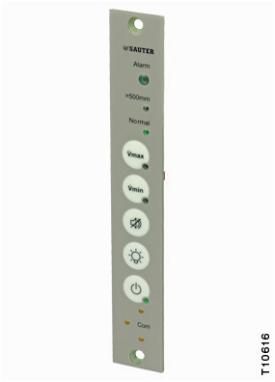
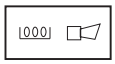
→ PDS 43.160

FCCP, FCIU: Monitor and indicator for fume cupboards





How energy efficiency is improved
For reliable, energy-efficient control of fume cupboards.

Areas of use
Monitoring of fume cupboards in accordance with EN 14175-2 with regard to correct operation and ventilation for providing laboratory personnel with maximum safety. Demand-led regulation of fume cupboards in accordance with EN 14175-6 in conjunction with the ASV 115 VAV compact controller.

Features
- Operating indicator with visual and acoustic alarms in accordance with EN 14175-2
- Air-volume control of fume cupboards, in conjunction with the ASV 115, in accordance with EN 14175-6
- A wide range of functions can be achieved using the FCIU interface unit, such as:
  - PI controller for controlling the air inflow speed via ASV 115
  - Contact input for signalling front sash opening of greater than 500 mm
  - Light at fume cupboard switched on and off
  - External alarm forwarding via hardware contact
  - Separate input for connecting a second SGU 100 front sash sensor
  - Facility for connecting up to two operating indicators for hatch-type fume cupboards
  - Battery back-up for alarms in the event of power failure
  - External day/night change-over function
  - Combined operation of SVU 100 flow sensor and SGU 100 front sash sensor is possible
  - Variable delay, or muting, for acoustic alarm
  - Can be used as a simple fume cupboard monitor without volume flow controller
- All adjustable parameters stored and retained in the event of a power failure
- Quick and easy start-up without a PC
- Parameterisation connection for easy access to the ASV 115
- Frame for surface- or flush-mounting of operating indicator

Technical description (FCCP)
- Up to five buttons for:
  - ON/OFF, light ON/OFF, V_{min}, V_{max}, mute
- LEDs for signalling:
  - Operation, V_{min}, V_{max}, normal operation, > 500 mm, alarm
- Power supply via FCIU
- Connecting sockets for ASV 115 parameterisation
- Front membrane made from chemical-resistant polyethylene
- Power cable, 2.9 m long, with D-Sub (HD15) connector

Technical description (FCCP)
- Power supply 24 V~
- Back-up battery 1600 mAh
- Connections for:
  - 1x ASV 115
  - 2x D-Sub (HD15) for FCCP
  - 2x SGU 100 front sash sensors or switches with gold-plated contacts
  - 1x SVU 100 flow sensor
- Outputs for:
  - Fume cupboard's actual value of air volume, 0 to 10 V
  - 1x relay: change-over, alarm for external low-voltage circuits
  - 1x relay: NO, 230 V for lighting
  - 1x output (0…10 V) for flow controller
- Inputs for:
  - 1x external volume flow setpoint, 0…10 V
  - 1x external actual value for air volume, 0…10 V
  - 2x contact inputs for front sash opening height > 500 mm
  - 1x contact input for front sash closed
  - 1x contact input for day/night change-over
  - 1x contact input for switching off the fume cupboard externally
  - 1x contact input for motion detector (reduced mode)
- External terminals for EIA-485 wiring

Technical data and accessories see next page >>>

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→ PDS 43.160

Model	Operation	Voltage
FCCP100F010	Alarm, mute	via FCIU
FCCP100F011	Alarm, mute, parameterisation access	via FCIU
FCCP100F020	Alarm, mute, on/off, light	via FCIU
FCCP100F021	Alarm, mute, on/off, light, parameterisation access	via FCIU
FCCP100F030	Alarm, mute, light, on/off, $\dot{V}_{min}$, $\dot{V}_{max}$	via FCIU
FCCP100F031	Alarm, mute, light, on/off, $\dot{V}_{min}$, $\dot{V}_{max}$ parameterisation access	via FCIU
FCIU100F021	Interface unit to FCCP, ASV 115 and fume cupboard sensors	24 V~
FCIU100F101	Interface unit to FCCP, ASV 115 and fume cupboard sensors, formation of max. selection or totalisation, external setpoint setting	24 V~

FCCP

Power supply	24 V~ ± 20% via FCIU 18…38 V=
Power consumption	3 VA
W x H x D	160 x 21.8 x 16
Protection class	III
Type of protection	IP 30 with EIA-485
(in installed condition)	IP 40 without RS485
Perm. ambient temperature	0 to 50° C
Perm. ambient humidity:	< 85% rh no condensation
Acoustic alarm	
Sound pressure level	80 dB (A)
Frequency	4 kHz
Alarm duration	60 s
Switch-on delay	5 s
Visual alarm	
Brightness	EN 842, punctiform
Beamwidth	>120°
Wiring diagram	A10493
Dimensioned drawing	M10481
Fitting instructions	P100000765
Material declaration	MD43.160

FCIU

Power supply	24 V~ ± 20%
Power consumption	3,5 VA incl. FCCP100
W x H x D	250 x 103 x 53
Protection class	II
Type of protection	IP 00
Perm. ambient temperature	0…50° C
Perm. ambient humidity:	< 85% rh
Inputs ($R_i \geq 100$ kΩ)	
Command signal $C_{q\text{-}ext}$	0…10 V
NO night	15 V=, 3 mA
NO CLOSE	15 V=, 3 mA
Air-flow sensor	0…10 V
End switch 500 mm Front sash 1	max. 15 V=, 3 mA
End switch closed Front sash 2	max. 15 V=, 3 mA
End switch 500 mm Front sash 1	max. 15 V=, 3 mA
Change-over day/night	Contact
Outputs	
Contact: alarm	Change-over switch (24 V~, 8 A)
Relay switching output: lighting	Normally open contact (250 V~, 8 A)
Feedback x_i	0…10 V, load > 5 kΩ
Connections for:	1x ASV 115 2x SLC (EIA-485) 2x FCCP (master, slave) 2x SGU100 1x SVU100
Wiring diagram	B11643
Dimension drawing	M11390
Fitting instructions	P100002330
Material declaration	MD43.160

Accessories

0430240 010* Surface-mounting kit, including frame and fixing parts
0430240 020* Flush-mounting kit, including frame and fixing parts
00430570 010* Back-up battery for alarms in the event of a power failure

*) Dimension drawing or wiring diagram are available under the same number

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→ PDS 43.91

NRTK300: Electronic air-conditioning controller (heating/cooling)

Areas of application

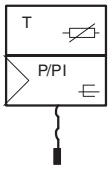
For fixed-value control (P and PI) in ventilation and air-conditioning systems.

Properties

- For integration into air ducting
- Output 0 - 10 V
- Input (change-over) for summer and winter change-over, or heating and cooling
- If used in combination with an NRT300 air-conditioning controller, also suitable for fixed-value/ schedule control

Technical description

- Lower section of housing made of black, glass-fibre-reinforced thermoplastic
- Upper section made of white thermoplastic
- Tube sensor Ø 12 mm
- Potentiometer for internal setpoint
- A red LED displays the output signal (luminosity proportional to signal)
- Two more LEDs show the operating status (red = heating, green = cooling)
- Internal DIP switch for switching off the temperature sensor when using an external sensor
- Black base with terminals for cable cross-section up to 1.5 mm^2
- Cable via stuffing box PG11
- Scope of supply: air-conditioning controller, mounting flange and fitting instructions



Type	Output V	Switching functions	Power	Weight kg
NRTK 300 F001	0 - 10 V-	P/PI, c/o, Tn and external setpoint	24 V ~	0.2

Power supply	24 V~	± 15%; 50 - 60 Hz	
Power consumption		2 VA	
Control parameters			
Setpoint adjustment X_s		0 - 30 °C	
Proportional band X_p		0.5 - 50 K	
Input change-over		Contact, NO	
External setpoint input		0…10 V-	
Integration time		2 or 20 min	
Output			
1 output		0…10 V-, 1 mA	

Storage and transport temperature	-40…+50 °C
Permissible ambient temperature	0…50 °C
Permissible ambient humidity	Max. 90 % rh
Degree of protection	IP 65 (EN 60529)
Protection class	III (IEC 60730)
CE conformity	EN 50081-1 EN 50082-1
Wiring diagram	A0NRT300
Dimension drawing	M0NRTK300
Fitting instructions	MV 2793 JAN 03

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Overview of types equitherm®

System / types:	Designation	Page
Equitherm		
EQJW 95	Heating controller with analogue operation	44.01
EQJW 125	Heating controller with digital user interface	44.02
EQJW 135	Heating controller for boiler control systems	44.04
EQJW 145	Heating controller for local and district heating	44.06
EQJW 245	Heating controller with two control loops, for local and district heating	44.08
Auxiliary units:		
EGS 52/15	Remote-control unit	44.10
STU 101	Electronic multiplier/converter for temperature data	44.11

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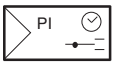
→ PDS 44.410

EQJW 95: Heating controller with analogue operation



Y02735

How energy efficiency is improved
Adjustable summer/winter heating limit for seasonal changeover of system, and digital input for switching the system off remotely.

Areas of application
Weather-compensated flow temperature control in all types of building.

Properties
- Easy to operate thanks to analogue user interface
- LED display
- Room temperature input by means of room temperaturesensor or room user panel
- Automatic changeover to summer or heating mode
- Manual mode
- Versions available with weekly or daily time switch

Technical description
- Housing 144 x 96 mm made of flame-retardant, pure white thermoplastic (RAL 9010)
- Inputs for Ni200 and Ni1000 sensors
- PI control
- Relay outputs for activation of final control elements and pumps
- SERVice level with adjustable control parameters
- Min./max. limitation of flow temperature
- Frost protection and pump anti-jamming function
- Room temperature switching
- Automatic switch-off to save energy
- Suitable for fitting on walls, in panels and on top-hat rails
- Electrical connection in base with screw terminals for wires up to 2.5 mm²

Type	Features	Power	Weight kg
EQJW 95 D F001	PI supply-temperature control, daily time-switch	230 V~	0.7
EQJW 95 W F001	PI supply-temperature control, weekly time-switch	230 V~	0.7

Power supply 230 V~	+10/–15%, 50…60 Hz
Power consumption	≤ 5 VA
Outputs	3 relays
Switch rating	
Relay: pump [1]	4 A, 250 V~, cos φ > 0,5
Relay: drive [2]	0,5 A, 250 V~, cos φ > 0,5
Inputs	3 analogue, 2 binary
Binary inputs	switching current approx. 1 mA
Analogue inputs	1 Ni1000 or remote control
	2 Ni200 or Ni1000
Control parameters	
Proportional band [3]	10 ... 90 K
Integral action time	2 min
Setting parameters	
Nominal room temp.	14...26 °C
Temperature set-back for reduced operation	0...–16 K
Max. limitation, supply	+30...+130 °C
Slope	0.2...3,0
Heating limit	+5...+25 °C
Proportional band	10...90 K
Cycle time	< 10 s
Frost-protection temp.	+3 °C

Analogue quartz daily or weekly time-switch	
Min. switching period (week)	2 hours
Min. switching period (day)	15 minutes
Running capacity	> 72 h
Accuracy	–1.5...+2.5 s/week
Ambient temperature	0...+50 °C
Storage temperature	–25 ... +65 °C
Ambient humidity	5...95 %rh without condensation
Degree of protection (when fitted in panels)	IP 40 (EN 60529)
Protection class	II (IEC 60730 - 1)
Conformity	EN 12098; CE
EMC immunity	EN 61000-6-1, 2
EMC irradiation	EN 61000-6-3, 4
Safety	EN 60730 - 1
Documentation	
Wiring diagram	A10173
Dimension drawing	M10174
Fitting instructions	MV 505869
Operating instructions [4]	BA 505871
Declaration on materials	MD 44.410

1) Start-up current max. 7 A, (1 s)
2) Low voltage not permissible
3) Applies to drives with a running time of 2 min. If faster drives are employed, increase the P-band accordingly!
4) Supplied with every controller, in 4 languages (Ger., Eng., Fre., Ital.)

Accessories see next page >>>

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→ PDS 44.410

Accessories	
-**EGS 52/15**	Remote control see Section 44
-**EGT . . .**	Temperature sensors see Section 36
-**AV…, AXM**	Motorised valve drive (3-point) see Section 51, 55
0220074 001	Adaptor plate for EQJW; replacement of type 41 C
0220074 002	Adaptor plate for EQJW; replacement of type 41 D

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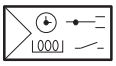
→ PDS 44.420

EQJW 125: Heating controller with digital user interface



How energy efficiency is improved
Integrated automatic switch-off for heating to save energy and convenient time-switch programming of system to suit individual requirements.

Areas of application
Weather-compensated flow temperature control in all types of building.

Properties
- Communicative heating controller
- High level of operating convenience thanks to modern operating concept (twist and press) and large LCD display
- Intuitive user interface
- Convenient weekly and annual switching program
- Automatic changeover between summertime and wintertime
- Room temperature input by means of room temperaturesensor or room user panel
- Automatic changeover to summer or heating mode
- Manual mode
- Alarming by SMS message

Technical description
- Housing 144 x 96 mm made of flame-retardant, pure white thermoplastic (RAL 9010)
- Ni1000 inputs for outside temperature, flow temperature and room temperature or room user panel
- Multiplication of outside temperature equipment with drive bus
- PI control
- Relay outputs for activation of final control elements and pumps
- Protected SERVice level with adjustable control parameters
- Room temperature switching
- Min./max. limitation of flow temperature
- Frost protection function, pump and valve anti-jamming function
- Function heating (floor drying function)
- Parameterisable interface for communication via RTU Modbus or proprietary drive bus
- Suitable for fitting on walls, in panels and on top-hat rails
- Electrical connection in base with screw terminals for wires up to 2.5 mm²

Type	Features	Power	Weight kg
EQJW 125 F001	PI supply-temperature control	230 V~	0.4

Power supply 230 V~	± 15%, 50…60 Hz	Digital time-switch for weekly/annual program	
Power consumption	approx. 2 VA	Running capacity	min. 24 h; typ. 48 h
Outputs	3 relays	Accuracy	< 1 s/day
Switch rating		Weekly switching program	
Relay: pump [1]	2 A, 250 V~, cos φ > 0,5	Number of switching commands	48 week
Relay: drive [2]	0.5 A, 250 V~, cos φ > 0,5	Min. switching period	10 min.
Inputs	3 analogue	Annual switching program	
Analogue inputs	2 Ni1000 1 Ni1000 or remote control	Number of switching commands	20
		Min. switching period	1 day
Control parameters		Ambient temperature	0...+50 °C
Proportional band	2...100 K	Storage temperature	–25...+65 °C
Integral action time	15...1000 s	Ambient humidity	5...95 %rh no-condensation
Temperature ranges		Degree of protection (when fitted in panels)	IP 40 (EN 60529)
Normal temperature	0...+40 °C	Protection class	II (IEC 60730 - 1)
Reduced temperature	0...+40 °C		
Supply temperature	0...+130 °C	Conformity	EN 12098; CE
Outside temperature	–50...+50 °C	EMC immunity	EN 61000-6-1, 2
		EMC irradiation	EN 61000-6-3, 4
Valve's running time	30...300 s	Safety	EN 60730 - 1
Cycle time	running time / 15		
Frost-protection temp.	+3 °C		
Communication			
Interface	RS485		
Protocol	MOD bus, device bus		

1) Start-up current max. 7 A, (1 s)
2) Low voltage not permissible

Documentation and accessories see next page >>>

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→ PDS 44.420

Documentation			
Wiring diagram	A10175	Abridged operating instructions [1]	BA 505872
Dimension drawing	M10176	Operating instructions	7 001029
Fitting instructions	MV 505870	Declaration of materials used	MD 44.420

Accessories

-**EGS 52/15**	Remote-control unit with analogue display see Section 44
-EDB 100	Remote-control unit with digital display
-**EGT . . .**	Temperature sensors see Section 36
-**AV…, AXM**	Motorised valve drive (3-point), see Section 51, 55
-**Modem**	Modems tested with EQJW 125 are available on request
0220074 001	Adaptor plate for EQJW; replacement of type 41 C
0220074 002	Adaptor plate for EQJW; replacement of type 41 D

1) Supplied with every controller, in 5 languages (Ger., Eng., Fre., Ital., Span.)

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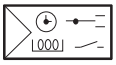
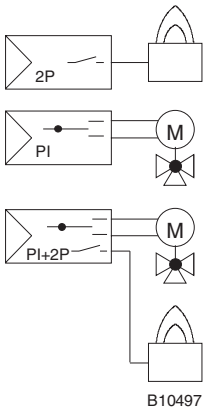
→ PDS 44.430

EQJW 135: Heating controller for boiler control systems





How energy efficiency is improved
Weather-compensated control of boiler temperature and integrated heating system automatic switch-off to save energy.

Areas of application
Weather-compensated boiler and/or flow temperature control, as well as drinking water preparation in buildings of all types.

Properties
- Communicative heating controller
- High level of operating convenience thanks to modern operating concept (twist and press) and large LCD display
- Intuitive user interface
- Convenient weekly and annual switching program
- Automatic changeover between summertime and wintertime
- Anti-legionella function
- Room temperature input by means of room temperaturesensor or room user panel
- Automatic changeover to summer or heating mode
- Manual mode
- Alarming by SMS message

Technical description
- Housing 144 x 96 mm made of flame-retardant, pure white thermoplastic (RAL 9010)
- Ni1000 inputs for outside, flow, boiler, drinking water and room temperature or room user panel
- PI control
- Relay outputs for activation of final control elements, pumps and releasing burner steps
- Additional multifunctional relay output
- Protected SERVice level with adjustable control parameters
- Log book
- Room temperature switching
- Min./max. limitation of flow temperature and return temperature maintenance
- Limitation of boiler temperature and boiler start-up relief function
- Frost protection function, pump and valve anti-jamming function
- Optimisation of switching on and off times for heating
- Function heating and screed curing (functions for drying floor screed)
- Parameterisable interface for communication via RTU Modbus or proprietary drive bus
- Suitable for fitting on walls, in panels and on top-hat rails
- Electrical connection in base with screw terminals for wires up to 2.5 mm²

Type	Features	Power	Weight kg
EQJW 135 F001	with DHW control	230 V~	0.4

Power supply 230 V~	± 15%, 50…60 Hz	Digital time-switch for weekly/annual programme	
Power consumption	approx. 1 VA	Running capacity	min. 24 h; typical 48 h
Outputs	6 relays	Accuracy	< 1 sec per day
Switch rating		Weekly switching programme:-	
Relay: pumps [1]	2 A, 250 V~, cos φ > 0,5	number of programmes	3
Relay: drive [2]	0.5 A, 250 V~, cos φ > 0,5	nbr. of switching commands	48 each
Relay: enable burner	0.5 A, 250 V~, cos φ > 0,5	min. switching period	10 min.
Relay: configurable [1] [2]	2 A, 250 V~, cos φ > 0,5	Annual switching programme:-	
Inputs	1 binary, 6 analogue	number of programmes	1 (for heater loops)
Binary input	switching current approx. 1 mA	nbr. of switching commands	20 each
Analogue inputs	5 Ni1000	min. switching period	1 day
	1 Ni1000 or remote-control unit	Ambient temperature	0...+50 °C
		Storage temperature	-25...+65 °C
Control characteristic		Ambient humidity	5...95 %rh non-condensing
Boiler temperature	2-point		
Flow temperature	PI control	Degree of protection (in panels)	IP 40 (EN 60529)
DHW temperature	2-point	Protection class	II (IEC 60730 - 1)
Control parameters			
P-band	2...100 K	Conformity	EN 12098; CE
Integral action time	15...1000 s	EMC immunity	EN 61000-6-1, 2
Switching difference, boiler	1…9 K	EMC irradiation	EN 61000-6-3, 4
Switching difference, DHW	1…19 K	Safety	EN 60730 - 1

1) Start-up current max. 7 A, (1 s)
2) Low voltage not permissible

For more technical data, documentation and accessories, see next page >>>

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→ PDS 44.430

Temperature ranges	
Normal temperature	0...+40 °C
Reduced temperature	0...+40 °C
Flow/return temperature	0...+130 °C
Boiler temperature	0...+130 °C
Outside temperature	–50...+50 °C
DHW temperature	+20…+90 °C
Valve's running time	30...300 s
Cycle time	Valve's running time/15
Frost-protection temp.	+3 °C
Communication	
Interface	RS485, similar to RS232
Protocol	MOD bus, device bus

Documentation

Wiring diagram	A10381
Dimension drawing	M10401
Fitting instructions	MV 505942
Abridged operating instr.[1)]	BA 505945
Operating instructions	7 001059
Declaration of materials used	MD 44.430

Accessories

-**EGS 52/15**	Remote-control unit with analogue user surface see Section 44
-**EDB 100**	Remote-control unit with digital user surface
-**EGT . . .**	Temperature sensors see Section 36
-**AV…, AXM**	Motorised actuators (3-point) see Sections 51, 55
-**Modem**	Modems tested with EQJW 135 are available on request

1) Supplied with every controller, in 5 languages (Ger., Eng., Fre., Ital. & Span.)

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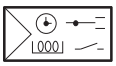
→ PDS 44.440

EQJW 145: Heating controller for local and district heating



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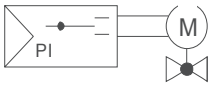

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How energy efficiency is improved
Convenient time program making it possible to adapt the system to individual user requirements and, if necessary, to switch it off temporarily.

Areas of application
Weather-compensated flow temperature control as well as drinking water preparation in combination with heat exchangers for all types of building.

Properties
- Communicative heating controller
- High level of operating convenience thanks to modern operating concept (twist and press) and large LCD display
- Intuitive user interface
- Convenient weekly and annual switching program
- Automatic changeover between summertime and wintertime
- Anti-legionella function
- Room temperature switching by means of room temperature sensor or room user panel
- Automatic changeover to summer or heating mode
- Manual mode
- Alarming by SMS message

Technical description
- Housing 144 x 96 mm made of flame-retardant, pure white thermoplastic (RAL 9010)
- Ni1000 inputs for outside, flow, drinking water, return and room temperature or room user panel
- PI control
- Relay outputs for activation of final control elements, pumps
- Additional multifunctional relay output
- Protected SERVice level with adjustable control parameters
- Log book
- Room temperature switching
- Min./max. limitation for flow temperature and max. limitation of return temperature
- Pulse input for measurement and limitation of flow rate or energy
- Frost protection function, pump and valve anti-jamming function
- Optimisation of switching on and off times for heating
- Function heating and screed curing (functions for drying floor screed)
- Parameterisable interface for communication via RTU Modbus or proprietary drive bus
- Suitable for fitting on walls, in panels and on top-hat rails
- Electrical connection in base with screw terminals for wires up to 2.5 mm²

Type	Features	Power	Weight (kg)
EQJW 145 F001	with DHW control	230 V~	0.4

Power supply 230 V~	± 15%, 50…60 Hz	Digital time-switch for weekly/annual programme	
Power consumption	approx. 1 VA	Running capacity	min. 24 h; typical 48 h
Outputs	6 relays	Accuracy	< 1 sec per day
Switch rating		Weekly switching programme:-	
Relay: pumps [1]	2 A, 250 V~, cos φ > 0,5	number of programmes	3
Relay: drive [2]	0,5 A, 250 V~, cos φ > 0,5	nbr. of switching commands	48 each
Relay: configurable [1] [2] [3]	2 A, 250 V~, cos φ > 0,5	min. switching period	10 min.
Inputs	1 binary, 6 analogue	Annual switching programme:-	
Pulse, binary input	switching current approx. 1 mA	number of programmes	1 (for heater loops)
Analogue inputs	5 Ni1000	nbr. of switching commands	20 each
	1 Ni1000 or remote-control unit	min. switching period	1 day
		Ambient temperature	0...+50 °C
Control characteristic		Storage temperature	-25...+65 °C
Flow temperature	PI control	Ambient humidity	5...95 %rh non-condensating
DHW temperature	2-point	Degree of protection (in panels)	IP 40 (EN 60529)
Control parameters		Protection class	II (IEC 60730 - 1)
P-band	2...100 K		
Integral action time	15...1000 s		
Switching difference, DHW	1…19 K	Conformity	EN 12098; CE

1) Start-up current max. 7 A, (1 s)
2) Low voltage not permissible
3) potential-free contact

For more technical data, documentation and accessories see next page >>>

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→ PDS 44.440

Temperature ranges		EMC immunity	EN 61000-6-1, 2
Normal temperature	0...+40 °C	EMC irradiation	EN 61000-6-3, 4
Reduced temperature	0...+40 °C	Safety	EN 60730 - 1
Flow/return temperature	0...+140 °C		
Outside temperature	–50...+50 °C	**Documentation**	
DHW temperature	+20…+90 °C	Wiring diagram	A10467
Valve's running time	30...300 s	Dimension drawing	M10401
Cycle time	Valve's running time/15	Fitting instructions	MV 506103
Frost-protection temp.	+3 °C	Abridged operating instr.[1)]	BA 508005
Communication		Operating instructions	7 010015
Interface	RS485, similar to RS232	Declaration on materials	MD 44.440
Protocol	MOD bus, device bus		

Accessories

-**EGS 52/15**	Remote-control unit with analogue user surface see Section 44
-**EDB 100**	Remote-control unit with digital user surface
-**EGT . . .**	Temperature sensors see Section 36
-**AV…, AXM**	Motorised actuators (3-point) see Sections 51, 55
-**Modem**	Modems tested with EQJW 145 are available on request

1) Supplied with every controller, in 5 languages (Ger., Eng., Fre., Ital. & Span.)

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→ PDS 44.461

EQJW 245: Heating controller with two control loops, for local/district heating

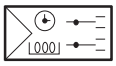
How energy efficiency is improved

Function for switching heating on and off at optimal times. Limitation of max. permissible temperatures for heating and drinking water.

Areas of application

Weather-compensated control of secondary flow temperature for heating control and drinking water preparation in combination with heat exchangers in buildings of all types.

Properties



Y01745

- Communicative heating controller
- High level of operating convenience thanks to front-mounted, modern operating concept (twist and press) and large LCD display
- Intuitive user interface
- Convenient weekly and annual switching program
- Automatic changeover between summertime and wintertime
- Anti-legionella function
- Room temperature switching by means of room temperature sensor or room user panel
- Automatic changeover to summer or heating mode
- Manual mode
- Alarming by SMS message

Technical description

- Housing 144 x 96 mm made of flame-retardant, pure white thermoplastic (RAL 9010)
- Ni1000 inputs for outside, flow, drinking water, return and room temperature or room user panel
- PI control
- Relay outputs for activation of final control elements and pumps
- Additional multifunctional relay output
- Protected SERVice level with adjustable control parameters
- Log book
- Room temperature switching
- Min./max. limitation for flow and return temperatures
- Pulse input for measurement and limitation of flow rate or energy
- Frost protection function, pump and valve anti-jamming function
- Optimisation of switching on and off times for individual heating circuits
- Function heating and screed curing (functions for drying floor screed)
- Parameterisable interface for communication via RTU Modbus or proprietary drive bus
- Suitable for fitting on walls, in panels and on top-hat rails
- Electrical connection in base with screw terminals for wires up to 2.5 mm²

Type	Features	Power	Weight (kg)
EQJW 245 F001	Two independent control loops	230 V~	0.4

Power supply 230 V~	± 15%, 50…60 Hz	Digital time-switch for weekly/annual programme	
Power consumption	approx. 1 VA	Running capacity	min. 24 h; typical 48 h
Outputs	8 relays	Accuracy	< 1 sec per day
Switch rating		Weekly switching programme:-	
Relay: pumps [1]	2 A, 250 V~, cos φ > 0,5	number of programmes	4
Relay: drive [2]	0,5 A, 250 V~, cos φ > 0,5	nbr. of switching commands	48 each
Relay: configurable [1] [2] [3]	2 A, 250 V~, cos φ > 0,5	min. switching period	10 min.
Inputs	1 binary, 8 analogue	Annual switching programme:-	
Pulse, binary input	switching current approx. 1 mA	number of programmes	1 (for heater loops)
Analogue inputs	6 Ni1000	nbr. of switching commands	20
	2 Ni1000 or remote-control unit	min. switching period	1 day
		Ambient temperature	0...+50 °C
Control characteristic		Storage temperature	-25...+65 °C
Flow temperature	PI control	Ambient humidity	5...95% rh
Drinking water temperature	2-point		non-condensating
Control parameters		Degree of protection (in panels)	IP 40 (EN 60529)
P-band	2...100 K	Protection class	II (IEC 60730 - 1)
Integral action time	15...1000 s		
Switching diff. drinking water	1…19 K	Conformity	EN 12098; CE

1) Start-up current max. 6 A, (1 s)
2) Low voltage not permissible
3) potential-free contact

For more technical data, documentation and accessories, see next page >>>

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→ PDS 44.461

Temperature ranges		EMC immunity	EN 61000-6-1, 2
Normal temperature	0...+40 °C	EMC irradiation	EN 61000-6-3, 4
Reduced temperature	0...+40 °C	Safety	EN 60730 - 1
Flow/return temperature	0...+140 °C		
Outside temperature	–50...+50 °C	**Documentation**	
Drinking water temperature	+20…+90 °C	Wiring diagram	A10486
Valve's running time	30...300 s	Dimension drawing	M10473
Cycle time	Valve's running time/15	Fitting instructions	P100001471
Frost-protection temp.	+3 °C	Abridged operating instr.[1)]	P100001472
Communication		Operating instructions	7 010042
Interface	RS485, similar to RS232	Declaration on materials	MD 44.461
Protocol	MOD bus, device bus		

Accessories

-**EGS 52/15**	Remote-control unit with analogue user surface see Section 44
-**EDB 100**	Remote-control unit with digital user surface on request
-**EGT . . .**	Temperature sensors see Section 36
-**AV…, AXM**	Motorised actuators (3-point) see Sections 51, 55
-**Modem**	Modems tested with EQJW 245 are available on request

1) Supplied with every controller, in 3 languages (Ger., Eng., Fre.)

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→ PDS 44.533

EGS: Remote-control unit

How energy efficiency is improved

Switch for easy changing over of operating mode or switching off the heating, and setpoint adjuster for individual adaptation of the setpoint temperature in the room.

Areas of application

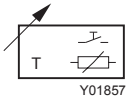
Remote operation of heating controller using equitherm® product range.

Properties

- Analogue user interface
- Switch for setting the operating mode on the heating controller
- Setting knob for remote correction of room temperature setpoint
- Detection of room temperature possible using integrated sensor

Technical description

- Housing 72 x 72 mm made of flame-retardant, pure white thermoplastic (RAL 9010)
- Switch for changing over between automatic, normal and stand-by mode
- Modification of room temperature setpoint by ±2.5 K
- Optional use of integrated Ni1000 temperature sensor
- Suitable for fitting on recessed or surface junction boxes (accessories)
- 2-conductor connection without polarity in base with screw terminals for wires up to 1.5 mm²
- Rear cable infeed



Type	Operating modes	Setpoint correction	Weight kg
EGS 52/15 F001	Normal/Off/Automatic	± 2,5 K	0.1

Type of signal	coded resistance values	Permissible ambient temp.	5...40 °C
		Degree of protection	IP 40 (EN 60529)
Temperature sensor	Ni1000 (DIN 43760)		
		Documentation	
Time characteristic in still air		Wiring diagram	A01859
Dead time	approx. 60 s	Dimension drawing	M369050
Time constant	approx. 600 s	Fitting instructions	MV 505453

Variants (otherwise as F001)

EGS 52/15 F902 Neutral variant: Housing without Sauter logo

Accessories

0297441 000* Intermediate cover plate in pure white for various recessed junction boxes.
0369573 001* Surface junction box in pure white
0303124 000* Recessed junction box (with 0297441 only)

*) Dimension drawing for accessory is available under the same number.

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→ PDS 44.535

STU: Electronic multiplier/converter for temperature data

Y07567

How energy efficiency is improved

Detection and multiplication of outside temperature for energy saving control of heating or ventilation systems.

Areas of application

In combination with controllers in the equitherm® and flexotron® ranges.

Properties

- Multiplication of temperature data for up to 4 controllers
- Converter for measuring points with Ni200 sensor on controller with Ni1000 inputs

Technical description

- Standard housing as per DIN 43880
- Choice of Ni200 or Ni1000 input
- Output 4x Ni1000 or 2 pairs with 2 x Ni1000
- Suitable for mounting on top-hat rail as per EN 60715
- Electrical connection with screw terminals for wires up to 2.5 mm²

Type	Characteristics	Voltage	Weight kg
STU 101 F001	Multiplier/converter (Ni200/Ni1000)	230 V~	0.25

Supply voltage 230 V~	± 15%, 50...60 Hz	Permissible ambient temp.	5...40 °C
Power consumption	approx. 3 VA	Degree of protection [2]	IP 20 (EN 60529)
Temp. measuring range	–50...150 °C	at front	IP 40
Measurement error		Protection class	II (IEC 60730)
at 0 °C	< ± 0,5 K, typically ± 0,1 K		
at –40...150 °C	< ± 1,1 K, typically ± 0,2 K	**Documentation**	
Inputs	2, for Ni200 or Ni1000	Wiring diagram	A02758
Outputs [1]	4, not electrically isolated	Dimension drawing	M368970
		Fitting instructions	MV 505142

Accessories

0368962 001 Terminal cover, complete

1) Simulation of Ni1000 temperature sensor; external measuring voltage of 0 to +2 V– at the outputs.
2) Applies to wall mounting, top-hat rail of standard height 7.5 mm and terminal cover.

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Overview of types

System / types:	Designation	Page
TRT 210...219	Electronic room thermostat	45.01
TRT 227, 228	Electronic room thermostat for heating and cooling	45.02
TXT 240	Remote-control mode selector	45.03
FXV 006	Electric distributor for control signals	45.04
FXV 106	Electric distributor for heating and cooling	45.05
LRT 210, 310	Electronic room thermostat with radio transmission	45.06
LXT 240, 250	Remote-control mode selector (radio-controlled)	45.07
LXT 340	Programmable radio-controlled remote-control unit	45.08
LET	Radio receiver for control signals	45.09

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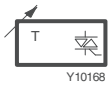
→ PDS 45.002

TRT 210…219: Electronic room thermostat



How energy efficiency is improved
Individual, optimised energy consumption thanks to precision setpoint control.

Areas of application
For intelligent unitary control (2-point) in residential and business premises with Triac output for up to 6 thermal drives.

Features
- Silent switching output
- Easy wiring
- Electronic room thermostat for 24 V or 230 V receiver
- NTC sensor
- LED display in case of heat demand
- With and without input for setback
- Depending on version, with remote sensor and 5 m cable
- Modern design with ergonomic setpoint rotary knob

Technical description
- Flat housing made of white thermoplastic (RAL 9016)
- Electrical connection in base with screw terminals
- Temperature range 5 - 30°C
- With automatic frost protection function 8°C
- Suitable for fitting on walls and recessed junction boxes

Type	Features	Power supply	Weight kg
TRT 210 F210	External setpoint adjuster	230 V~	0.1
TRT 210 F212	External setpoint adjuster	24 V~	0.1
TRT 217 F210	With input for set-back	230 V~	0.1
TRT 218 F210	Setpoint adjuster, internal	230 V~	0.1
TRT 218 F212	Setpoint adjuster, internal	24 V~	0.1
TRT 219 F212	With remote sensor, 5m	24 V~	0.1

Voltage tolerance	± 15% 50 Hz	Degree of protection	IP 20 (EN 60529)
Power consumption	< 1 VA	Protection class	
Switch rating	1.0 A	230 V	II (EN 60730)
		24 V	III (EN 60730)
Number of drives:			
230 V	max. 6 in parallel (230 V)	CE - Conformity	
24 V	max. 4 in parallel (24 V)	EMV-89/336/EWG	EN 61000-6-1
Setting range	5...30 °C		EN 61000-6-3
Switching difference	0.5 K	Nsp 73/23/EWG	EN 60730-1
Set-back TRT 217	3 °C		EN 60730-2-9
Sensor	NTC	**Documentation**	
		Wiring diagram	
Perm. ambient temperature	0...60 °C	TRT 210, 218 (230 V)	A10562
Perm. ambient humidity	5...80 %rh	TRT 210, 218 (24 V)	A10514b
		TRT 217	A10515a
		TRT 219	A10513a
		Dimension drawing	M10456
		Fitting instructions	MV 505989003

Accessories
AXT . . . For thermal actuators, see Section 55

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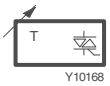
→ PDS 45.003

TRT 227, 228: Electronic room thermostat for heating and cooling



How energy efficiency is improved
Individual, optimised energy consumption thanks to precision setpoint control.

Areas of application
For intelligent unitary control (2-point) in residential and business premises with Triac output for up to 6 thermal drives.

Features
- Silent switching output
- Easy wiring
- NTC sensor
- LED display in case of heat demand
- With input for setback
- With input for heating/cooling changeover
- Modern design with ergonomic setpoint rotary knob

Technical description
- Flat housing made of white thermoplastic (RAL 9016)
- Electrical connection in base with screw terminals
- Temperature range 5 - 30°C
- With automatic frost protection function 8°C
- Suitable for fitting on walls and recessed junction boxes

Type	Features	Power supply	Weight kg
TRT 227 F210	External setpoint adjuster	230 V~	0.1
TRT 227 F212	External setpoint adjuster	24 V~	0.1
TRT 228 F210	Internal setpoint adjuster	230 V~	0.1
TRT 228 F212	Internal setpoint adjuster	24 V~	0.1

Voltage tolerance	± 10% 50 Hz	Degree of protection	IP 20 (EN 60529)
Power consumption	< 1 VA	Protection class	
Switch rating	1,0 A	230 V	II (EN 60730)
		24 V	III (EN 60730)
Number of drives:			
230 V	max. 6 in parallel (230 V)	CE - Conformity	
24 V	max. 4 in parallel (24 V)	EMV 2004/108/EG	EN 61000-6-1
Setting range	5...30 °C		EN 61000-6-3
Switching difference	0.5 K	Nsp 2006/95/EG	EN 60730-1
Set-back TRT 227	3 °C	(230 V versions only)	EN 60730-9
Sensor	NTC		
		Documentation	
Perm. ambient temperature	0...60 °C	Wiring diagram	A10477
Perm. ambient humidity	5...80 %rh		
		Dimension drawing	M10456
		Fitting instructions	P100001352

Accessories
AXT . . . For thermal actuators, see Section 55

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→ PDS 45.006

TXT 240: Remote-control mode selector

How energy efficiency is improved
Optimised energy consumption by means of operating mode selection.

Areas of application
The operating mode of the system can be controlled from a central point with the remote control, together with the FXV 106 electric distributor

Features
- For changing over automatic, comfort, reduced and cooling operating modes
- Central changeover point of a reduction or changeover to cooling
- Power supply 24 V~ and 230 V~
- Easy wiring
- Modern design with ergonomic setpoint rotary knob

Technical description
- Flat housing made of white thermoplastic (RAL 9016)
- Electrical connection in base with screw terminals
- Suitable for fitting on walls and recessed junction boxes

Y10171

Type	Features	Weight kg
For use with 230 V~ / 24V~ receivers		
TXT 240 F210	4 positions	0.1

Tolerance in power supply	± 20% 50 Hz	Degree of protection	IP 20 (EN 60529)
Power consumption	< 1 VA	Degree of protection 230 V	II (EN 60730)
Load permissible	for 15 TRT	24 V	III (EN 60730)
		CE - Conformity	
		EMV 2004/108/EG	EN 61000-6-1 EN 61000-6-3
		Nsp 2006/95/EG	EN 60730-1
		(230 V versions only)	EN 60730-9
Perm. ambient temperature	0...60 °C	Wiring diagram	A10476
Perm. ambient humidity	25...80 %rh	Dimension drawing	M10456
		Fitting instructions	P100001351

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→ PDS 45.020

FXV 006: Electric distributor for control signals

FXV
Y09318

How energy efficiency is improved
Distributor for intelligent, energy-efficient controls.

Areas of application
Distribution of power supply, output signals and a common time program for room devices and thermal drives.

Features
- Easy, clearly arranged installation of all devices
- For the easy wiring of up to 6 zones in a surface heating system
- Forwarding switching pulses from an intelligent unitary controller
- Individual transmission of time commands or night setback to appropriate actuators, max. 2 time channels
- Snap-on pump logic for activation of heating pumps

Technical description
- Upper and lower sections of housing made of self-extinguishing plastic, pure white (RAL 9010)
- Integrated 4 A fuse, varistor as over-voltage protection for actuators
- Electrical connection with screw terminals for wires up to 1.5 mm²
- Connections for up to 12 thermal drives

Type	Circuits or zones	Time channels or temp. decrease	Power	Weight kg
FXV 006 F001	6	2	24 V~ / 230 V~	0.2

Power supply	230 V~	± 15%, 50...60 Hz	Ambient temperature	–5...50 °C
	24 V~	± 15%, 50...60 Hz	Ambient humidity	< 95 %rh
			Degree of protection	IP 43 (EN 60529)
Number of drives		max. 12 pcs (2 per zone)		
Pump connection		max. 2.2 A	Wiring diagram	A09311
Distributor fuse		T 4.0A	Dimension drawing	M09310
			Fitting instructions	MV 505714

Accessories

0374381 001	Two brackets for fitting to top-hat rails EN 60715 35 × 7,5 or 35 × 15
0374382 001	Caps for cord grips, 9 pcs for cable of Ø 6...13 mm, and 6 pcs for Ø 3...7 mm
0374383 001	Insertable pump-logic module 24 V~; for demand-led pump operation
0374383 002	Insertable pump-logic module 230 V~; for demand-led pump operation

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→ PDS 45.021

FXV 106: Electric distributor for heating and cooling

FXV

Y09318

How energy efficiency is improved
Distributor for intelligent, energy-efficient controls.

Areas of application
Distribution of power supply, output signals and a common time program for room devices and thermal drives. Changing over from heating to cooling with an external command, e.g. from a heating pump.

Features
- Easy, clearly arranged installation of all devices
- For the easy wiring of up to 6 zones in a surface heating or cooling system
- Forwarding switching pulses from an intelligent unitary controller
- Individual transmission of time commands or night setback to appropriate actuators
- With external operating mode switch or heat pump command, the system can change over to cooling
- Direct connection of a dew-point monitor to prevent condensation
- Depending on version, with a cooling block for rooms that must not be cooled
- Snap-on pump logic for activation of heating pumps

Technical description
- Upper and lower sections of housing made of self-extinguishing plastic, pure white (RAL 9010)
- Integrated 4 A fuse
- Electrical connection with screw terminals for wires up to 1.5 mm²
- Connections for up to 12 thermal drives
- Output for heating/cooling and dew-point monitoring module with potential-free contacts as accessory

Type	Circuits or zones	Time channels or temp. decrease	Cooling lock	Power	Weight kg
FXV 106 F100	6	1	-	230 V~	0.2
FXV 106 F101	6	1	-	24 V~	0.2
FXV 106 F102	6	1	✔	230 V~	0.2
FXV 106 F112	6	1	✔	24 V~	0.2

Power supply	230 V~ ± 20%, 50...60 Hz	Connection diagram	
	24 V~ ± 20%, 50...60 Hz	FXV 106 F100	A10478
		FXV 106 F101	A10479
Number of drives	max. 12 pcs (2 per zone)	FXV 106 F102	A10480
Pump connection	max. 2.2 A	FXV 106 F112	A10481
Distributor fuse	T 4.0 A	Dimension drawing	M11384
		Fitting instructions	
Ambient temperature	-5...50 °C	FXV 106 F100	P100002010
Ambient humidity	< 95% rh	FXV 106 F101	P100002011
	without condensation	FXV 106 F102	P100002012
Degree of protection	IP 43 (EN 60529)	FXV 106 F112	P100002013

Accessories
0010240 001 Cord grips, 10 cable ties and 10 mounting bases for cable ties
0374383 001 Plug-in pump-logic module 24 V~; for demand-led pump operation
0374383 002 Plug-in pump-logic module 230 V~; for demand-led pump operation
0550420 001 Plug-in module, 230 V~, for connecting a dew-point monitor EGH 102
0550420 002 Plug-in module, 24 V~, for connecting a dew-point monitor EGH 102
0550420 010 Plug-in change-over-module, 230 V~, for potential free output heating/cooling (for F100 only)
0550420 011 Plug-in change-over-module, 24 V~, for potential free output heating/cooling (for F101 only)

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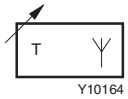
→ PDS 45.001

LRT 210, 310: Electronic room thermostat with radio transmission



How energy efficiency is improved
Individual, optimised energy consumption thanks to precision setpoint control.

Areas of application
For intelligent unitary control, 2-point or quasi-continuous, in residential and business premises with wireless data transfer.

Features
- Room thermostat with radio transmission for 230 V or 24 V receivers
- Transmission frequency 868.3 Hz, range in open areas: approx. 300 m
- Easy addressing and control with push-buttons
- NTC sensor
- LED display for data transmission function and low battery warning
- Modern design with ergonomic setpoint rotary knob

Technical description
- Flat housing made of white thermoplastic (RAL 9016)
- Temperature range 5 - 30°C
- With frost protection function 8°C
- Suitable for fitting on walls and recessed junction boxes

Type	Temperature range °C	Weight kg
For use with 230 V~ receivers		
LRT 210R F210	5…30	0.110
For use with 24 V~ receivers		
LRT 310R F012	5…30	0.110

Setting range	5...30 °C	Degree of protection	IP 20 (EN 60529)
Setting accuracy	±0,5 °C	Protection class	III (EN 60730)
Sensor	NTC		
Transmission frequency	868,3 MHz	CE - Conformity	
Transmission capacity	50 µW	R&TTE 1999/5/EC	EN 300220-1
Range [1]	approx. 50 m		EN 300220-3
Data transmission	every 1...10 minutes		
Power supply	2 batteries LR03 [2]	Dimension drawing	M10456
Battery life	approx. 3 years	Fitting instructions	MV 505955003
Perm. ambient temperature	0...60 °C		
Perm. ambient humidity	25…80 %rh		

1) In normal buildings, depending on the ambient conditions
2) Included in delivery

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→ PDS 45.004

LXT 240, 250: Remote-control mode selector (radio-controlled)

How energy efficiency is improved
Central activation of frost protection and eco operating modes for combined energy saving.

Areas of application
Using the wireless remote-control unit, you can control the operating mode of one or more zones from a central point.

Features
- Wireless remote-control mode selector can be used with 24 V~ receivers
- For changing over automatic, comfort, reduced, frost protection and cooling operating modes
- Transmission frequency 868.3 Hz, range in open areas: approx. 300 m
- Easy addressing and control with push-buttons
- LED display for data transmission function and low battery warning
- Modern design with ergonomic setpoint rotary knob

Technical description
- Flat housing made of white thermoplastic (RAL 9016)
- Operating modes 4 stage: automatic, comfort, reduced and frost protection
- Operating modes 5 stage: automatic, comfort, reduced, frost protection and cooling mode
- Suitable for fitting on walls and recessed junction boxes

Type	Features	Weight kg
LXT 240R F012	4 positions	0.1
LXT 250R F012 1)	5 positions	0.1

Transmission frequency	868,3 MHz	Degree of protection	IP 20 (EN 60529)
Transmission power	50 µW	Protection class	III (EN 60730)
Range 2)	approx. 50 m		
Data transmission	every 1...10 minutes	CE - Conformity	
Power supply	2 batteries LR03 3)	R&TTE 1999/5/CE	EN 300220-1
Battery life	approx. 3 years		EN 300220-3
Perm. ambient temperature	0...60 °C		
Perm. ambient humidity	25...80 %rh without condensation	Dimension drawing	M10456
		Fitting instructions	MV 505990003

1) Should be used only if the heating/cooling module (accessory no. 0313872 001) is employed in the LET radio receiver.
2) In normal buildings, depending on the ambient conditions
3) Included in delivery

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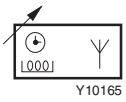
→ PDS 45.005

LXT 340: Programmable radio-controlled remote-control unit



How energy efficiency is improved
Wireless activation of all operating modes for individual energy saving.

Areas of application
With the programmable radio remote control, you can control the operating mode of up to four different zones from a central point.

Features
- Wireless remote-control mode selector can be used with 24 V~ receivers
- For changing over automatic, comfort, reduced, frost protection and cooling operating modes
- Transmission frequency 868.3 Hz, range in open areas: approx. 300 m
- Easy addressing and control with push-buttons
- Time program with hourly, daily and holiday functions
- Copy function of time program
- Easy and intuitive programming
- Modern design with push-buttons

Technical description
- Grey plastic housing with LCD displays
- Indicates hours/minutes, temperature, control status, time zones and low battery warning
- Holiday function for up to 99 days' absence
- With wall holder and table stand

Type	Features	Weight kg
LXT 340R F002	5 positions, 4 zones	0.1

Transmission frequency	868.3 MHz	Degree of protection	IP 20 (EN 60529)
Transmission power	50 µW	Protection class	III (EN 60730)
Range of transmission 2)	approx. 50 m	CE - Conformity	
Data transfer	1...10 minutes	R&TTE 1999/5/EC	EN 300220-1
Power supply	3 alkali batteries LR03 4)		EN 300220-3
Battery life	approx. 2 years	**Documentation**	
		Dimension drawing	M10471
Permissible ambient temp.	0...40 °C	Fitting instructions 3)	MV 506099003
Ambient humidity	5...80 %rh	Operating instructions	(see MV506099)

1) As indicator only (5…30 °C)
2) In normal buildings, depending on the ambient conditions
3) Supplied with each unit, in four languages (German, English, French and Italian)
4) Included in delivery

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→ PDS 45.011

LET 210…380: Radio receiver for control signals

Y10167

How energy efficiency is improved

Fused, intelligent solution for adaptive, optimal use of energy.

Areas of application

As a receiver station for radio signals from LRT room thermostats and LXT mode selector radio remote control, as an intelligent unitary controller for each duct and for activation of thermal drives. The switching pulses of the radio thermostats can be assigned individually to particular ducts.

Features

- Intelligent radio receiver with data storage for heating/cooling in 24 V~ version
- Radio receiver for heating in 230 V~ version
- Reception frequency 868.3 Hz
- With 2 LEDs per duct for visualisation and confirmation of duct allocation
- With emergency function if signal reception fails
- Individual configuration for each duct
- Integrated pump logic for 230 V~ input and potential-free output contact
- Heating/cooling accessory with connection for dew-point monitor

Technical description

- Housing pure white (RAL 9010), versions in 4 to 8 ducts
- Single duct version in standard plastic housing
- Control of thermostat signals with red LED
- Control of radio remote control with green LED
- Max. 2 drives/duct

Type	Characteristics	Housing	Voltage	Weight kg
LET 210R F200	1 channel	Standard white	230 V~	0.135
LET 240R F200	4 channels	RAL 9010	230 V~	0.550
LET 260R F200	6 channels	RAL 9010	230 V~	0.550
LET 340R F102	4 channels	RAL 9010	24 V~	0.530
LET 360R F102	6 channels	RAL 9010	24 V~	0.530
LET 380R F102	8 channels	RAL 9010	24 V~	0.530

Power supply		Ambient temperature	0…60°C
230 V Single- / Multichannel	230 V~ ± 15%	Ambient humidity	5…80 %rH
24 V Multichannel	24 V~ ± 20%		(without condensation)
Power consumption		Degree of protection	
230 V Singlechannel	max. 35 VA	Singlechannel [3]	IP 55 (EN 60529)
24 V / 230 V Multichannel	max. 48 VA	Multichannel	IP 42 (EN 60529)
		Protection class	
Number of drives [2]	max. 2 per channel	230 V~	II (EN 60730)
		24 V~	III (EN 60730)
max. Contact rating	2 A / 24 V	Wiring diagram	
	1 A / 230 V	Singlechannel	A10393
	(Fuse ratings)	Multichannel	A10389 / A10397
		Dimensional drawing	M10421 / M10424
Pump connection	230 V~, max. 2,2 A	Fitting instructions	
Frequency	868.3 MHz	230 V	MV 505916003
Range [1]	approx. 50 m	24 V	MV 505957003

Accessories

0313872 001* Heating/cooling module with contact output (24 V versions only)
0374381 001 Two mounting clips, for installation on top-hat rail, EN 60715
0374382 001 Cord grip, 9 pcs. for cable ø6...13 mm and 6 pcs. for cable ø3...7 mm
0386501 001 Power supply unit, 230 V primary/24 V secondary, 50 VA for up to 20 thermal actuators for supplying power to the 24 V versions
0386501 002 Power supply unit, 230 V primary/24 V secondary, 20 VA for up to 8 thermal actuators for supplying power to the 24 V versions

*) Dimension drawing and wiring diagram are available under the same number

1) Depends on ambient conditions
2) Depends on transformer power
3) In the housing

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Overview of types flexotron®

System / types:	Designation	Page
Flexotron 2000		
ERA 610	Electronic two-point (on/off) temperature controller	46.01
EXR 101, 102	Switching units	46.02
EXR 400	Selecting unit	46.03
EXR 500	Sequence amplifier	46.04
EXR 560	Measuring amplifier	46.05
Flexotron 300		
RDT 100	Electronic controller for ventilation and air-conditioning	46.06
RDB 300	Operating unit for RDT 300	46.07
RDT 300	Electronic controller for ventilation and air-conditioning	46.08
Flexotron 700		
RDT 708	Controller for ventilation and air-conditioning	46.09
RDT 711	Controller for ventilation and air-conditioning, with advanced functionality	46.11
RDT 724	Controller for ventilation and air-conditioning, for universal use	46.13
Flexotron 100		
ERA 10, 20	PI fixed-value controller	46.15
ERA 30	Cascade fixed-value P- and PI-controller	46.16
Auxiliary units:		
EXPR	Positioner	46.17
EXMT, EXMU	Digital indicator unit	46.18
XPES	Setpoint potentiometer	46.19
EXG	Active potentiometer	46.20
ESL	Electronic power control unit	46.21
Controller with compact station		
	Controller sets	46.91

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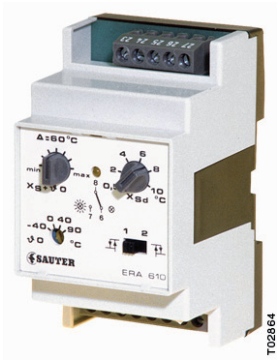
→ PDS 46.886

ERA 610: Electronic two-point (on/off) temperature controller



How energy efficiency is improved

Analogue user interface for easy and optimal adaptation of control parameters and setpoint to suit the system or user requirements.

Areas of application

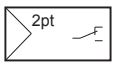
Two-point temperature control, as well as execution of general switching and alarm functions in combination with Ni1000 temperature sensor.

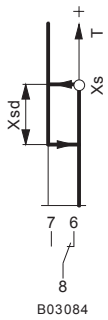
Features

- Easy to operate thanks to analogue user interface
- LED display for indication of switching status
- Setting options for setpoint, switching difference, direction of travel and start of range

Technical description

- Standard housing as per DIN 43880 made of flame-retardant thermoplastic
- Analogue input Ni1000 and 0 - 10 V
- Potential-free relay contact with RC wiring as digital output
- 0 - 10 V output for measured value multiplication
- Suitable for mounting on top-hat rail as per EN 60715
- Electrical connection with screw terminals for wires up to 2.5 mm²





Type	Start of range T_0 °C	Setting range ΔT [1] K	Voltage	Weight kg
ERA 610 F001	–40, 0, 40, 90	0...60	230 V~	0.22

Power supply	+15, –20%, 50...60 Hz	Permissible ambient temp	0...40 °C
Power consumption	approx. 3,5 VA	Degree of protection	IP 20 (EN 60529)
Contact rating	6 (2) A, 250 V~	frontal	IP 40
min. switching voltage	24 V		
Actual-value input	0...10 V, R_i = 20 kΩ	Wiring diagram	A02903
	Ni1000	Dimension drawing	M368975
Actual-value-signal output	0...10 V, load > 2.5 kΩ	Fitting instructions	MV 505092
Switching time-lag	approx. 1 s		
Switching difference X_{Sd}	0.5...10 K		

Accessories

0368961 001 Terminal cover, protection class II as per IEC 60730

1) Setpoint $X_S = T_0 + \Delta T$

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→ PDS 46.887

EXR 101, 102: Switching units

Y03350

How energy efficiency is improved

Switching outputs for the activation of a two-stage fan control. With this you can, for example, retrofit a system with a ventilation control if needed.

Areas of application

Switching and alarm function in various applications.

Features

- Easy to operate thanks to analogue user interface
- LED display for indication of switching status
- Setting options for setpoint and switching difference

Technical description

- Standard housing as per DIN 43880 made of flame-retardant thermoplastic
- Analogue input 0 - 10 V or 4 - 20 mA
- 1 potential-free relay contact per switch position
- Suitable for mounting on top-hat rail as per EN 60715
- Electrical connection with screw terminals for wires up to 2.5 mm²

Type	Features	Voltage	Weight kg
EXR 101 F001	1-stage switching unit	24 V~	0.13
EXR 102 F001	2-stage switching unit	24 V~	0.22

Input	0(2)...10 V, R_i = 30 kΩ [1]	Setting ranges	
or	0(4)...20 mA, R_i = 50 Ω [2]	Setpoint X_{S1}, X_{S2}	0...10 V, 0...20 mA
Output relay	4(1)A, 250 V~	Switching difference	0.4...10 V, 0.8...20 mA

Power supply 24 V~	± 20%, 50...60 Hz		**EXR 101**	**EXR 102**
Power consumption	approx. 3 VA	Wiring diagram	A03210	A03211
Permissible ambient temp.	0...40 °C	Dimension drawing	M368975	M368970
Degree of protection	IP 20 (EN 60529)	Fitting instructions	MV 505084	MV 505085
frontal	IP 40			

Accessories

0368961 001 Terminal cover for EXR 101; attains protection class II as per IEC 60730
0368962 001 Terminal cover for EXR 102; attains protection class II as per IEC 60730

1) Protected against excess voltage up to 20 V–
2) Protected against excess current up to 40 mA

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→ PDS 46.896

EXR 400: Selecting unit

Y03181

How energy efficiency is improved

You can select minimum or maximum from several signals (e.g. heating demand). The transmission of this signal ensures that a system is working optimised to requirements.

Areas of application

Selection of minimum or maximum from 2 to 4 input signals (0 - 10 V) for measuring values and positioning signals.

Features

- Sliding switch for simple configuration of product
- Min./max. selection from up to 4 input signals

Technical description

- Standard housing as per DIN 43880 made of flame-retardant thermoplastic
- Analogue inputs 0 -10 V
- Analogue output 0 -10 V
- Suitable for mounting on top-hat rail as per EN 60715
- Electrical connection with screw terminals for wires up to 2.5 mm²

Type	Features	Input/output	Voltage	Weight kg
EXR 400 F001	min./max. selection	0...10 V	24 V~	0.3

Power supply 24 V~	± 20%, 50...60 Hz	Permissible ambient temp.	0...40 °C
Power consumption	approx. 5 VA	Degree of protection	IP 20 (EN 60529)
		at front	IP 40
4 inputs [1]	0...10 V, R_i = 33 kΩ		
1 output [1]	0...10 V, load > 2 kΩ limited to 10.7 V	Wiring diagram	A00813
		Dimension drawing	M368975
		Fitting instructions	MV 505155

Accessories

0368961 001 Terminal cover (Protection class II as per IEC 60730)

[1] Inputs and outputs are protected against short circuits and over-voltage up to 24 V~.

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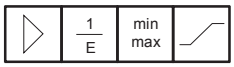
→ PDS 46.897

EXR 500: Sequence amplifier



Y03346

How energy efficiency is improved

You can select minimum or maximum from several signals (e.g. heating demand). As an option, the signal can be limited in terms of maximum and minimum value. The transmission of this signal ensures that a system is working optimised to requirements.

Areas of application

Processing, e.g. amplification, inversion and min./max. limitation of current and voltage signals.

Features

- Easy to operate thanks to analogue user interface
- LED display for indication of switching status
- Setting options for start of range and span
- Depending on the connected load, the output automatically switches to the current or voltage signal

Technical description

- Standard housing as per DIN 43880 made of flame-retardant thermoplastic
- Analogue inputs 0 -10 V or 4 - 20 mA
- Output 0 - 10 V or 4 - 20 mA
- Setting direction of travel and selection of a min. or max. limitation using sliding switch
- Suitable for mounting on top-hat rail as per EN 60715
- Electrical connection with screw terminals for wires up to 2.5 mm²

Type	Features	Voltage	Weight kg
EXR 500 F001	amplification, selection, limitation, inversion	24 V~	0.19

Input	0(2)...10 V, R_i = 30 kΩ	Starting point U_0	0...10V, 0...20 mA
or	0(4)...20 mA, R_i = 50 Ω	Control span ΔU	1...10V, 2...20 mA
external inversion	via normally-open contacts	Min. limitation B_{min}	0...11V, 0...22 mA
Output signal[1)]	0(2)...10V, load > 500 Ω	Min. limitation B_{max}	0...11V, 0...22 mA
Power supply 24 V~	+15, –20%, 50...60 Hz	Permissible ambient temp.	0...40 °C
Power consumption	approx. 3 VA	Wiring diagram	A03282
Degree of protection	IP 20 (EN 60529)	Dimension drawing	M368970
at front	IP 40	Fitting instructions	MV 505491

Accessories

0368962 001 Terminal cover, provides protection class II as per IEC 60730

1) At a load of < 500 Ω, the unit changes over automatically to 0...20 mA or 4...20 mA.
Output is protected against short circuits and over-voltage up to 24 V~.

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→ PDS 46.898

EXR 560: Measuring amplifier

How energy efficiency is improved

Conversion of a passive signal (e.g. outside temperature) into an active signal so it is better suited to multiplication and therefore several controllers can be made available for the energy-saving operation of the particular systems (e.g. for summer compensation).

Areas of application

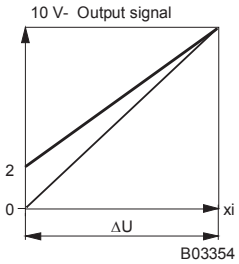
Amplification and inversion of actual value and control deviation signals of products in the flexotron® and equitherm® ranges.

Features

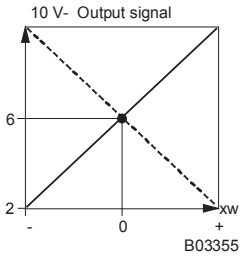
- Setting options for start of range and span
- Optional inversion of output signal
- Depending on the connected load, the output automatically switches to current or voltage signal

Technical description

- Light-grey 140 x 65 mm housing made of thermoplastic
- Analogue input Ni200, 6.2 mV/K, 0.5 V/K or 0.6 V/K
- Output 0 -10 V, 4 - 20 mA or 6.2 mV/K
- Suitable for wall mounting
- Electrical connection with screw terminals for wires up to 2.5 mm²



Type	Features	Voltage	Weigh kg
EXR 560 F001	amplification, inversion	230 V~	0.24



Inputs:		**Setting ranges**:	
Temperature sensor	Ni200	Starting point U_o	
Potentiometric transmitter	130 Ω (max. 2000 Ω)	Ni200, x_i and x_w	–30...30 °C
Actual-value signal x_i	6.2 mV/K, R_i = 200 kΩ	Potentiometric transmitter	0...30%
Control deviation x_w	6.2 mV/K, R_i = 200 kΩ	Control range ΔU	
	0.5 V/K, R_i = 25 kΩ	Ni200, x_i and x_w	30...150 °C/10...50 °C
	0.6 V/K, R_i = 30 kΩ	Potentiometric transmitter	30...150%/10...50%
Output signal [1] actual value	0(2)...10 V, load > 500 Ω 6.2 mV/°C, load > 500 kΩ	Direction of operation	1 or 2
Power supply 230 V~	+15, –20%, 50...60 Hz	Degree of protection	IP 00 (EN 60529)
Power consumption	approx. 4 VA	Wiring diagram	A03324
		Dimension drawing	M290250
Permissible ambient temp.	0...40 °C	Fitting instructions	MV 505492

Accessories

0368230 000* Light-grey housing of thermoplastic for wall mounting, four cable inlets for Pg 11, with pins. Degree of protection IP 54 (with cable screw fitting); protection class II.

*) Dimension drawing or wiring diagram are available under the same number

1) At a load of < 500 Ω, the unit changes over automatically to 0...20 mA or 4...20 mA.
Output is protected against short circuits and over-voltage up to 24 V~.

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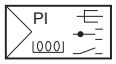
→ PDS 46.100

RDT 100: Electronic controller for ventilation and air-conditioning



How energy efficiency is improved

Highest level of flexibility as regards adaptation of the controller to the particular system and therefore a guarantee of extremely efficient operation.

Areas of application

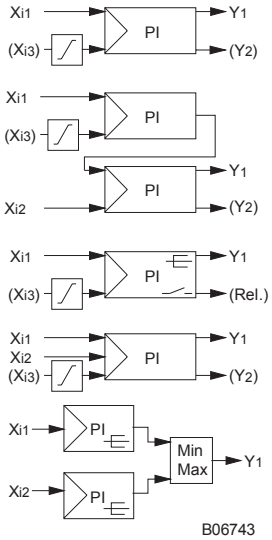
Monitoring and control of temperature, humidity, pressure and flow rate in ventilation and air-conditioning applications.

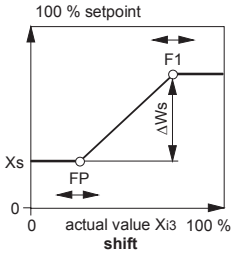
Features

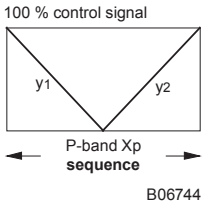
- Clearly laid out operating unit with large LCD display and generously proportioned keypad
- 35 controller models
- Plug-in memory for copying and documenting system parameters
- Fast commissioning thanks to preset parameters
- Sealable sliding switch for selection of operating mode

Technical description

- Housing 144 x 96 mm made of flame-retardant, pure white thermoplastic (RAL 9010)
- 4 universal inputs and 1 digital input
- P, PI, cascade and differential control
- 3 continuous outputs and 2 relay outputs (2-point or 3-point)
- Reset, sequencing and limiting functions
- Suitable for fitting on walls, in panels and on top-hat rails
- Electrical connection in base with screw terminals for wires up to 2.5 mm²







Type [1]	Range °C	Control modes	Voltage	Weight kg
RDT 100 F001	–30...150	P, PI, 2pt, 3pt	230 V~	0.67
RDT 100 F002	–30...150	P, PI, 2pt, 3pt	24 V~	0.54

Models					
Structure of controller	1 output continuous	Sequence contin.-contin	Sequence contin.-2pt	1 output 2pt	1 output PI (3pt)
1 fixed-value controller:	**0**	**1**	**15**	**20**	**30**
with command	**2**	**3**	**16**	**22**	**31**
2 fixed-value controller:	**12**	**–**	**–**	**21**	**–**
with common actual value	**13**	**–**	**–**	**27**	**–**
with y = min/max selection	**14**	**–**	**–**	**–**	**–**
1 controller with command	**–**	**–**	**–**	**23**	**–**
with common command	**–**	**–**	**–**	**24**	**–**
common actual value; once with command	**–**	**–**	**–**	**25**	**–**
common acttual value; common command	**–**	**–**	**–**	**28**	**–**
1 cascade controller:	**4**	**5**	**17**	**–**	**32**
with command	**6**	**7**	**18**	**–**	**33**
1 differential controller:	**8**	**9**	**–**	**29**	**34**
with command	**10**	**11**	**–**	**26**	**35**

Ranges (depends on transmitter)	Temperature °C or K	Percentage %	Rel. humidity %rh	Abs. humidity g/kg	Enthalpy kJ/kg	no units
Setpoint X_s	–30...150 °C	0...100	0...100	0.0...20	0...100	–4999...4999
P-band	0,1...250 K	0,1...1000	0,1...100	0,1...100	0,1...100	10...4999

4 universal inputs [2]		1 binary input [2]	Threshold –6 V
Temperature	Ni1000 (DIN 43760)		
Voltage	0(2)...10 V; R_i = 100 kΩ	Outputs	
	0...1 V, R_i = 500 kΩ	2 continuous	0(2)...10 V, load > 5 kΩ
Current	0(4)...20 mA, R_i = 50 Ω	1 continuous	0...10 V, load > 5 kΩ
Potentiometer	2 kΩ (min.1 kΩ)	2 relays	5(2) A, 250 V~

1) Operating instructions; since several languages are available, please order as an accessory.
2) Protected against short-circuiting and over-voltage up to 24 V ac. Current input max 70 mA.

For more technical specifications, documentation and accessories, see next page >>>

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→ PDS 46.100

Power supply	230 V~	+10/-15%; 50...60Hz	Degree of protection		IP 40 (EN 60529)
	24 V~	± 20%; 50...60 Hz	Protection class F001	230V	II (IEC 60730)
			F002	24V	III (IEC 60730)
Power consumption		2,5 VA			
P-band X_p		0,1....250 K	Wiring diagram		A06368
Integral action time T_n		0....9990 s	Dimension drawing		M368900
Switching difference X_{Sd}		0,1...180 K	Fitting instructions		MV 505379
Cycle		1 s	Operating instructions		7000835 (Part 1)
Permissible ambient temp.		0...45 °C	Commissioning		7000836 (Part 2)
Ambient humidity		5...95 %rh	Abridged oper. instructions		BA 505380

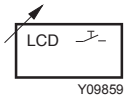
Accessories

0369739 . . .	Operating instructions (Part 1, Part 2 and Abridged operating instructions) German 001, French 002, English 003, Italian 004
0369746 001	Cover plate for the whole front; of transparent thermoplastic; sealable
0226187 002*	Plug-in dummy for memory slot
0226187 003*	Plug-in memory for Flexotron

*) Dimension drawing or wiring diagram are available under the same number

→PDS 46.103

RDB: Operating unit for RDT 300



How energy efficiency is improved
Modification of the room setpoint temperature and operating mode of the system.

Areas of application
Remote control of RDT 300 controller.

Features
- High level of operating convenience thanks to LCD display and easy push-button operation
- Attractive design
- Modification of setpoints, operating mode and changeover between absence/presence
- Display of system status and outside temperature
- Time display and setting of RDT 300

Technical description
- Housing 76 x 76 mm made of flame-retardant, pure white thermoplastic (RAL 9010)
- Suitable for fitting on recessed junction boxes
- 4-conductor connection in base with screw terminals for wires up to 1.0 mm²
- Rear cable inlet

Type	Description	Power supply	Weight kg
RDB 300 F001	Remote-control unit	via RDT 300	0.1

Permissible ambient temp.	0...45 °C	Wiring diagram	A09891
Permissible ambient humidity	< 85% rh	Dimension drawing	M07634
Degree of protection	IP 30	Fitting instructions	MV 505800
Protection class	III	Operating instructions	BA 505793

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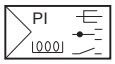
→ PDS 46.102

RDT 300: Electronic controller for ventilation and air-conditioning



How energy efficiency is improved
Top quality algorithm for generation of c/o signal for changeover between heating and cooling mode, and therefore ensuring energy saving operation of the system.

Areas of application
Weather-compensated flow temperature control in 2- and 4-pipe systems for heating/cooling. Activation of intelligent unitary controllers.

Features
- Clearly-laid-out operating unit with large LCD display and generously proportioned keypad
- 6 controller models
- Plug-in memory for copying and documenting system parameters
- Fast commissioning thanks to preset parameters
- Room user panel with display available as accessory
- Weekly and annual switching program
- Automatic summertime/wintertime changeover
- Sealable sliding switch for selection of operating mode

Technical description
- Housing 144 x 96 mm made of flame-retardant, pure white thermoplastic (RAL 9010)
- 4 universal inputs and 2 analogue inputs
- 2 independent PI controllers
- 3 continuous outputs and 6 relay outputs
- Reset, sequencing and limiting functions, as well as alarm and time functions
- Suitable for fitting on walls, in panels and on top-hat rails
- Electrical connection in base with screw terminals for wires up to 2.5 mm²

Type [1]	Setting range °C	Control modes	Power supply	Weight kg
RDT 300 F001	–30...150	P, PI	230 V~	0.67

Ranges (depending on transmitter)	Temperature °C or K	Percentage %	Rel. humidity %rh	Abs. humidity g/kg	Enthalpy kJ/kg	No unit of measurement
Setpoint X_S	–30...150 °C	0...100	0...100	0.0...20	0...100	–4999...4999
P-band	0.1...180 K	0.1...200	0.1...100	0.1...100	0.1...100	10...4999

4 universal inputs [3]		2 analogue inputs	
Temperature	Ni1000 (DIN 43760)	2× temperature [2] [3]	Ni1000 (DIN 43760)
Voltage	0(2)...10 V; R_i = 100 kΩ		
	0...1 V, R_i = 500 kΩ	Outputs [3]	
Current	0(4)...20 mA, R_i = 50 Ω	3 continuous	0(2)...10 V, load > 5 kΩ
Potentiometer	2 kΩ (min.1 kΩ)	4 relays	5(2) A, 250 V~
		2 relays	5(2) A, 24/250 V~

Power supply 230 V~	+10/–15%; 50...60 Hz	Degree of protection	IP 30 (EN 60529)
Power consumption	5 VA	Protection class F001 230V	II (IEC 60730)
P-band X_p	0,1....180 K		
Integral action time T_n	0....9990 s	Wiring diagram	A09432
		Dimension drawing	M368900
Cycle time	1 s	Fitting instructions	MV 505711
Permissible ambient temp.	0...45 °C	Operating instructions	
Ambient humidity	5...80% rh	For end users	7000927 (Part 1)
	non-condensing	Commissioning	7000928 (Part 2)

Accessories

RDB 300	Remote-control unit see Section 46
0313516 . . .	Additional operating instructions (7000927 and 7000928) German 001, French 002, English 003, Italian 004.
0369746 001	Cover plate for the whole front; of transparent thermoplastic; sealable
0226187 002*	Plug-in dummy for memory slot
0226187 003*	Plug-in memory for *flexotron*

*) Dimension drawing or wiring diagram are available under the same number

1) Since several languages are available, please order the operating instructions as an accessory.
2) Can also be used as a binary input (gold contacts).
3) Protected against short-circuiting and excess voltage up to 24 V a.c. Current input for max 70 mA.

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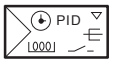
→ PDS 46.201

RDT 708: Controller for ventilation/air-conditioning, for compact systems

T10612



Y02899

How energy efficiency is improved
Input for outside temperature for summer adjustment and free outside cooling available.

Areas of application
Activation of final control elements for heating and cooling register, as well as dampers for heat or cold recovery, especially suitable for compact systems.

Features
- 2-line plain text display with backlighting
- Easy operator guidance with 4 buttons
- 4 different basic models for continuous supply air and cascade control
- Expansion level with PLC functionality
- Weekly and annual switching program with automatic summertime/wintertime changeover
- Manual mode
- Option of connecting various setpoint adjusters
- PC software for parameterisation

Technical description
- Housing made of flame-retardant, black thermoplastic
- 4 analogue inputs Ni1000 or 0 - 10 V
- Multiplication of measured values
- PID control
- 3 analogue outputs (0 - 10 V) and 1 relay output
- Protected SERVice level with adjustable control parameters
- Sequencing, limiting and reset functions
- Free outside cooling
- Suitable for mounting on top-hat rail as per EN 60715
- Electrical connection with screw terminals for wires up to 1.5 mm²

Type	Features	Power supply	Weight kg
RDT 708 F002	SA-temperature control	24 V~	0.29

Supply voltage	24 V~	± 20%, 50…60 Hz
	24 V=	-10…+30%
Power consumption		approx. 5 VA
Outputs		1 digital, 3 analogue
Digital output[1)]		4 A, 230 V~, cosφ > 0.6
Analogue outputs		0…10 V dc, 5 mA short-circuit protected
Inputs		4 analogue
Analogue inputs		4 Ni1000, 0…10 V, Room control unit or setpoint adjuster
Input impedance		approx. 15 kΩ (for 0…10 V=)
Parameters, main controller		
Proportional band		0…100 K
Integral action time		0…999 s
Parameters, aux. controller		
Proportional band		0…100 K
Integral action time		0…999 s
Derivative action time		0.0…99.9 s
Temperature ranges		
Normal temperature		-50,0…300°C
Reduced temperature		-50,0…300°C
Setpoint, actual value, aux. controller		-50,0…300°C
Cycle time		1 s

Digital time-switch for daily, weekly and Calendar switching programmes	
Running capacity	min. 24 h
Accuracy	< 2.5 s/day @ 25°C
Daily switching prog.:	
Switching commands	6
Min. switching period	15 minutes
Weekly switching prog.:	
Switching commands	6 per day
Min. switching period	15 minutes
Calendar switching prog.:	
Switching commands	12
Min. switching period	1 day
Ambient temp.	0…50°C
Storage temp.	-20…60°C
Ambient humidity	5…95%rh non-condensating
Degree of protection	IP20 [2)] (EN 60529)
Protection class	II (IEC 60730-1)
EMC immunity	EN 50082-2
EMC irradiation	EN 50081-1
Documentation	
Wiring diagram	A10484
Dimension drawing	M10474
Fitting instructions	P100001528
Operating instructions	P100002034
Manual	7 010047
Declaration on materials	MD 46.201

1) Potential-free contacts
2) When fitted

Accessories see next page >>>

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→ PDS 46.201

Accessories	
- RAB700	Room operating unit, see Section 46
- STU101F001	Multiplier/Converter for measured temperature data, see Section 44
- XPES F001	Setpoint potentiometer, see Section 46
- EXG 100 F001	Active potentiometer, see Section 46
- EGT . . .	Temperature sensor, see Section 36
- AV . , AS .	Electric drives, see Section 51
0313991 001	USB adaptor for access to the RDT 708 via PC

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→ PDS 46.205

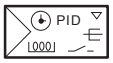
RDT 711: Controller for ventilation/air-conditioning with advanced functionality

How energy efficiency is improved

Free outside cooling with adjustable parameters. Inputs are provided for connecting room user panels for modification of the setpoint or operating mode and for setpoint adjusters.

Areas of application

A number of relay outputs for the activation of a fan, pump or actuator.
Analogue outputs for the activation of final control elements for heating and cooling register, as well as dampers for heat and cold recovery.



Y02899

Features

- 2-line plain text display with backlighting
- Easy operator guidance with 4 buttons
- 4 different basic models for continuous supply air and cascade control
- Expansion level with PLC functionality
- Weekly and annual switching program with automatic summertime/wintertime changeover
- Manual mode
- Option of connecting various setpoint adjusters
- PC software for parameterisation

Technical description

- Housing made of flame-retardant, black thermoplastic
- 4 analogue inputs Ni1000 or 0 - 10 V and 2 digital inputs
- Multiplication of measured values
- PID control
- 3 analogue outputs (0 - 10 V) and 2 relay outputs
- Protected SERVice level with adjustable control parameters
- Sequencing, limiting and reset functions
- Free outside cooling
- Frost protection function
- Suitable for mounting on top-hat rail as per EN 60715
- Electrical connection with screw terminals for wires up to 1.5 mm²

Type	Features	Power supply	Weight kg
RDT 711 F002	SA-temperature control	24 V~/=	0.30

Supply voltage	24 V~	± 20%, 50…60 Hz	
	24 V=	-10…+30%	
Power consumption		approx. 5 VA	
Outputs		2 digital, 3 analogue	
Digital outputs [1]		4 A, 230 V~, cosφ > 0.6	
Analogue outputs		0…10 V dc, 5 mA short-circuit protected	
Inputs		2 digital, 4 analogue	
Digital inputs		switching current approx. 5 mA	
Analogue inputs		4 Ni1000, 0…10 V, room control unit or setpoint adjuster	
Input impedance		approx. 15 kΩ (for 0…10 V=)	
Parameters, main controller			
Proportional band		0…100 K	
Integral action time		0…999 s	
Parameters, aux. controller			
Proportional band		0…100 K	
Integral action time		0…999 s	
Derivative action time		0.0…99.9 s	
Temperature ranges			
Normal temperature		-50,0…300°C	
Reduced temperature		-50,0…300°C	
given/actual value, aux. ctrlr.		-50,0…300°C	
Cycle time		1 s	

Digital time-switch for daily, weekly and calendar switching programmes	
Back-up capacity	min. 24 h
Accuracy	< 2.5 s/day @ 25°C
Daily switching prog.	
Switching commands	6
Min. switching period	15 minutes
Weekly switching prog.	
Switching commands	6 per day
Calendar switching prog.	
Switching commands	12
min. switching period	1 day
Ambient temp.	0…50°C
Storage temp.	-20…60 °C
Ambient humidity	5…95%rh non-condensating
Degree of protection	IP20 [2] (EN 60529)
Protection class	II (IEC 60730 - 1)
EMC immunity	EN 50082-2
EMC irradiation	EN 50081-1
Safety	EN 60730-1
Documentation	
Wiring diagram	A10485
Dimension drawing	M10475
Fitting instructions	P100001972
Operating instructions	P100002033
Manual	7 010047
Declaration on materials	MD 46.201

1) Potential-free contacts
2) When fitted

Accessories see next page >>>

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→ PDS 46.205

Accessories	
- RAB 700	Room operating unit, see Section 46
- STU101F001	Multiplier/Converter for measured temperature data, see Section 44
- XPES F001	Setpoint-potentiometer, see Section 46
- EXG 100 F001	Active potentiometer, see Section 46
- EGT . . .	Temperature sensor, see Section 36
- AV . , AS .	Electric drives, see Section 51
0313991 001	USB adaptor for access to the RDT 711 via PC

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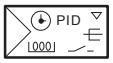
→ PDS 46.210

RDT 724: Controller for ventilation and air-conditioning, for universal use

T10557



Y02899

How energy efficiency is improved

Option of communication with a management level or other devices at automation level via an open protocol for the exchange of data for energy-efficient operation of the system.

Areas of application

Universal use in ventilation, air-conditioning and heating systems or in similar applications.

Features

- Communicative ventilation and air-conditioning controller
- 2-line plain text display with backlighting
- Easy operator guidance with 4 buttons
- 18 different basic models for continuous supply air and cascade control
- Expansion level with PLC functionality
- Weekly and annual switching program with automatic summertime/wintertime changeover
- Manual mode
- Option of connecting various setpoint adjusters
- PC software for parameterisation

Technical description

- Housing made of flame-retardant, black thermoplastic
- 8 analogue inputs Ni1000 or 0 - 10 V and 4 digital inputs
- Multiplication of measured values
- PID control
- 6 analogue outputs (0 - 10 V) and 6 relay outputs
- Protected SERVice level with adjustable control parameters
- Sequencing, limiting and reset functions, as well as measuring and time functions
- Free outside cooling and energy recovery
- Frost protection function and c/o input
- Communication via Modbus RTU, can be parameterised as master or slave
- Suitable for mounting on top-hat rail as per EN 60715
- Electrical connection with plug terminals for wires up to 2.5 mm²

Type	Features	Power supply	Weight (kg)
RDT 724 F002	For ventilation & air-conditioning	24 V~/=	0.42
RDT 724 F022	For vent. & air-cond., with communication	24 V~/=	0.42

Power supply	24 V~	± 20%, 50…60 Hz	
	24 V=	-10…+30%	
Power consumption		approx. 5VA	
Outputs		6 digital, 6 analogue	
Digital outputs[1]		4 A, 230 V~, cosφ > 0.6	
Analogue outputs		0…10 V dc, 5 mA short-circuit protected	
Inputs		4 digital, 8 analogue	
Digital inputs		switching current approx. 5 mA	
Analogue inputs		4 Ni1000, 0…10 V, Room control unit or setpoint adjuster 4 Ni1000	
Input impedance		approx. 15 kΩ (for 0…10 V=)	
Parameters, main controller			
Proportional band		0…100 K	
Integral action time		0…999 s	
Parameters, aux. controller			
Proportional band		0…100 K	
Integral action time		0…999 s	
Derivative action time		0.0…99.9 s	
Ranges:			
Normal temperature		-50,0…300°C	
Reduced temperature		-50,0…300°C	
Setpoint, actual value, aux. ctrlr.		-50,0…300°C	
Humidity		0…100%rh	
other areas		0…100 %	

Cycle time	1 s
Communication	
Interface	RS485
Protocol	Modbus RTU
Digital time-switch for daily, weekly and calendar switching programmes	
Back-up capacity	min. 24 h
Accuracy	< 2.5 s/day @ 25°C
Daily switching prog.	
Switching commands	6
Min. switching period	15 minutes
Weekly switching prog.	
Switching commands	6
Min. switching period	15 minutes
Calendar switching prog.	
Switching commands	12
Min. switching period	1 day
Ambient temp.	0…50 °C
Permissible storage temp.	-20…60°C
Ambient humidity	5…95%rh non-condensating
Degree of protection	IP20 [2] (EN 60529)
Protection class	II (IEC 60730 – 1)
EMC immunity	EN 50082 – 2
EMC irradiation	EN 50081 – 1
Safety	EN 60730 – 1

1) Potential-free contacts
2) When fitted

Documentation and accessories see next page >>>

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→ PDS 46.210

Documentation			
Wiring diagram	A10472	Fitting instructions	P100001978
Dimension drawing	M10466	Operating instructions	P100002032
		Manual	7 010047
		Declaration on materials	MD 46.201

Accessories

- RAB 700	Room operating unit, see Section 46
- STU101F001	Multiplier/Converter for measured temperature data, see Section 44
- XPES F001	Setpoint-potentiometer, see Section 46
- EXG 100 F001	Active potentiometer, see Section 46
- EGT . . .	Temperature sensor, see Section 36
- AV . , AS .	Electric drives, see Section 51
0313991 001	USB adaptor for access to the RDT 724 via PC

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→ PDS 46.650

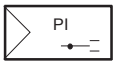
ERA 10, 20: PI fixed-value controller

T02830

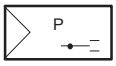
How energy efficiency is improved
Rotary knob on device itself for easy adjustment of setpoint.

Areas of application
Electronic control of temperature, humidity or other physical variables with appropriate transducers (e.g. Ni200 temperature sensor, pot200 potentiometric transmitter or a standard current signal).

Features
- Easy to operate thanks to analogue user interface
- Can be adjusted for setpoint and P-band
- Interchangeable scales



Y02856



Y02855

Technical description
- Standard housing 144 x 72 mm, as per DIN43700 in light-grey thermoplastic
- Analogue input Ni200 or 0 - 1 mA
- P or PI control
- 3 point output and analogue output 6.2 mV/K
- Suitable for fitting on walls and for incorporating into panels

Type	Description	Voltage	Weight kg
ERA 10 F001	Fixed-value PI-controller	230 V~	0.6
ERA 20 F001	Fixed-value P-controller [1]	230 V~	0.6

Power supply 230 V~	+15, –20%, 50 Hz	Wiring diagram	ERA 10	A171710
Power consumption	approx. 4 VA		ERA 20	A171711
Contact rating	2 A, 250 V~, 250 VA, cos φ ≥ 0.8	Dimension drawing		M295450
Permissible ambient temp.	0...40 °C	Fitting instructions	ERA 10	MV 8399
Degree of protection	IP 42 (EN 60529)		ERA 20	MV 83100

Inputs: (percentages refer to percentage of range of pot. transmitter or transducer)

Data acquisition with		Ni200 sensor	Pot. transmitter pot 200	Transducer 0...1 mA
Actual value		Temperature	Relative humidity or any physical variable	Any physical variable
Command or disturbance value		–	–	from ERB 20
Remote adjustment of setpoint		Pot 2 kΩ	Pot 2 kΩ	Pot 2 kΩ
Setting range for setpoint X_S		0...100 °C	20...80%	0...100%
P-band	ERA 10 [2]	0...50 °C	0...30%	0...50%
	ERA 20	0...40 °C	0...25%	0...40%
Switching range X_{Sh}	ERA 10	1.5 °C	0.9%	1.5%
	ERA 20	0.7 °C	0.42%	0.7%
Reset time T_n		5 min (ERA 10 only)		

Outputs:	
Activation of valves and drives	Potential-free contacts
Actual-value display x_i	Voltage signal 6,2 m V/K, load ≥ 100 kΩ

Accessories
0295449 000 Bag of scales containing six adhesive scales, fitted as per MV 83124.
Nickel sensor: – 20...20 °C and 0...40 °C for Ni200, 0...180 °C for Ni100
Platinum sensor: 0...330 °C and 270...630 °C for Pt100, 0...160 °C for Pt200

1) For P-control, use a drive with a feedback potentiometer of 130 Ω.
2) Applies to drives with a running time of 2 minutes. Faster drives have a smaller P-band.

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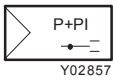
→ PDS 46.670

ERA 30: Cascade fixed-value P- and PI-controller

T02834



Y02857

How energy efficiency is improved
Input for shifting the setpoint (e.g. depending on the outside temperature) and therefore energy-efficient operation of the system.

Areas of application
Electronic P/PI cascade control of temperature, humidity or other physical variables with appropriate transducers (e.g. Ni200 temperature sensor, pot200 potentiometric transmitter or a standard current signal).

Features
- Easy to operate thanks to analogue user interface
- Can be adjusted for setpoints, slope and P-band
- Interchangeable scales

Technical description
- Standard housing 144 x 72 mm, as per DIN43700 in light-grey thermoplastic
- Analogue inputs Ni200, 0 -1 mA
- P/PI cascade control
- 3 point output and analogue output 6.2 mV/ K
- Suitable for fitting on walls and for incorporating into panels

Type	Description	Voltage	Weight kg
ERA 30 F001	cascade fixed-value P- and PI-controller	230 V~	0.6

Power supply 230 V~	+15, –20%, 50 Hz	Degree of protection	IP 42 (EN 60529)
Power consumption	approx. 4 VA		
Contact rating	2 A, 250 V~, 250 VA, cos φ ≥ 0,8	Wiring diagram	A171712
		Dimension drawing	M295450
Permissible ambient temp.	0...40 °C	Fitting instructions	MV 83101

P main control loop:

Inputs (percentages refer to percentage of range of pot. transmitter or transducer)			
Data acquisition with	Ni200 sensor	Pot. transmitter pot 200	Transducer 0...1 mA
Actual value	Temperature	Relative humidity or any physical variable	Any physical variable
Command or disturbance value	–	–	from ERB 20
Remote setpoint adjustment	Pot 2 kΩ	Pot 2 kΩ	Pot 2 kΩ
Setting range for setpoint X_S	0...100 °C	20...80%	0...100%
Slope S (variable)	0...20 °C		

PI auxiliary control loop:

Inputs (percentages refer to percentage of range of pot. transmitter)		
Data acquisition wit	Ni200 sensor	Pot. transmitter pot 200
Actual value	Temperature	Relative humidity or any physical variable
Setting range for setpoint B	0...100 °C	20...80%
P-band [1]	0...50 °C	0...30%
Switching range X_{Sh}	1.5 °C	0.9%
Reset time T_n	5 min	

Outputs:	
Activation of valves and drives	Potential-free contacts
Potential-free contacts x_i	Voltage signal 6,2 mV/K, load ≥ 100 kΩ

Accessories

0295449 000 Bag of scales containing six adhesive scales, fitted as per MV 83124.
Nickel sensor: –20...20 °C and 0...40 °C for Ni200, 0...180 °C for Ni100
Platinum sensor: 0...330 °C and 270...630 °C for Pt100, 0...160 °C for Pt200

1) Applies to drives with a running time of 2 minutes. Faster drives have a smaller P-band.

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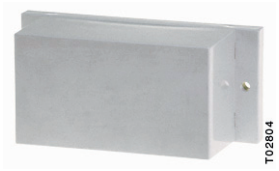
→ PDS 46.705

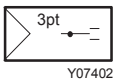
EXPR: Positioner



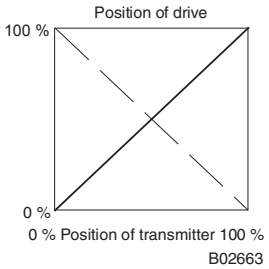
How energy efficiency is improved
Facility for maximum limiting of control value.

Areas of application
Conversion of a transmitter value (potentiometer setting) into a defined setting of a motor drive with feedback potentiometer.

Features
- Inputs for feedback potentiometer and potentiometric transmitter
- Can also be used as P control system
- Modification of direction of travel possible



Technical description
- Dimensions of housing base 140 x 65 mm
- Adjustable start of range and span
- Suitable for wall mounting
- Electrical connection with screw terminals for wires up to 2.5 mm²



Type	Voltage	Weight kg
EXPR 10 F002	24 V~	0.25

Power supply	± 20%, 50...60 Hz	Output open/stop/closed	2(0.5) A, 24 V~ 1)
Power consumption	approx. 4 VA	Permissible ambient temp.	0...40 °C
Operating range X_{Sh} (fixed)	approx. 4% of transmitter range	Degree of protection	IP 00 (EN 60529)
Inputs for			
potentiometric transmitter	130 Ω, max. 2 kΩ	Wiring diagram	A02654
feedback potentiometer	130 Ω, max. 2 kΩ	Dimension drawing	M290250
		Fitting instructions	MV 505490

Accessories
0368230 000* Light-grey housing of thermoplastic for wall mounting; 4 cable inlets for Pg 11, with grommets; degree of protection IP 54 (IP 65 with cable screw fitting); protection class II.

*) Dimension drawing or wiring diagram are available under the same number

1) Potential-free relay contacts with RC circuitry.

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→ PDS 46.771

EXMT, EXMU: Digital indicator unit

Y03229

How energy efficiency is improved

Display of actual controlled current temperature.

Areas of application

EXMT indicator unit for fixed ranges. EXMU indicator unit for multiple ranges.

Features

- LCD display
- Display with choice of physical units
- Suitable for active and passive input signals

Technical description

- Housing 60 x 36 mm, made of flame-retardant, light-grey thermoplastic
- Analogue input for active (e.g. 0 - 10 V) or passive (e.g. Ni1000) signal
- Calibration of start and end of range
- Suitable for panel mounting
- Electrical connection for wires up to 1.5 mm²

Type	Features	Voltage	Weight kg
EXMT F001	fixed ranges	24 V~	0.13
EXMU F001	multiple ranges	24 V~	0.13

EXMT:		**EXMU**:	
Input signal	Display	Input signal	Display
Ni1000, Ni200 6,2 mV/°C (R_i = 1MΩ)	–60...180 °C	Pot. 200	10...100%
0...1 V, (R_i = 500 kΩ) 0...10 V, (R_i = 500 kΩ) Pot. 130 (max. 2 kΩ) as a voltage divider	0...100% 100...0%	0...1 V, (R_i = 500 kΩ) 0...10 V, (R_i = 500 kΩ) Pot. 130 (max. 2 kΩ) as a voltage divider	–20...50 °C, –20...40 °C 0...40 °C, 0...50 °C, 0...100 °C 0...100%, 100...0% 0...100 %rh 0...100 kJ/kg, 0..20 g/kg [1)] 0...400, 0...1000
0...10 V (humidity)	0...100 %rh	Pot. 200 (HBG 5), x_i	0...100 %rh
6,2 mV/% (EXPR 3 .)	0...100% 100...0%	6,2 mV/% (EXPR 30)	0...100% 100...0%

Supply voltage 24 V~	± 20%, 50...60 Hz	Wiring diagram	A04812
Power consumption	2 VA	Dimension drawing	M368530
Permissible ambient temp.	0...40 °C	Fitting instructions	
Degree of protection	IP 00 (EN 60529)	EXMT	MV 505367
at front	IP 52	EXMU	MV 505366

1) The range 0...20 g/kg or –10...35° C_{TP} is also possible for EGH 10/20.

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→ PDS 46.790

XPES: Setpoint-potentiometer

How energy efficiency is improved
Easy-to-use analogue user interface for individual adjustment of system setpoint.

Areas of application
Remote adjustment of setpoint in electronic and electro-mechanical control equipment.

Features
- Very easy to operate thanks to rotary knob
- 2 adjustable stops for limiting or locking

Technical description
- Housing made of flame-retardant, pale grey thermoplastic (RAL 7035)
- Interchangeable scales with different ranges and for different physical variables
- Neutral scales available with fixed graduations or for inscribing yourself
- Suitable for panel mounting

Type	Ω- Value	Model	Weight kg
XPES F001	2000	for panel fitting	0.05

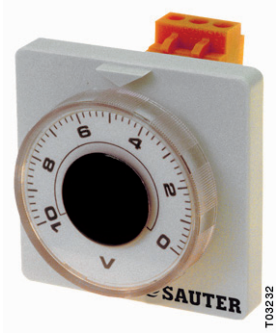
Exchangeable scales	0...40 °C, –20...40 °C 0...100 °C, 30...180 °C 0...100%, 20...80% 0...100 %rh, 35...85 %rh 0...20 g/kg, 2...22 g/kg 0...1 mA, –10...25 °C_{TP} 0...100 kJ/kg	Permissible ambient temp. Degree of protection [1] Wiring diagram Dimension drawing Fitting instructions	0...55 °C IP 00 A04751 M310232 MV 505437
Loading	2 W		

Accessories
0368433 000 Four neutral scales (for self-inscription) with gradations of: 5/10, 6/12/60, 8/40, 15/30.

1) at front: IP 52

→ PDS 46.791

EXG: Active potentiometer



How energy efficiency is improved
Simple user interface for individual adjustment of the setpoint with the option of presetting max. and/or min. limiting for the setpoint.

Areas of application
Remote adjustment of setpoints or for the remote adjustment of drives in combination with a positioner.

Features
- Very easy to operate thanks to rotary knob
- 2 adjustable stops for limiting or locking.

Technical description
- Housing made of flame-retardant, pale grey thermoplastic (RAL 7035)
- Interchangeable scales available with different ranges and for different physical variables
- Analogue output signal 0 - 10 V
- Suitable for panel mounting
- Electrical connection via plug-in unit for wires up to 2.5 mm²

Type	Characteristic	Voltage	Weight kg
EXG 100 F001	active potentiometer 0...10 V	24 V~	0.25

Supply voltage 24 V~	+15%, –20%, 50...60 Hz	Degree of protection	
Power consumption	0,5 VA	at front	IP 52 (EN 60529)
Output	0...10 V	inside panel	IP 00
max. current loading	3 mA		
		Wiring diagram	A02742
Permissible ambient temp.	0...40 °C	Dimension drawing	M02807
		Fitting instructions	MV 505455

Accessories
0312949 000 9 scales: 0-40/100/130/250 °C; 100%; 100 %rh; –35...35 °C; ± 4 °C; ± 8 %rh

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→ PDS 46.930

ESL: Electronic power control unit

How energy efficiency is improved

Through the output signal (pulse pause) it is ensured that, in spite of continuous control, a higher degree of efficiency is provided by the system.

Areas of application

Power control in auxiliary electric heating systems, electric heating elements in heating coils, fan-coil units, etc., and heating elements for domestic hot water.

Features

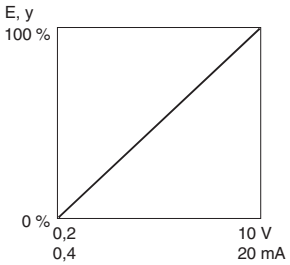
- Quasi-continuous power control of ohmic loads
- Suitable for consumer equipment that is controlled by one, two or three phases
- Y and Δ switching possible

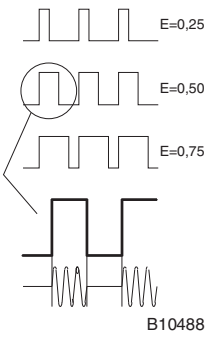
Technical description

- LED display
- Analogue inputs for active standard signals 0/2 - 10 V or 0/4 - 20 mA
- Suitable for mounting on top-hat rail in a control cabinet as per EN 60715
- Electrical connection via screw terminals up to 1.0 mm² (control signals) or up to 4.0 mm² (power signals)

Type	Rating	Power supply	Weight kg
ESL 116 F001	3,7 kW (230 V~)	230/400 V~	0.500
ESL 125 F001	5,8 kW (230 V~)	230/400 V~	0.800

Voltage	Circuit	Number of ESLs	ESL 116	ESL 125
230 V~	single-phase	1	3.7 kW	5.8 kW
400 V~	dual-phase	1	6.4 kW	10.0 kW
3 × 400 V~	star-delta	2	11.0 kW	17.3 kW
3 × 400 V~	delta	3	19.0 kW	30.0 kW





Inputs:-
- Control signal y: 0/2...10 V, R_i > 100 kΩ; 0/4...20 mA, R_i < 170 Ω

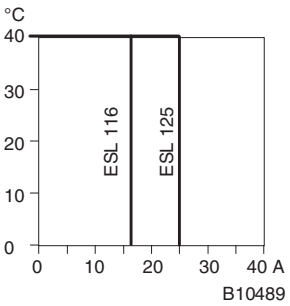
Power supply:-
- Voltage: 230…400 V~
- Tolerance in power supply: ± 20%, 50...60 Hz
- Power consumption: max. 5 VA

Output:-
- Nominal voltage: 230 V~ ± 20%, 50...60 Hz; 400 V~ ± 20%, 50...60 Hz
- Period duration: approx. 45 sec.

	ESL 116	ESL 125
Nominal current	16 A	25 A
Min. nominal current	2,0 A	2,0 A
cos phi	> 0,95	> 0,95
Max. dissipated power	20 W	40 W

Ambient temperature.	0...65°C 0...40°C at rated current
Storage & transport temp.	–25...+65°C
Ambient humidity	5…95 %rh non-condensating
Degree of protection	IP20 (EN 60529)
Protection class	I (IEC 60730 - 1)
Over-voltage category	II (IEC 60730 - 1)
Conformity	CE
EMC immunity	EN 61000 - 6 - 1; 2
EMC irradiation	EN 61000 - 6 - 3; 4
Safety	EN 60730 - 1

Documentation	ESL 116	ESL 125
Wiring diagram	A10377	A10377
Dimension drawing	M10399	M10416
Fitting instructions	MV 505937	MV 505948



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Controller sets:
novaFlex EYR 203 universal controller with modu240 control panel EY-OP240, novaFlex EYR 207 universal controller with modu240 EY-OP240 control panel or modu250 EY-OP250 touch-panel

Five different controller sets are available. The customer has a choice between the novaFlex EYR203 universal controller with modu240 EY-OP240 control panel and the novaFlex EYR207 universal controller with modu240 EY-OP240 control panel or, alternatively, the modu250 EY-OP250 touch-panel (colour or monochrome); there is also a connecting cable and a point-to-point auxiliary module (only for novaFlex EYR207 in conjunction with the touch-panel).
These modular controller sets (which have been matched to customers' requirements) not only impress by their OEM-optimised hardware components for use in HVAC and chilling applications, but also emphasise their great flexibility by the ability to freely programme each of the functions. In addition, the ability to choose an operator language is a welcome asset for commissioning engineers and operators in the country of use.
The wide variety of applications is based on the extensive HVAC function libraries, which – using PC-based programming tools (CASE Project, CASE FBD, CASE TPC) – enable complex control requirements to be fulfilled individually and easily.
Extensive standard applications – which have proved themselves in practice and are continually growing in number – are available immediately and require no programming.

Order no.	Description	Power	Weight kg	
0374423 001	Set comprising:- • moduFlex universal controller EYR 203 F001 (6 relays, 3 circuits and 5 AI Ni 1000) • modu240 control panel EY-OP240 F001 • Connecting cable 2,9 m (0367842 003)	24 V~	1.5	
0374423 002	Set comprising:- • novaFlex universal controller EYR 203 F002 (1 relay, 5 triacs and 5 AI Ni 1000) • modu240 control panel EY-OP240 F001 • Connecting cable 2,9 m (0367842 003)	24 V~	1.5	
0374485 001	Set comprising:- • novaFlex universal controller EYR 207 F001 (6 relays, 6 circuits and 7 AI Ni 1000) • modu240 control panel EY-OP240 F001 • Connecting cable 2,9 m (0367842 003)	24 V~	1.5	
0374486 001	Set comprising:- • novaFlex universal controller EYR 207 F001 (6 relays, 6 circuits and 7 AI Ni 1000) • modu250 touch-panel EY-OP250 F001, colour • Auxiliary module (pt. to pt.) (0374448 001) • Connecting cable 2,9 m (0367862 002)	24 V~ 100...230 V~	2.0	
0374487 001	Set comprising:- • novaFlex universal controller EYR 207 F001 (6 relays, 6 circuits and 7 AI Ni 1000) • modu250 touch-panel monochrome EY-OP250 F001 • Auxiliary module (pt. to pt.) (0374448 001) • Connecting cable 2,9 m (0367862 002)	24 V~ 100...230 V~	2.0	

Technical data

EYR 203 F001	moduFlex universal controller (see catalogue EY-modulo), 18 inputs and 10 outputs
EYR 203 F002	novaFlex universal controller (see PSI 92), 18 inputs and 10 outputs
EYR 207 F001	novaFlex universal controller (see PSI 92), 20 inputs and 10 outputs
ET-OP240 F001	modu240 control panel (see catalogue EY-modulo)
EY-OP250 F001/F002	modu250 touch-panel (see catalogue EY-modulo)

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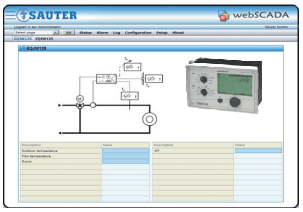
→ PDS 46.93

ERW100: Web server for stand-alone controllers



Areas of application

For connecting devices with Modbus RTU interface, e.g. equitherm® heating controller with digital user interface or flexotron700® RDT724F022 universal controller. Depending on local circumstances, various internet access options are available (e.g. analogue or GSM modem, DSL router, WAN/LAN connection). All the functions described also apply correspondingly for use on an intranet.

Properties

- Display and control of up to 32 devices via Modbus
- Dynamic display of values and static display of pictures
- Alarm via e-mail or SMS
- Data-logging with integrated memory, as well as display of historic trend curves
- Easy installation thanks to predefined templates
- Entire configuration using installed websites. No Windows tools or HTML editors necessary
- Design kit available for setting up customer-specific websites
- No licences and no licence fees
- Multilingual (German, English, French, Swedish, etc.)
- Software for detection of network parameters that have been set up

Technical description

- Housing made of white thermoplastic, fire-retardant as per DIN43880
- RS232 serial interface for Modbus RTU protocol or connection of a modem
- RS232/RS485 serial interface for Modbus RTU or Modbus ASCII protocol
- Ethernet interface for following protocols: HTTP (web), Modbus TCP (slave), Smtp (e-mail), FTP (File Transfer Protocol), SNMP (Simple Network Management Protocol)
- 2 digital inputs e.g. for fault signals
- For installation on track as per EN50022
- Dimensions 90 x 70 x 58 mm
- Screw terminals for cables up to 2.5 mm^2

Type	Features	Power	Weight kg
ERW100 F001	Web server via Modbus	9 - 32 V~/=	0.115

Power supply	9 - 32 V~ 50…60 Hz 9-32 V=	Storage and transport temperature	- 25…75 °C
Power consumption	approx. 1.2 VA	Permissible ambient temperature	5…40 °C
2 digital inputs	10 - 30 V=		
Ports:		Permissible ambient humidity	5 - 95% rH.
1x Ethernet	RJ45 (10/100 Mbit/s)	CE conformity	EN 50081-2:1993 EN 61000-6-2 :1999
2x serial	RS 232 (for modems) RS 232 or RS 485 (Modbus)	Degree of protection	IP 20 (EN 60529)
		Protection class	II (IEC 60730)
Display	4 LEDs	Wiring diagram Dimension drawing Fitting instructions	

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5 Electric drives Valves, Control valves Butterfly valves, VAV

51 Electric drives	Damper actuators with/without safety function Motorised drives for butterfly valves and control valves Valve drives with/without safety function Actuators for ball valves
52 VAV compact controllers	VAV compact for laboratory and pharmaceutical applications 2…15 sec., static
54 Control valves and butterfly valves	Butterfly valves Three-way control valves Four-way control valves
55 Unit valves and drives	Unit valves with thermal drive Unit valves with electric drive
56 Regulating valves, combined with drive	Ball valve with female thread PN 40 Valves with screw-type connection PN 16 Valves with flange connection PN 6, 16, 16/10, 25/16, 25, 40
57 Valveco regulating valves	

→ PDS 51.024

ASM 105L, 115L: Valve drive (SUT) with LON communication (bus) module

Y10137

How energy efficiency is improved
Torque related cut-off for efficient energy use.

Areas of application
For use in a LON network with connection of active sensors, actuator, switch contact and passive temperature sensor. For actuation of air, shut-off and restrictor dampers and louvres.

Features
- 5 and 10 Nm torque and holding torque
- 24 V~/=
- 35/60/120 sec. as running time for 90° can be selected in the case of ASM 105L and 60/120 sec. in the case of ASM 115L
- Protection classIP54, horizontal
- Operating noise < 30 db(A)
- Self-centring axle adaptor
- Gearbox that can be disengaged for positioning the damper and manual adjustment
- Stepping motor with control and electronic cut-off
- Maintenance-free
- Intelligent rotation angle adaptation, incl. adaptation of feedback

Technical description
- Two-part housing made of self-extinguishing plastic, lower section black and upper section yellow
- Suitable for all installation positions
- Connecting cable 1.2 m long, 5x 0.5 mm² and 6x 0.5 mm²
- Profile as per LONMARK #8110
- LON communication bus FTT 10
- On/Off switching input
- Input temperature sensor Ni1000, -50°C to +150°C

Type	Torque Nm	Holding torque Nm	Running time for 90° s	Power	Weight kg
ASM 105L F132	5	5	35/60/120	24 V~	0.9
ASM 115L F132	10	10	60/120	24 V~	0.9

Valve drive:

Power supply	24 V~	± 20%, 50...60 Hz	
Power consumption			
ASM 105L F132		4.6 W	8.0 VA
ASM 115L F132		6.1 W	10.3 VA
Angle of rotation		90 °	
Damper spindle		Ø 8...16 mm	
		☐ 6.5...12.7 mm	
Damper spindle (hardness)		max. 300 HV	

Ambient temp.	-20...+55 °C
Ambient humidity	< 95% rh
	without condensation
Degree of protection (horizontal)	IP 54 as per EN 60529
Protection class	III as per IEC 60730
Noise while running	< 30 dB(A)
Response time	200 ms
Wiring diagram	A10141
Dimension drawing	M10149
Fitting instructions	MV 505863
Declaration on materials and the environment	MD 51.024

LON module
Technical details

Power supply	24 V~	± 20%, 50...60 Hz	
Power consumption		2 VA	
Profile of valve drive			
as per LONMARK		# 8110	
LON communication:			
BUS		FTT-10	

Ambient temp.	-10...+55 °C
Ambient humidity	< 95% rh
	without condensation
Degree of protection	IP 54 as per EN 60529
Protection class	III as per IEC 60730
Wiring diagram	A10141
Dimension drawing	M10149
Fitting instructions	MV 505863

Inputs		**Outputs**	
for switch inputs	On/Off	for output voltage	0...10 V
for input voltage	0...10 V		
for temperature sensor	Ni1000, -50...150 °C		

Accessories see next page >>>

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→ PDS 51.024

Accessories	
0361977 002	Assembly kit for MH32 / MH42 control valve; MV 505840
0372300 001	Anti-torsion device, long (230 mm)
0372301 001	Spindle adapter for squared end (□15 mm) tubular section (batch package of 10 pieces)
7001024 . . .	Operating manual, LON module, German, French, English

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→ PDS 51.040

ASM 105, 115: Actuators

Y07551

How energy efficiency is improved
Time related cut-off for efficient energy use.

Areas of application
For controllers with a switching output (2-point or 3-point control). For actuation of air, shut-off and restrictor dampers and louvres.

Features
- 5 and 10 Nm torque and holding torque
- 230 V, 50/60 Hz or 24 V, 50/60 Hz
- 30 to 120 sec. running time for 90°
- Protection class IP54 6)
- Operating noise < 30 db(A)
- Self-centring axle adaptor
- Gearbox that can be disengaged for positioning the damper and manual adjustment
- Synchronous motor with control and electronic cut-off
- Maintenance-free

Technical description
- Two-part housing made of self-extinguishing plastic, lower section black and upper section yellow
- Suitable for all installation positions
- Connecting cable 1.2 m long, 3x 0.75 mm²
- Change direction of rotation by reversing the connections

Type 4)	Control	Torque	Holding torque	Running time for 90°	Power	Weight
		Nm	Nm	s		kg
ASM 105 F100	2/3-point	5	5	30	230 V~	0.7
ASM 105 F120	2/3-point	5	5	120	230 V~	0.7
ASM 105 F122	2/3-point	5	5	120	24 V~	0.7
ASM 115 F120	2/3-point	10	10	120	230 V~	0.7
ASM 115 F122	2/3-point	10	10	120	24 V~	0.7

Power supply			Permissible ambient temp.		–20...65 °C 5)
F100	230 V~	± 15%, 50 Hz	Permissible ambient humidity		5...85 %rh
F12 .	230 V~	± 15%, 50...60 Hz			without condensation
	24 V~	± 20%, 50...60 Hz	Degree of protection (horizontal)		IP 54 as per EN 60529 6)
			Protection class	24 V	III as per IEC 60730
Power consumption				230 V	II as per IEC 60730
F100	2.4 W	4.5 VA	Noise while running		< 30 dB(A)
F120	2.0 W	4.0 VA	Response time		200 ms
F122	1.6 W	1.7 VA	Wiring diagram	2-point	A10210
Angle of rotation	90° 1)			3-point	A09713
Damper spindle	Ø 8...16 mm		Dimension drawing		M09736
	□ 6.5...12,7 mm		Fitting instructions		MV 506064
Damper spindle (hardness)	Max. 300 HV		Declaration on materials		MD 51.040

Accessories

0361977 002	Assembly kit for MH32 / MH42 control valve; MV 505840
0372145 001*	Single auxiliary change-over contacts 2); MV 505795
0372145 002*	Double auxiliary change-over contacts 2); MV 505795
0372286 001*	Potentiometer 3) 130 Ω; MV 505795
0372286 002*	Potentiometer 3) 1000 Ω; MV 505795
0372286 003*	Potentiometer 3) 5000 Ω; MV 505795
0372300 001	Anti-torsion device, long (230 mm)
0372301 001	Spindle adaptor for squared-end (□15 mm) tubular section (batch package of 10 pieces)
0372320 001	Plastic Allen key for indicating the position
0372459 100*	External circuitry 230V version for parallel operation with ASM/AVM 104, 114 or actuators with end-switch, incl. distribution box; MV 506102
0372459 102*	External circuitry 24V version for parallel operation with ASM/AVM 104, 114 or actuators with end-switch, incl. distribution box; MV 506102

*) Dimension drawing or wiring diagram are available under the same number

1) Maximum angle of rotation: 95° (without stops for the dampers)
2) Fully variable from 0...90°; max. loading 5 (2) A, 24...230 V
3) Only one potentiometer or one set of auxiliary contacts can be fitted to each drive!
4) Version with halogen-free cable available on request
5) Operating time approx. 80% up to 65 °C, 100% up to 55 °C
6) See Fitting instructions

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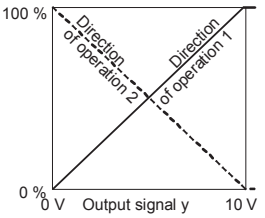
→ PDS 51.041

ASM 105S, 115S: Actuators with Sauter Universal Technology (SUT)

Y07552



B07650

How energy efficiency is improved

Torque related cut-off for efficient energy use.

Areas of application

For controllers with continuous output (0 - 10 V) or switching output (2-point or 3-point control). For actuation of air, shut-off and restrictor dampers and louvres.

Features

- 5 and 10 Nm torque and holding torque
- 24 V ~/=
- 35, 60 or 120 sec. running time for 90° can be selected with switch
- Protection class IP54
- Operating noise < 30 db(A)
- Self-centring axle adaptor
- Gearbox that can be disengaged for positioning the damper and manual adjustment
- Stepping motor with control and electronic cut-off
- Maintenance-free
- Intelligent rotation angle adaptation, incl. adaptation of feedback
- Free configuration using *CASE Drives* PC tool

Technical description

- Two-part housing made of self-extinguishing plastic, lower section black and upper section yellow
- Suitable for all installation positions
- Connecting cable 1.2 m long, 5 x 0.5 mm²
- Direction of rotation can be changed by reversing connections

Type [5]	Torque	Holding torque	Running time for 90°	Power	Weight
	Nm	Nm	s		kg
ASM 105S F132	5	5	35 / 60 / 120	24 V~/=	0.7
ASM 115S F132	10	10	60 / 120	24 V~/=	0.7

Positioner [1]				
Control signal *y*	0...10 V, Ri > 100 kΩ		Starting point U0	0 or 10 V
Positional feedback signal *yo*	0...10 V, load >10 kΩ		Control span ΔU	10 V
			Switching range Xsh	200 mV
Power supply	24 V~	± 20%, 50...60 Hz	Ambient temperature	–20...55 °C
	24 V=	± 20%	Ambient humidity	< 95 %rh
Power consumption				without condensation
ASM 105S F132	5.0 W	9.0 VA	Protection (horizontal)	IP 54 as per EN 60529
ASM 115S F132	4.8 W	8.7 VA	Protection class	III as per IEC 60730
			Noise while running	< 30 dB(A)
Angle of rotation	90° [2]		Response time [1]	200 ms
Damper spindle	Ø 8...16 mm;		Wiring diagram	A10465
	□ 6.5...12.7 mm		Dimension drawing	M09736
Damper spindle (hardness)	max. 300 HV		Fitting instructions	MV 506064
			Declaration of materials	MD 51.041

Accessories

0313529 001*	Split-range unit for setting sequences; to be fitted in separate distribution box as per MV 505671
0361977 002	Assembly kit for MH32 / MH42 control valve; MV 505840
0372145 001*	Auxiliary change-over contacts [3], single, MV 505795
0372145 002*	Double auxiliary change-over contacts [3]; MV 505795
0372286 001*	Potentiometer [4] 130 Ω; MV 505795
0372286 002*	Potentiometer [4] 1000 Ω; MV 505795
0372286 003*	Potentiometer [4] 5000 Ω; MV 505795
0372300 001	Anti-torsion device, long (230 mm)
0372301 001	Spindle adaptor for squared-end (□15 mm) tubular section(batch package of 10 pieces)
0372320 001	Plastic Allen key for indicating the position
0372462 001	CASE Drives PC Tool for configuration of actuators per computer; MV 506101

*) Dimension drawing or wiring diagram are available under the same number.

1) Also for 2-point or 3-point, depending on type of connection
2) Maximum angle of rotation: 95° (without stops for the dampers)
3) Fully variable from 0...90°; max. loading 5 (2) A, 24...230V
4) Only one potentiometer or one set of auxiliary contacts can be fitted to each drive!
5) Version with halogen-free cable available on request

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→ PDS 51.025

ASM 124: Actuators

Y07551

How energy efficiency is improved

Torque related cut-off for efficient energy use.

Areas of application

For controllers with a switching output (2-point or 3-point control). For actuation of air, shut-off and restrictor dampers and louvres.

Features

- 18 Nm torque and holding torque
- 230 V, 50/60 Hz or 24 V, 50/60 Hz
- 120 sec. running time for 90°
- Protection class IP54[4]
- Operating noise < 30 db(A)
- Self-centring axle adaptor
- Gearbox that can be disengaged for positioning the damper and manual adjustment
- Synchronous motor with control and electronic cut-off
- Maintenance-free

Technical description

- Two-part housing made of self-extinguishing plastic, lower section black and upper section yellow
- Suitable for all installation positions
- Connecting cable 1.2 m long, 3x 0.75 mm²
- Direction of rotation can be changed by reversing connections

Type [3]	Torque Nm	Holding torque Nm	Running time [1] for 90° s	Power	Weight kg
ASM 124 F120	18	18	120	230 V~	1.2
ASM 124 F122	18	18	120	24 V~	1.2

Power supply	230 V~	± 15%, 50...60 Hz		Degree of protection[4]	IP 54 as per EN 60529
	24 V~	± 20%, 50...60 Hz		Protection class 24 V	III as per IEC 60730
				230 V	II as per IEC 60730
Power consumption					
ASM 124 F120		2.9 W	5.6 VA	Noise while running	< 30 dB(A)
ASM 124 F122		2.3 W	2.4 VA	Response time	200 ms
Angle of rotation		90° [1]		Wiring diagram	
Damper spindle		Ø 10...20 mm		2-point 24 V	A10210
		□10...16 mm		2-point 230 V	A10402
Damper spindle (hardness)		max. 300 HV		3-Punkt	A09713
Permissible ambient temp.		–20...55 °C		Dimension drawing	M05671
Permissible ambient humidity		< 85 %rh		Fitting instructions	MV 505792
		without condensation		Declaration on materials	MD 51.025

Accessories

0361977 001	Assembly kit for MH32 / MH42 control valve; MV 505477
0370059 000*	Clamp-on lever for shafts of d=8-18 mm
0370990 001*	Auxiliary change-over contacts [2], single, MV 505446
0370990 002*	Auxiliary change-over contacts [2], double, MV 505446
0370992 001*	Potentiometer, 2000 Ω, 1 W, MV 505446
0370992 002*	Potentiometer, 130 Ω, 1 W, MV 505446
0372200 001	Fixing bracket; MV 505676
0372201 001	Spindle extension with coupling; MV 505676
0372202 001	Lever and tape; MV 505676
0372203 001	Connecting piece for contact unit; 0370990; MV 505676
0372204 001	Spindle for clamp-on lever 0370059; MV 505676

*) Dimension drawing or wiring diagram are available under the same number

1) Maximum angle of rotation: 95° (without stops)
2) Fully variable from 0...90°; max. loading 5 (2) A, 24...230V
3) Version with halogen-free cable available on request
4) See fitting instructions

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→ PDS 51.022

ASM 134: Actuators

How energy efficiency is improved

Torque related cut-off for efficient energy use.

Areas of application

For controllers with switching outputs (3-point control). For actuation of air, shut-off and restrictor dampers and louvres.

Features

- 30 Nm torque and holding torque
- 230 V, 50/60 Hz
- 120 or 240 sec. running time for 90° can be selected with switch
- Protection class IP54
- Operating noise < 30 db(A)
- Self-centring axle adaptor
- Gearbox that can be disengaged for positioning the damper and manual adjustment
- Stepping motor with control and electronic cut-off
- Maintenance-free

Technical description

- Two-part housing made of self-extinguishing plastic, lower section black and upper section yellow
- Suitable for all installation positions
- Connecting cable 1.2 m long, 3x 0.75 mm²
- Direction of rotation can be changed by reversing connections

Type [3]	Torque Nm	Holding torque Nm	Running time [1] for 90° s	Power	Weight kg
ASM 134 F130	30	30	120/240	230 V~	1.2

Power supply	± 15%, 50...60 Hz	Degree of protection	IP 54 as per EN 60529
		Protection class	III as per IEC 60730
Power consumption	3.7 W 4.7 VA		
Angle of rotation	90° [1]	Noise while running	< 30 dB(A)
Damper spindle	Ø 12...20 mm □10...16 mm	Response time	200 ms
Damper spindle (hardness)	max. 300 HV		
		Wiring diagram	A05669
Permissible ambient temp.	–20...55 °C	Dimension drawing	M05671
Permissible ambient humidity	< 95 %rh without condensation	Fitting instructions	MV 505771
		Declaration of materials	MD 51.022

Accessories

0361977 001	Assembly kit for MH32 / MH42 control valve; MV 505477
0370059 000*	Clamp-on lever for shafts of d=8-18 mm
0370990 001*	Auxiliary change-over contacts [2], single, MV 505446
0370990 002*	Auxiliary change-over contacts [2], double, MV 505446
0370992 001*	Potentiometer, 2000 Ω, 1 W, MV 505446
0370992 002*	Potentiometer, 130 Ω, 1 W, MV 505446
0372200 001	Fixing bracket; MV 505676
0372201 001	Spindle extension with coupling; MV 505676
0372202 001	Lever and tape; MV 505676
0372203 001	Connecting piece for contact unit; 0370990; MV 505676
0372204 001	Spindle for clamp-on lever 0370059; MV 505676

*) Dimension drawing or wiring diagram are available under the same number

1) Maximum angle of rotation: 95° (without stops)
2) Fully variable from 0...90°; max. loading 5 (2) A, 24...230 V
3) Version with halogen-free cable available on request

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→ PDS 51.023

ASM 124S, 134S: Actuators with Sauter Universal Technology (SUT)

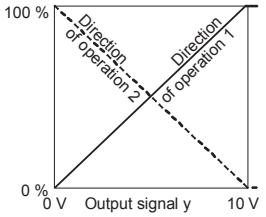
How energy efficiency is improved
Torque related cut-off for efficient energy use.

Areas of application
For controllers with continuous output (0 - 10 V) or switching output (2-point or 3-point control). For actuation of air, shut-off and restrictor dampers and louvres.

Features
- 15 and 30 Nm torque and holding torque
- 24 V~/=
- 60/120 sec. and 120/240 sec. as running time for 90° can be selected with switch
- Protection class IP54
- Operating noise < 30 db(A)
- Self-centring axle adaptor
- Gearbox that can be disengaged for positioning the damper and manual adjustment
- Stepping motor with control and electronic cut-off
- Maintenance-free
- Intelligent rotation angle adaptation, incl. adaptation of feedback

Y07552

Technical description
- Two-part housing made of self-extinguishing plastic, lower section black and upper section yellow
- Suitable for all installation positions
- Connecting cable 1.2 m long, 5x 0.75 mm²
- Direction of rotation can be changed by reversing connections



B07650

Type [5]	Torque Nm	Holding torque Nm	Running time for 90° s	Power	Weight kg
ASM 124S F132	15	15	60, 120	24 V~/= [2]	1.2
ASM 134S F132	30	30	120, 240	24 V~/= [2]	1.2

Positioner [1]		Starting point U_0	0 or 10 V
Control signal	0...10 V, R_i > 100 kΩ	Control span ΔU	10 V
Positional feedback signal	0...10 V, load >10 kΩ	Switching range X_{sh}	200 mV

Power supply	24 V ± 20%, 50...60 Hz		Permissible ambient temp.	–20...55 °C
	24 V = [2] ± 20%		Permissible ambient humidity	< 95 %rh
Power consumption				without condensation
ASM 124S F132	2.4 W	4.4 VA	Degree of protection	IP 54 as per EN 60529
ASM 134S F132	2.4 W	4.3 VA	Protection class	III as per IEC 60730
			Running noise	< 30 dB(A)
Angle of rotation	90° [3]		Response time	200 ms
Damper spindle			Wiring diagram	A09681
ASM 124S F132	Ø 10...20 mm		Dimension drawing	M05671
	□10...16 mm		Fitting instructions	
ASM 134S F132	Ø 12...20 mm		ASM 124S F132	MV 505792
	□10...16 mm		ASM 134S F132	MV 505771
Damper spindle (hardness)	max. 300 HV		Declaration of materials	MD 51.023

Accessories
0313529 001* Split-range unit, 0...10 V, for setting sequences; to be fitted and connected in separate distribution box
0361977 001 Assembly kit for MH32 / MH42 control valve; MV 505477
0370059 000* Clamp-on lever for shafts of d=8-18 mm
0370990 001* Auxiliary change-over contacts [4] single; MV 505446
0370990 002* Auxiliary change-over contacts [4], double; MV 505446
0370992 001* Potentiometer, 2000 Ω, 1 W; MV 505446
0370992 002* Potentiometer, 130 Ω, 1 W; MV 505446
0372200 001 Fixing bracket; MV 505676
0372201 001 Spindle extension with coupling; MV 505676
0372202 001 Lever & tape; MV 505676
0372203 001 Connecting piece for contact unit; 0370990; MV 505676
0372204 001 Spindle for clamp-on lever 0370059; MV 505676

*) Dimension drawing or wiring diagram are available under the same number

1) Also for 2-point or 3-point depending on type the of connection
2) 24 = for input signal 0...10 V only
3) Maximum angle of rotation: 95° (without stops)
4) Fully variable from 0...90°; max. loading 5 (2) A, 24...230 V
5) Version with halogen-free cable available on request

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→ PDS 51.033

ASF 112, 113: Actuators with spring return

How energy efficiency is improved

Overload protection and end stop detection for efficient energy use.

Areas of application

For controllers with a switching output (2-point or 3-point control). For actuation of air, shut-off and restrictor dampers and louvres.

Features

- 7 Nm torque and holding torque
- 230 V, 50/60 Hz or 24 V~/=
- 90 sec. running time for 90°
- Protection class IP54, vertical
- Self-centring axle adaptor
- Manual adjustment with hexagon socket, including locking gears
- Non-wearing, brushless motor
- Maintenance-free

Technical description

- Robust all-metal housing
- Suitable for all installation positions
- Connecting cable 0.9 m long, 0.75 mm²
- Change direction of rotation simply by turning the drive

Type	Running time for 90° in sec Motor	Spring return	Control	Power	Weight kg
ASF 112 F120	90	15	2-point	230 V~	1.2
ASF 112 F122	90	15	2-point	24 V~ / 24…48 V=	1.2
ASF 113 F122	90	15	3-point	24 V~ / 24…48 V=	1.2
With double auxiliary contacts [1] 6 (2) A; 24...250 V~ with cable of 0,9 m; 6 x 0,75 mm²					
ASF 112 F220	90	15	2-point	230 V~	1.3
ASF 112 F222	90	15	2-point	24 V~ / 24…48 V=	1.3

Power supply	230 V~	± 10%, 50...60 Hz	
	24 V~	± 20%, 50...60 Hz	
	24…48 V=	± 20%	
Power consumption			
ASF 112 F120		2.6 W	4.6 VA
ASF 112 F122		2.0 W	3.0 VA
Torque and holding torque		7 Nm	
Angle of rotation		max. 95°	
Permissible damper area [3]		ca. 1.5 m²	
Permissible ambient temp.		–32...55 °C	
Permissible ambient humidity		5...95 %rh	

Degree of protection		IP 42 as per EN 60529
see fitting instructions [2]		IP 54
Protection class	230 V	II as per IEC 60730
	24 V	III as per IEC 60730
Wiring diagram	2 pt	A05769
	3 pt	A05770
Dimension drawing		M09970
Fitting instructions		MV 505820

Accessories

0372245 001	Lever adaptor for changing the rotary movement into stroke; MV 505824
0372245 002	Lever adaptor for changing the rotary movement into stroke; with plate for fixing to wall or plinth; MV 505825
0510240 001	Mounting kit for ball valves VKR/BKR for damper drives ASF 112 and 113 from index B, MV P100002479

1) Switching range 5°...85° (factory setting), variable in steps of 5°, switching difference 2°
2) Degree of protection IP 54, see positional information on MV 505820
3) Recommended value for easy-acting air damper

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→ PDS 51.034

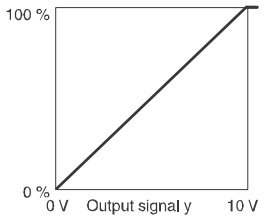
ASF 113S: Actuator with spring return and positioner

How energy efficiency is improved
Overload protection and end stop detection for efficient energy use.

Areas of application
For controllers with continuous output (0 - 10 V). For actuation of air, shut-off and restrictor dampers and louvres.

Features
- 7 Nm torque and holding torque
- 24 V~; 24 - 48 V =
- 90 sec. running time for 90°
- Protection class IP54, vertical
- Self-centring axle adaptor
- Manual adjustment with hexagon socket, including locking gears
- Non-wearing, brushless motor
- Maintenance-free

Technical description
- Robust all-metal housing
- Suitable for all installation positions
- Connecting cable 0.9 m long, 4x 0.75 mm²
- Change direction of rotation simply by turning the drive



Type	Running time for 90° Motor sec	Spring sec	Torque Nm	Holding Torque Nm	Power	Weight kg
ASF 113S F122	90	15	7	7	24 V~ / 24…48 V=	1.3

Positioner			Permanently set at	
Control voltage		0...10 V, R_i = 100 kΩ	Starting point U_0	0 V
Positional feedback signal		0...10 V (0...100%)	Control span ΔU	10 V
Permissible load		> 10 kΩ	Switching range X_{sh}	0.2 V
Power supply	24 V~	± 20%, 50...60 Hz	Degree of protection	IP 42 as per EN 60529
	24…48 V=	± 20%	see fitting instructions	IP 54
Power consumption		2.5 W 3.5 VA	Protection class	III as per IEC 60730
Angle of rotation		max. 95°	Wiring diagram	A05780
Permissible ambient temp.		–32...55 °C	Dimension drawing	M09970
Permissible ambient humidity		< 95 %rh	Fitting instructions	MV 505820

Accessories
0372245 001 Lever adaptor for changing the rotary movement into stroke; MV 505824
0372245 002 Lever adaptor for changing the rotary movement into stroke; with plate for fixing to wall or plinth; MV 505825
0510240 001 Mounting kit for ball valves VKR/BKR for damper drives ASF 112 and 113 from index B, MV P100002479

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→ PDS 51.035

ASF 122, 123: Actuators with spring return

How energy efficiency is improved

Overload protection and end stop detection for efficient energy use.

Areas of application

For controllers with a switching output (2-point or 3-point control). For actuation of air, shut-off and restrictor dampers and louvres.

Features

- 18 Nm torque and holding torque
- 230 V, 50/60 Hz or 24 V~/=
- 90 sec. running time for 90°
- Protection class IP54, vertical
- Self-centring axle adaptor
- Manual adjustment with hexagon socket, including locking gears
- Non-wearing, brushless motor
- Maintenance-free

Technical description

- Robust all-metal housing
- Suitable for all installation positions
- Connecting cable 0.9 m long, 0.75 mm²
- Change direction of rotation simply by turning the drive

Type	Running time for 90° in s Motor	Spring return	Control function	Power	Weight kg
ASF 122 F120	90	15	2-point	230 V~	2.0
ASF 122 F122	90	15	2-point	24 V~ / 24…48 V=	2.0
ASF 123 F122	90	15	3-point	24 V~ / 24…48 V=	2.0
With double auxiliary contacts [1] 6 (2) A; 24...250 V~ with cable of 0.9 m; 6 × 0.75 mm²					
ASF 122 F220	90	15	2-point	230 V~	2.1
ASF 122 F222	90	15	2-point	24 V~ / 24…48 V=	2.1

Power supply	230 V~	± 10%, 50...60 Hz
	24 V~	± 20%, 50...60 Hz
	24…48 V=	± 20%
Power consumption		
ASF 122 F120	5.8 W	7.9 VA
ASF 123 F122	5.8 W	7.7 VA
Torque and holding torque	18 Nm	
Angle of rotation	max. 90°	
Permissible damper area [3]	approx. 3 m²	
Permissible ambient temp.	–32...55 °C	
Permissible ambient humidity	5...95 %rh	

Degree of protection		IP 42 as per EN 60529
see Fitting Instructions [2]		IP 54
Protection class	230 V~	II as per IEC 60730
	24 V~/=	III as per IEC 60730
Wiring diagram	ASF 122	A05769
	ASF 123	A05770
Dimension drawing		M05768
Fitting instructions		MV 505422

Accessories

0370997 001 Lever adaptor for changing the rotary movement into stroke; MV 505430
0370998 001 Lever adaptor for changing the rotary movement into stroke; with plate for fixing to wall or plinth; MV 505431

1) Switching range 5°...85° (factory setting), variable in steps of 5°, switching difference 2°
2) Degree of protection IP 54, see positional information on MV 505422
3) Recommended value for easy-acting air damper

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→ PDS 51.036

ASF 123S: Actuators with spring return and positioner

How energy efficiency is improved
Overload protection and end stop detection for efficient energy use.

Areas of application
For controllers with continuous output (0 - 10 V). For actuation of air, shut-off and restrictor dampers and louvres

Features
- 18 Nm torque and holding torque
- 24 V~; 24 - 48 V =
- 90 sec. running time for 90°
- Protection class IP54, vertical
- Self-centring axle adaptor
- Manual adjustment with hexagon socket, including locking gears
- Non-wearing, brushless motor
- Maintenance-free

Technical description
- Robust all-metal housing
- Suitable for all installation positions
- Connecting cable 0.9 m long, 4x 0.75 mm²
- Change direction of rotation simply by turning the drive

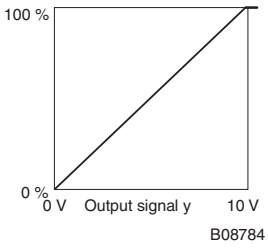
Type	Running time for 90° Motor	Running time for 90° Spring return	Torque	Holding Torque	Voltage	Weight
	sec	sec	Nm	Nm		kg
ASF 123S F122	90	15	18	18	24 V~ / 24…48 V=	2

Positioner:

Control voltage	0...10 V, R_i = 100 kΩ
Positional feedback signal	0...10 V (0...100%)
Max. load	> 10 kΩ

Permanently set at:

Starting point U_0	0 V
Control span ΔU	10 V
Switching range X_{sh}	0,2 V



Power supply	24 V~	± 20%, 50...60 Hz
	24…48 V=	± 20%
Power consumption		5,4 W 7,5 VA
Angle of rotation		max. 95°
Permissible ambient temp.		–32...55 °C
Permissible ambient humidity		< 95 %rh

Degree of protection	IP 42 as per EN 60529
see Fitting Instructions [1]	IP 54
Protection class	III as per IEC 60730
Wiring diagram	A05780
Dimension drawing	M05768
Fitting instructions	MV 505422

Accessories
0370997 001 Lever adaptor for changing the rotary movement into stroke; MV 505430
0370998 001 Lever adaptor for changing the rotary movement into stroke; with plate for fixing to wall or plinth; MV 505431

1) Degree of protection IP 54, see positional information on MV 505422

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→ PDS 51.330

AR30 W21...23: Motor drive

How energy efficiency is improved

Electric cut-off in end position to save energy.

Areas of application

Actuation of regulating units, such as air dampers, mixers, butterfly valves, etc. for controllers with a switching output (3-point control).

Features

- Torque 15 Nm
- Synchronous motor with limit switch
- Maintenance-free gearbox
- Controlling the regulating unit to be actuated in any intermediate position
- Rotation angle min. 30° to max. 320°

Technical description

- Maximum torque and holding torque is 15 Nm
- Cast light alloy housing
- Cover made of transparent, self-extinguishing thermoplastic
- Electrical connections (max. 1.5 mm²) with screw terminals
- Cable clamping sleeve M20x1.5
- Depending on the model, the running time for 90° rotation angle is 30, 60 or 120 sec.

Type	Running time for 90°	Torque	Holding torque	Voltage	Weight
	s	Nm	Nm		kg
AR30 W21 F001	30	15	15	230 V~	1.1
AR30 W21 F020	30	15	15	24 V~	1.1
AR30 W22 F001	60	15	15	230 V~	1.1
AR30 W22 F020	60	15	15	24 V~	1.1
AR30 W23 F001	120	15	15	230 V~	1.1
AR30 W23 F020	120	15	15	24 V~	1.1

Power supply	230 V~	± 15%, 50...60 Hz	Permissible ambient temp.	–20...60 °C
Power supply	24 V~	± 20%, 50...60 Hz	Permissible ambient humidity	< 95 %rh
Power consumption			Degree of protection [3]	IP 55 (EN 60529)
	230 V~	3.7 VA	Upside down	IP 54
	24 V~	4.8 VA		
Permissible damper area [1]		5 m²	Wiring diagram	A01348
Angle of rotation [2]		90°	Dimension drawing	M04307
			Fitting instructions	MV 505334

Accessories

0188813 000* Ball-joint for lever
0294148 000* Fixing bracket for wall mounting.
0294967 000* Pivot pin for lever
0370059 000* Clamp-on lever (can be used only in conjunction with 0370819)
0370772 001* Two auxiliary change-over contacts [4], max. rating 10 (2) A, 250 V~; fitted as per MV 505343.
0370774 001 Handle for manual adjustment.
0370785 001 Position indicator, MV 505329
0370819 000* Flat-sided hub (can be used only in conjunction with 0370059)
0372460 001 Cable screw fitting (plastic M20x1,5) incl. locking nut and gasket, max. 2 pcs.

Potentiometer kit, 1 W, fitted as per MV 505335
Set of cogs (0370644) according to angle of rotation of end shaft
0370780 001* Potentiometer 2000 Ω
0370781 001* Potentiometer 130/2000 Ω
0370644 001 Set of cogs for angle of rotation 90 or 180°, with coupling
0370644 002 Set of cogs for angle of rotation 120 or 150°, with coupling

*) Dimension drawing or wiring diagram are available under the same number

1) Recommended value for equal-sided, smooth-action air dampers, for AR30 W21, damper surface area = 4 m²
2) Angle of rotation of the drive shaft can be set between 30 and 320° via switching cams (any starting point). If fitted, note the potentiometer's angle of rotation.
3) Degree of protection IP 55 with cable screw fitting M20x1,5
4) The switching cam 180° ON or 180° OFF can be positioned anywhere in the whole 360° angle of rotation

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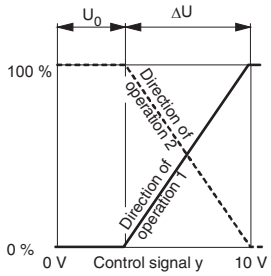
→ PDS 51.331

AR30 W22S, W23S: Motor drive with positioner

Y07552



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How energy efficiency is improved

Electric cut-off in end position to save energy.

Areas of application

Actuation of regulating units, such as air dampers, mixers, butterfly valves, etc. For controllers with a continuous output (0...10 V oder 4...20 mA).

Features

- Torque 15 Nm
- Synchronous motor with limit switch and integrated positioner
- Maintenance-free gearbox
- Controlling the regulating unit to be actuated in any intermediate position
- Rotation angle min. 30° to max. 320°
- Direction of travel can be selected with switch

Technical description

- Maximum torque and holding torque is 15 Nm
- Cast light alloy housing
- Cover made of transparent, self-extinguishing thermoplastic
- Electrical connections (max. 1.5 mm²) with screw terminals
- Cable clamping sleeve M20 x 1.5
- Depending on the model, the running time for 90° rotation angle is 60 or 120 s

Type	Running time for 90°	Torque	Holding torque	Voltage	Weight
	s	Nm	Nm		kg
AR30 W22S F020	60	15	15	24 V~	1.1
AR30 W23S F020	120	15	15	24 V~	1.1

Positioner:			
Control signal		Setting range	
0...10 V	$R_i \geq 30\ k\Omega$	Starting point U_o	0.4...9,1 V
0...20 mA	$R_i \geq 50\ \Omega$	Control span ΔU	1...10 V
Positional feedback		Switching range X_{Sh}	4% of ΔU
0...10 V	max. load ≥ 2,5 kΩ		
0...620 mV	max. load ≥ 100 kΩ		
Power supply 24 V~	± 20%, 50 Hz	Permissible ambient temp.	–5...60 °C
Power consumption		Permissible amb. humidity	< 95 %rh
running	approx. 5.1 W	Degree of protection [3]	IP 55 (EN 60529)
standstill	approx. 0.7 VA	Upside down	IP 54 (EN 60529)
Permissible damper area [1]	5 m²	Wiring diagram	A04311
Angle of rotation [2]	90°	Dimension drawing	M04307
		Fitting instructions	MV 505334

Accessories

0188813 000* Ball-joint for lever
0294148 000* Fixing bracket for wall mounting.
0294967 000* Pivot pin for lever
0370059 000* Clamp-on lever (can be used only in conjuction with 0370819)
0370774 001 Handle for manual adjustment.
0370785 001 Position indicator, MV 505329
0370819 000* Flat-sided hub (can be used only in conjuction with 0370059)
0372460 001 Cable screw fitting (plastic M20x1,5) incl, locking nut and gasket, max, 2 pcs.

*) Dimension drawing or wiring diagram are available under the same number

1) Recommended value for equal-sided, smooth-action air dampers.
2) Angle of rotation of drive shaft is 90° (factory setting). Can be changed to 180° by reversing the cogs and adjusting the end switches (see MV 505335).
3) Degree of protection IP 55 with cable screw fitting (M20x1,5)

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→ PDS 51.345

A44 W0...W2: Motor drive

How energy efficiency is improved

Electric cut-off in end position to save energy.

Areas of application

Actuation of regulating units, such as air dampers, gate valves, butterfly valves, etc. For controllers with a switching output (3-point control).

Features

- Torque up to 30 Nm
- Synchronous motor with limit switch
- Maintenance-free gearbox
- Control of regulating unit to be activated in any intermediate position
- Rotation angle min. 30° to max. 320°

Technical description

- Depending on the model, the torque is 25 or 30 Nm
- Cast light alloy housing
- Cover made of self-extinguishing thermoplastic
- Electrical connections (max. 1.5 mm²) with screw terminals
- Cable clamping sleeve M20 x 1.5
- Crank handle for manual adjustment with automatic motor cut-off
- Depending on the model, the running time for 90° rotation angle is 30, 60 or 120 sec.

Type	Torque Nm	Holding torque Nm	Running time for 90° s	Voltage	Weight kg
A44 W0 F001	25	22	30	230 V~	2.5
A44 W0 F020	25	22	30	24 V~	2.5
A44 W1 F001	30	30	60	230 V~	2.5
A44 W1 F020	30	30	60	24 V~	2.5
A44 W2 F001	30	30	120	230 V~	2.2
A44 W2 F020	30	30	120	24 V~	2.2

Supply voltage	230 V~ ± 15%, 50...60 Hz	Angle of rotation [2]	90°
	24 V~ ± 20%, 50...60 Hz	Perm. ambient temp. [3]	–20...60 °C
Power consumption		Perm. ambient humidity	< 95 %rh
A44 W0, A44 W1	9.2 W	Degree of protection [4]	IP 43 (EN 60529)
A44 W2	3.8 W		
Perm. damper area [1]		Wiring diagram	A01344
A44 W0	8 m²	Dimension drawing	M370550
A44 W1, A44 W2	10 m²	Fitting instructions	MV 505006

1) The recommended permissible damper area applies to equal-sided, easy-action dampers.
2) Angle of rotation of end shaft is adjustable from 30° min. to 320° max. by means of a switching cam (starting point is freely selectable). If a potentiometer is fitted: observe potentiometer rotation angle.
3) Use a heating resistor in temperatures below 0 °C (accessory).
4) Degree of protection IP 43 is attained only in conjunction with cable screw fitting M20x1,5.
Degree of protection IP 55 is attained with steel or aluminium cover (accessory) and cable screw fitting M20x1,5.

Accessories see next page >>>

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→ PDS 51.345

Accessories

0188614 000* Fixing bracket for wall mounting
0274605 000* Angle ball joint for clamp-on lever with M10 nut
0294967 000* Pivot-pin for clamp-on lever
0370205 001 Heating resistor 5 W, 230 V~, MV 505058
0370205 002 Heating resistor 5 W, 24 V~, MV 505058
0370396 000* 3 plug-in auxiliary change-over contacts [1], 10 (2) A 250 V~, MV 505004
0370479 000* Bright galvanised steel cover with lever for external manual adjustment, rubber seal, degree of protection IP 55, olive. Fitted as per MV 505005
0370486 000* Clamp-on lever, complete (incl. square-head hub)
0370493 000* 2 plug-in auxiliary change-over contacts [1], 10 (2) A 250 V~, MV 505004
0370628 000* Adaptor plate including four M6 counter-sunk screws for replacing A33 W by A44 W.
0370638 000* Straight ball joint for clamp-on lever with M10 nut
0370715 001* Cover of diecast aluminium, with rubber seal, degree of protection IP 55
0371290 001* Black cover of diecast aluminium; with window, rubber seal, position indicator and scale. Fitted as per MV 505329, degree of protection IP 55
0372460 001 Cable screw fitting (plastic M20x1,5) incl. locking nut and gasket, max. 3 pcs.

Potentiometer 1,0 W, with slipping clutch, fitted as per MV 505228
Set of cogs according to angle of rotation of end shaft

0370640 . . .*	/001 = 2000 Ω	/002 = 130 Ω	/006 = 1000 Ω
0370641 . . .*	/001 = 130/2000 Ω	/002 = 2000/2000 Ω	/006 = 130/140 Ω

0370644 001 Rotation-angle cog set 90° or 180° with clutch
0370644 002 Rotation-angle cog set 120° or 150° with clutch
Other resistance values or angles of rotation (135°, 270°, 320°) on demand.

Potentiometer 1,0 W, with rigid clutch [2], fitted as per MV 505222
Set of cogs (370646) according to angle of rotation of end shaft

0370645 . . .	/006 = 1000 Ω	/007 = 5000 Ω

0370646 001 Rotation-angle cog set 90°, without clutch
0370646 002 Rotation-angle cog set 120°, without clutch

*) Dimension drawing or wiring diagram are available under the same number

1) Switching cam 180° ON or 180° OFF can be positioned at any point over the entire angle of rotation (360°).
2) Potentiometers with a rigid clutch are obligatory for certain TÜV-approved burner control systems.

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→ PDS 51.346

A44 W0S…W2S: Motor drive with positioner

T04258

How energy efficiency is improved

Electric cut-off in end position to save energy.

Areas of application

Actuation of regulating units, such as air dampers, gate valves, butterfly valves, etc. For controllers with a continuous output (0 - 10 V or 4 - 20 mA).

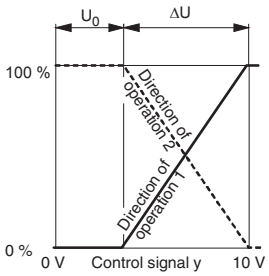
Features

- Torque up to 30 Nm
- Synchronous motor with limit switch and integrated positioner
- Maintenance-free gearbox
- Controlling the regulating unit to be actuated in any intermediate position
- Rotation angle min. 30° to max. 320°
- Direction of travel can be selected with switch

Y07552

Technical description

- Depending on the model, the torque is 25 or 30 Nm
- Cast light alloy housing
- Cover made of self-extinguishing thermoplastic
- Electrical connections (max. 1.5m²) with screw terminals
- Cable clamping sleeve M20x1.5
- Crank handle for manual adjustment with automatic cut-off of motor
- Depending on the model, the running time for 90° rotation angle is 30, 60 or 120 sec.



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Type	Torque	Holding torque	Running for 90°	Voltage	Weight
	Nm	Nm	s		kg
A44 W0S F001	25	22	30	24 V~	2.7
A44 W1S F001	30	30	60	24 V~	2.7
A44 W2S F001	30	30	120	24 V~	2.4

Positioner:

Control signal		Setting range	
0...10 V	R_i = 30 kΩ	Starting point U_o	0,4...9,1 V
0...20 mA	R_i = 50 Ω	Control range ΔU	1...10 V
Positional feedback		Switching range X_{Sh}	4% of ΔU
0...10 V	max. load ≥ 2,5 kΩ		
0...620 mV	max. load ≥ 100 kΩ		

Supply voltage 24 V~	± 20%, 50...60 Hz	Angle of rotation 2)	90°
Power consumption at 50 Hz		Perm. ambient temperature.	–5...50 °C
A44 W0S, A44 W1S	12.2 W	Perm. ambient humidity	< 95 %rh
A44 W2S	6.8 W	Degree of protection 3)	IP 43 (EN 60529)
Standstill	3 VA		
		Wiring diagram	A01345
Perm. damper area 1)		Dimension drawing	M370550
A44 W0S	8 m²	Fitting instructions	MV 505006
A44 W1S, A44 W2S	10 m²		

Accessories

0188614 000* Fixing bracket for wall mounting
0274605 000* Angle ball joint for clamp-on lever, with M10 nut
0294967 000* Pivot-pin for clamp-on lever
0370479 000* Bright galvanised steel cover with lever for external manual adjustment, rubber seal, degree of protection IP 55, olive. Fitted as per MV 505005
0370486 000* Clamp-on lever, complete (incl. square-head hub)
0370493 000* 2 plug-in auxiliary change-over contacts 4), 10 (2) A 250 V~, MV 505004
0370628 000* Adaptor plate including four M6 counter-sunk screws for replacing A33 W by A44 W.
0370638 000* Straight ball joint for clamp-on lever, with M10 nut
0370715 001* Cover of diecast aluminium, with rubber seal, degree of protection IP 55
0371290 001* Black cover of diecast aluminium; with window, rubber seal, position indicator and scale. Fitted as per MV 505329, degree of protection IP 55
0372460 001 Cable screw fitting (plastic M20x1,5) incl. locking nut and gasket, max. 3 pcs.

*) Dimension drawing or wiring diagram are available under the same number

1) The recommended permissible damper area applies to equal-sided, easy-action dampers.
2) Angle of rotation of end shaft is 90° (factory set). Changing the arrangement to 180° is possible by reversing the cogs and readjusting the limit switches. Refer to fitting instruction MV 505228.
3) Degree of protection IP 43 is attained only in conjunction with cable screw fitting M20x1,5.
Degree of protection IP 55 is attained with steel or aluminium cover (accessory) and cable screw fitting M20x1,5.
4) Switching cam 180° ON or 180° OFF can be positioned at any point over the entire angle of rotation (360°).

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→ PDS 51.363

AKM 105, 115: Rotary drive for ball valve

How energy efficiency is improved
Torque-dependent cut-off for efficient energy use.

Areas of application
For actuating 2-way and 3-way ball valves in the VKR and BKR series. For controllers with a switching output (2/3-point control).

Features
- Synchronous motor with control and electronic cut-off
- Electronic end position detection and motor cut-off with time switch in the device
- Maintenance-free gearbox with magnetic clutch
- Gearbox that can be disengaged for positioning the ball valve manually (with hand lever)
- Assembly with ball valve without any tools

Technical description
- Two-part housing made of self-extinguishing plastic, lower section black, upper section yellow
- Console and bayonet ring made of glass-fibre-reinforced plastic for fitting onto ball valve
- Connecting cable 1.2 m long, 3x 0.75 mm²
- Depending on the model, the running time for 90° rotation angle is 30 or 120 secs
- Installation position: vertically to horizontally, but but not upside down

Type	Control	Running time s	Rotation angle	Voltage	Weight kg
AKM 105 F100	2/3-point	30	90°	230 V~	0.7
AKM 115 F120	2/3-point	120	90°	230 V~	0.7
AKM 115 F122	2/3-point	120	90°	24 V~	0.7

Supply voltage	230 V~	± 15%, 50 to 60 Hz
	24 V~	± 20%, 50 to 60 Hz
Power consumption		
F100	2.4 W	4.5 VA
F120	2.0 W	4.0 VA
F122	1.6 W	1.7 VA
Max. medium temperature [2]	100 °C	
Perm. ambient temperature	-10...55 °C	
Perm. ambient humidity	5...95% rh without condensation	

Protection class (horizontal)		IP 54 acc. to EN 60529 [3]
Protection class	24 V	III acc. to IEC 60730
	230 V	II acc. to IEC 60730
Min. response time		200 ms
Connection diagram	2-point	A10464
	3-point	A10463
Dimension drawing		M10489
Fitting instructions		P100001578
Declaration on materials and the environment		MD 51.363

Accessories
0372459 100* External circuit 230V Version for parallel operation with A . M 1 . 4 or drives with limit switches incl. distribution socket; MV 506102

0372459 102* External circuit 24V Version for parallel operation with A . M 1 . 4 or drives with limit switches incl. distribution socket; MV 506102

0510420 001* Temperature adapter required at >100 °C Medium temperature for VKR / BKR (recommended at a temperature of <10 °C); P100002660

0510480 001* Auxiliary change-over switch [1] single; P100002035

0510480 002* Auxiliary change-over switch [1] double; P100002035

*) Dimension drawing or connection diagram available under same number

1) Infinitely adjustable 0...100%, perm. load 5(2) A, 24 to 230 V
2) For medium temperature > 100 °C use appropriate accessory
3) See Fitting instructions P100001578

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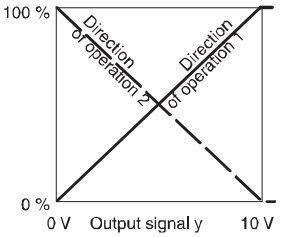
→ PDS 51.364

AKM 115S: Rotary drive with Sauter universal technology for ball valve

Y07552



How energy efficiency is improved

Automatic adaptation to ball valve, precision control and high energy efficiency with minimal operating noise.

Areas of application

For actuating 2-way and 3-way ball valves in the VKR and BKR series. For controllers with continuous output (0 - 10 V) or switching output (2-point or 3-point control).

Features

- Stepping motor with SUT (Sauter Universal Technology) electronic control unit
- Automatic detection of control signal applied (continuous or switching)
- The type of characteristic curve (linear, quadratic or equal percentage) can be adjusted in the drive
- Direction of travel can be switched on cable
- Electronic, load-dependent cut-off by means of stops in drive
- Coding switch for selection of characteristic and running time (35, 60 or 120 sec.)
- Maintenance-free gearbox with magnetic clutch
- Gearbox that can be disengaged for positioning the ball valve manually (with hand lever)
- Assembly with ball valve without any tools

Technical description

- Two-part housing made of self-extinguishing plastic, lower section black, upper section yellow
- Console and bayonet ring made of glass-fibre-reinforced plastic for fitting onto ball valve
- Connecting cable 1.2 m long, 5x 0.5 mm²
- Installation position: vertically to horizontally, but but not upside down

Type	Running time s	Rotation angle	Voltage	Weight kg
AKM 115S F132	35 / 60 / 120	90°	24 V~/=	0.7

Positioner [1]

Control signal	0...10 V, R_i > 100 kΩ	Start point U_0	0 or 10 V
Position feedback signal	0...10 V, load > 10 kΩ	Control span ΔU	10 V
		Switching range X_{sh}	200 mV

Supply voltage	24V~ ± 20%, 50...60 Hz	Protection class (horiz.)	IP 54 acc. to EN 60529
	24V= [2] + 20% / - 10%	Protection class	III acc. to IEC 60730
		Response time [1]	200 ms
Power consumption	4.9 W 8.7 VA		
		Connection diagram	A10520
Max. medium temperature [3]	100 °C	Dimension drawing	M10489
Perm. ambient temperature	-10...55 °C		
Perm. ambient humidity:	5...95% rh without condensation	Fitting instructions	P100001578
		Declaration on materials and the environment	MD 51.364

Accessories

0313529 001*	Split-range unit for selecting sequences Installation according to MV 505671 in separate distribution socket
0372462 001	CASE Drives PC Tool for configuring drives using computer; MV 506101
0510420 001*	Temperature adapter required at >100 °C medium temperature (recommended at a temperature of <10 °C); P100002660
0510480 001*	Auxiliary change-over switch [4] single; P100002035
0510480 002*	Auxiliary change-over switch [4] double; P100002035

*) Dimension drawing or connection diagram available under same number

1) Also for 2-point or 3-point, depending on connection type
2) 24V= for all functions
3) For medium temperature > 100 °C use appropriate accessory
4) Infinitely adjustable 0...100%, perm. load 5(2) A, 24 to 230 V

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→ PDS 51.372

AKF 112, 113: Rotary drive with spring return for control ball valves

How energy efficiency is improved
Torque related cut-off for efficient energy use.

Areas of application
For operating 2-way and 3-way control ball valves. For controllers with switching output (2-point or 3-point controller).

Characteristics
- Return to original position in the event of power failure or activation of a safety device
- Electronic torque-dependent shut-off using stops in the device
- Direction of rotation changed by installing the other way round

Technical description
- Two-piece housing made from cast light alloy with motor, gearbox, return spring and control electronics
- Also supplied: Installation kit for fitting to ball valves of type VKR and BKR, hex spanner for manual adjustment or spring winding, and position indication
- Connecting cable 0,9 m long, 0,75 mm², fixed to housing

Type	Running time for 90° in s		Control function	Voltage	Weight
	Motor	Spring			
AKF 112 F120	90	15	2-point	230 V~	1.2
AKF 112 F122	90	15	2-point	24 V~ / 24 to 48 V=	1.2
AKF 113 F122	90	15	3-point	24 V~ / 24 to 48 V=	1.2

Supply voltage	230 V~	± 10%, 50 to 60 Hz	Protection class		IP 42 in acc.with EN 60529
	24 V~	± 20%, 50 to 60 Hz	See installation instructions		IP 54
	24 to 48 V=	± 20%			
Power consumption			Protection class	230 V	II in acc.with IEC 60730
AKF 112 F120	4.5 W	7.0 VA		24 V	III in acc.with IEC 60730
AKF 112 F122	3.5 W	5.0 VA			
AKF 113 F122	3.5 W	5.0 VA	Connection diagram	2 pt	A05769
				3 pt	A05770
Torque/holding torque	7 Nm				
Rotation angle	max. 95°		Dimension drawing		M10504
			Fitting instructions		P100002659
Perm. ambient temperature	-32 to 55 °C		Declaration on materials and the environment		MD 51.372
Perm. ambient humidity	5...95% rH				

Accessories
0510240 001 Mounting kit for ball valves VKR/BKR as spare part and as accessory for rotary drives ASF 112 and 113 from index B, MV P100002479

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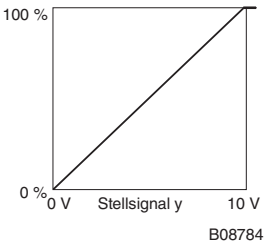
→ PDS 51.373

AKF 113S: Rotary drive with spring return and positioner



How energy efficiency is improved

Torque related cut-off for efficient energy use.

Areas of application

For operating 2-way and 3-way control ball valves, for example. For controllers with continuous output (0...10 V).

Characteristics

- Return to original position in the event of power failure or activation of a safety device
- Electronic torque-dependent shut-off using stops in the device
- Direction of rotation changed by installing the other way round

Technical description

- Two-piece housing made from cast light alloy with motor, gearbox, return spring, control electronics and positioner
- Also supplied: Installation kit for fitting to ball valves of type VKR and BKR, hex spanner for manual adjustment or spring winding, and position indication
- Connecting cable 0,9 m long, 4× 0,75 mm², fixed to housing

Type	Running time for 90° Motor	Running time for 90° Spring	Torque	Holding torque	Voltage	Weight
	s	s	Nm	Nm		kg
AKF 113S F122	90	15	7	7	24 V~ / 24…48 V=	1.3

Positioner		fixed to	
Control voltage	0...10 V, R_i = 100 kΩ	Starting point U_0	0 V
Position feedback signal	0...10 V (0...100%)	Control span ΔU	10 V
Perm. load	> 10 kΩ	Switching range X_{sh}	0,2 V

Supply voltage	24 V~ ± 20%, 50/60 Hz	Protection class	IP 42 acc. to EN 60529
	24…48 V= ± 20%	See installation instructions	IP 54
Power consumption	3,5 W 5 VA	Protection class	III acc. to IEC 60730
Rotation angle	max. 95°	Connection diagram	A05780
		Dimensioned drawing	M10504
Perm. ambient temperature	-32...55 °C	Fitting instructions	P100002659
Perm. ambient humidity:	< 95% rh	Declaration on materials and the environment	MD 51.373

Accessories

05210240001 Mounting kit for ball valves VKR/BKR as spare part and as accessory for rotary drives ASF 112 and 113 from index B, MV P100002479

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→ PDS 51.361

AVM 105, 115: Actuators

How energy efficiency is improved
Torque-dependent cut-off for efficient energy use.

Areas of application
Actuation of through and three-way valves in the VUN/BUN, VUD/BUD and VUE/BUE, DN15 to DN50 series. For controllers with a switching output (2/3-point control).

Features
- Pushing force 250 N in the case of the AVM 105 and 500 N in the case of the AVM 115
- Synchronous motor with control and electronic cut-off
- Electronic end position detection and motor cut-off with time switch in the device
- Maintenance-free gearbox with magnetic clutch
- Gearbox that can be disengaged for positioning valve manually (Allen key included)
- Assembly with valve takes place more or less automatically

Technical description
- Two-part housing made of self-extinguishing plastic, lower section black, upper section yellow
- Console made of glass-fibre-reinforced plastic
- Brass box nut for fitting valve
- Connecting cable 1.2 m long, 3x 0.75 mm²
- Depending on the model, the running time for 8 mm stroke is 30 or 120 secs
- Installation position: vertical to horizontal, but not upside down

Type	Control	Running time s	Stroke mm	Pushing force N	Power	Weight kg
AVM 105 F100	2/3-point	30	8	250	230 V~	0.7
AVM 105 F120	2/3-point	120	8	250	230 V~	0.7
AVM 105 F122	2/3-point	120	8	250	24 V~	0.7
AVM 115 F120	2/3-point	120	8	500	230 V~	0.7
AVM 115 F122	2/3-point	120	8	500	24 V~	0.7

Power supply	230 V~	± 15%, 50...60 Hz	Protection (horizontal)		IP 54 as per EN 60529
	24 V~	± 20%, 50...60 Hz	Protection class	24 V	III as per IEC 60730
				230 V	II as per IEC 60730
Power consumption					
F100		2.4 W 4.5 VA	Min. response time		200 ms
F120		2.0 W 4.0 VA			
F122		1.6 W 1.7 VA	Wiring diagram	2-point	A10351
Max. media temperature		100 °C		3-point	A09679
Permissible ambient temp.		–10...55°C	Dimension drawing		M09743
Ambient humidity		5…95 %rh without condensation	Fitting instructions		MV 505790
			Declaration on materials		MD 51.361

For control valve type KTM512 / TA-Regulator DN 15…50

Type	Control	Running time s	Stroke mm	Pushing force N	Power	Weight kg
AVM 115 F901	2/3-point	160	10	500	230 V~	0,7

Deviation from standard type: inverse scale therefore inverse connection. Adaptor for control valve available on the valve, or from TA-Regulator, stating reference no. 52 757 003.

Accessories
0372145 001*	Single auxiliary change-over contacts [1]; MV 505795
0372145 002*	Double auxiliary change-over contacts [1]; MV 505795
0372249 001*	Intermediate piece required for media temperature >100 °C for BXN / VXN (recommended for temperature < 10 °C); MV 505932
0372273 001*	Adaptor for Siemens VVG / VXG 44 and 48 valves; MV 505848
0372286 001	Potentiometer [2] 130 Ω; MV 505795
0372286 002	Potentiometer [2] 1000 Ω; MV 505795
0372286 003	Potentiometer [2] 5000 Ω; MV 505795
0372320 001	Allen key for manual adjustment
0372459 100*	External circuitry 230V version for parallel operation with ASM/AVM 104, 114 or actuators with end-switch, incl. distribution box; MV 506102
0372459 102*	External circuitry 24V version for parallel operation with ASM/AVM 104, 114 or actuators with end-switch, incl. distribution box; MV 506102

*) Dimension drawing or wiring diagram are available under the same number

1) Infinitely variable from 0...100%; max. load 5(2) A, 24...230 V
2) Only one potentiometer or one set of auxiliary contacts can be fitted to each drive!

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→ PDS 51.362

AVM 105S, 115S: Valve drive with Sauter Universal Technology SUT

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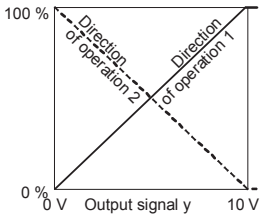

B07650

How energy efficiency is improved

Automatic adaptation to valve, precision control and high energy efficiency with minimal operating noise.

Areas of application

Actuation of through and three-way valves in the VUN/BUN, VUD/BUD and VUE/BUE, DN15 to DN50 series. For controllers with continuous output (0 - 10 V) or switching output (2-point or 3-point control).

Features

- Pushing force 250 N in the case of the AVM 105S and 500 N in the case of the AVM 115S
- Stepping motor with SUT (Sauter Universal Technology) electronic control unit and electronic load-dependent cut-off
- Automatic detection of control signal applied (continuous or switching)
- The type of characteristic curve (linear, quadratic or equal percentage) can be adjusted in the drive
- Independent adaptation to valve stroke
- Direction of travel can be switched on cable
- Coding switch for selection of characteristic and running time (35, 60 or 120 sec.)
- Maintenance-free gearbox with magnetic clutch
- Gearbox that can be disengaged for positioning valve manually (Allen key included)
- Assembly with valve takes place automatically after applying the control voltage

Technical description

- 24 V~ or 24 V~/= power supply
- Two-part housing made of self-extinguishing plastic, lower section black, upper section yellow
- Console made of glass-fibre-reinforced plastic
- Brass box nut for fitting valve
- Connecting cable 1.2 m long, 5x 0.75 mm²
- Installation position: vertical to horizontal, but not upside down

Type	Running time s	Stroke [3] mm	Pushing force N	Power	Weight kg
For valves with equal-percentage characteristic, can be switched over to linear					
AVM 105S F132	35/60/120	8.0	250	24 V~/=	0.7
AVM 115S F132	60/120	8.0	500	24 V~/=	0.7

Positioner [1]

Control signal	0...10V, R_i > 100 kΩ	Starting point U_0	0 or 10V
Positional feedback signal	0...10V, load > 10 kΩ	Control span ΔU	10V
		Switching range X_{sh}	200 mV

Power supply	24V~	± 20%, 50...60 Hz		Protection (horizontal)	IP 54 as per EN 60529
	24V= [2]	+ 20% / - 10%		Protection class	III as per IEC 60730
Power consumption					
AVM 105S F132		4.8 W	8.5 VA	Response time [1]	200 ms
AVM 115S F132		4.9 W	8.7 VA		
				Wiring diagram	A09673
Max. media temperature		100 °C		Dimension drawing	M09743
Permissible amb. temp.		–10...55 °C			
Ambient humidity		5…95 %rh without condensation		Fitting instructions 1 . 5S	MV 506065
				Declaration on materials	MD 51.362

For control valve type KTM512 / TA-Regulator DN 15…50

Type	Running time s	Stroke mm	Pushing force N	Power	Weight kg
AVM 115S F901	80/160	10,0	500	24 V~	0,7

Deviation from standard type: inverse scale therefore inverse direction of operation. Adaptor for control valve available on the valve or from TA-Regulator, stating reference no. 52 757 003.

1) Also for 2-point or 3-point. depending on type of connection
2) 24V = for input signal of 0...10V only on AVM 1 . 4; on AVM 1 . 5S for all functions.
3) Maximum stroke of drive = 10,0 mm

Accessories see next page >>>

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→ PDS 51.362

Accessories

0313529 001*	Split-range unit for setting sequences; to be fitted in separate distribution box as per MV 505671
0372145 001*	Single auxiliary change-over contacts [1]; MV 505795
0372145 002*	Double auxiliary change-over contacts [1]; MV 505795
0372249 001*	Intermediate piece required for media temperature >100 °C (recommended for temperature < 10 °C); MV 505932
0372273 001*	Adaptor for Siemens VVG / VXG 44 and 48 valves; MV 505848
0372286 001	Potentiometer [2] 130 Ω; MV 505795
0372286 002	Potentiometer [2] 1000 Ω; MV 505795
0372286 003	Potentiometer [2] 5000 Ω; MV 505795
0372462 001	CASE Drives PC Tool for configuration of actuators per computer; MV 506101

*) Dimension drawing or wiring diagram are available under the same number

1) Fully variable from 0...100%; max. loading 5 (2) A. 24....230V
2) Only one potentiometer or one set of auxiliary contacts can be fitted to each drive!

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→ PDS 51.365

AVM 124: Valve drive

How energy efficiency is improved

Cut-off in end position to save energy.

Areas of application

Actuation of through and three-way valves in the VUN/BUN, VUD/BUD and VUE/BUE, DN15 to DN50 series. For controllers with a switching output (2-/3-point control).

Features

- Pushing force 800 N
- Stepping motor with electronic control unit and electronic load-dependent cut-off
- Maintenance-free gearbox
- Manual positioning using external hand crank with motor cut-off
- LED display
- Coding switch for changing over running time (30, 60, 120 sec.)

Technical description

- 230 V power supply
- Two-part housing made of self-extinguishing plastic, lower section black, cover transparent
- Body of gearbox and mounting bracket for fitting valve made of cast zinc
- Electrical connections (max. 1.5 mm²) with screw terminals
- Cable entry M20 × 1.5
- Installation position: vertical to horizontal, but not upside down

Type	Running time s	Stroke mm	Pushing force N	Power	Weight kg
AVM 124 F130	30 / 60 / 120	8	800	230 V~	2.1

Power supply	230 V~	± 15%, 50...60 Hz	
Power consumption	3,4 W	4,4 VA	
max. operating temperature	100 °C at valve		
Permissible ambient temp.	5...60 °C		
Ambient humidity	< 95 %rh without condensation		

Degree of protection [1]	IP 54 as per EN 60529
Protection class	II as per IEC 60730
Min. response time	200 ms
Wiring diagram	A09855
Dimension drawing	M07430
Fitting instructions	MV 505809
Declaration of materials	MD 51.365

Accessories

0370880 001 Mechanical stroke indicator; MV 505517
0370881 001* Auxiliary change-over contacts [2], simple; MV 505517
0370882 001* Auxiliary change-over contacts [2], simple, with pot. 2000 Ω, 1 W; 24 V; MV 505517
0370882 006* Auxiliary change-over contacts [2], simple, with pot. 1000 Ω, 1 W; 24 V; MV 505517
0370883 001* Potentiometer 2000 Ω, 1 W; 24 V; MV 505517
0370883 006* Potentiometer 1000 Ω, 1 W; 24 V; MV 505517
0372249 001* Intermediate piece required for media temperature >100 °C for BXN / VXN (recommended for temperature < 10 °C); MV 505932
0372460 001 Cable screw fitting (plastic M20×1,5) incl. locking nut and gasket, max. 2 pcs.

*) Dimension drawing or wiring diagram are available under the same number

1) Degree of protection IP 54 only with cable screw fitting
2) Infinitely variable; max. load 2 (1) A, 12 ...250 V~, min. load 250 mA, 12 V~

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→ PDS 51.366

AVM 125S: Valve drive with Sauter Universal Technology SUT

How energy efficiency is improved
Electric cut-off and auto-adjustment to save energy

Areas of application
Actuation of through and three-way valves in the VUN/BUN, VUD/BUD and VUE/BUE, DN15 to DN50 series. For controllers with continuous output (0 - 10 V or 4 - 20 mA) or switching output (2-point or 3-point control).

Features
- Pushing force 800 N
- Stepping motor with SUT (Sauter Universal Technology) electronic control unit and electronic load-dependent cut-off
- Automatic detection of control signal applied (continuous or switching)
- The type of characteristic curve (linear, quadratic or equal percentage) can be adjusted in the drive
- Independent adaptation to valve stroke
- Direction of travel can be selected via screw terminal when making electrical connection or remotely
- Coding switch for selection of characteristic and running time (30, 60 or 120 sec.)
- Maintenance-free gearbox
- Manual positioning using external hand crank with motor cut-off
- LED display

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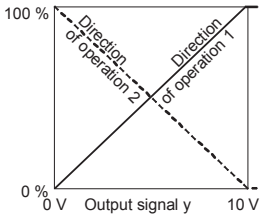
Technical description
- 24 V~ power supply
- Two-part housing made of self-extinguishing plastic, lower section black, cover transparent
- Body of gearbox and mounting bracket for fitting valve made of cast zinc
- Electrical connections (max. 1.5 mm²) with screw terminals
- Cable entry M20 × 1.5
- Installation position: vertical to horizontal, but not upside down



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Type	Running time s	Stroke [4] mm	Pushing force N	Power	Weight kg
For valves with equal-percentage characteristic, can be switched over to linear					
AVM 125S F132	30 / 60 / 120	8	800	24 V~	2.1

Positioner: [1]			
Control signal 1	0...10 V, R_i > 100 kΩ	Starting point U_0	0 or 10 V
Control signal 2	4...20 mA, R_i = 50 Ω	Control span ΔU	10 V
Position feedback signal	0...10 V, load > 2.5 kΩ	Switching range X_{sh}	200 mV

Power supply	24 V~	± 20%, 50...60 Hz	Degree of protection [2] IP 54 as per EN 60529
			Protection class III as per IEC 60730
Power consumption		5 W 8.4 VA	
			Wiring diagram A10451
Max. medium temperature		100 °C	Dimension drawing M07430
Permissible ambient temp.		-10...55 °C	
Ambient humidity		< 95 %rh without condensation	Fitting instructions MV 506066
			Declaration on materials MD 51.366

Accessories
0313529 001* Split-range unit for settings sequences. MV 505671; A09421
0370880 001 Mechanical stroke indicator; MV 505517
0370881 001* Auxiliary change-over contacts [3], single; MV 505517
0370882 001* Auxiliary change-over contacts [3], single, and pot.2000 Ω, 1 W; 24 V; MV 505517
0370882 006* Auxiliary change-over contacts [3], single, and pot.1000 Ω, 1 W; 24 V; MV 505517
0370883 001* Potentiometer 2000 Ω, 1 W; 24 V; MV 505517
0370883 006* Potentiometer 1000 Ω, 1 W; 24 V; MV 505517
0372249 001* Intermediate piece required for media temperature >100 °C for BXN / VXN (recommended for temperature < 10 °C); MV 505932
0372460 001 Cable screw fitting (plastic M20x1,5) incl. locking nut and gasket, max. 2 pcs.

*) Dimension drawing or wiring diagram are available under the same number

1) Also for 2-point or 3-point, depending on connection
2) Degree of protection IP 54 only with Pg 16 cable screw fitting
3) Infinitely variable; max. load 2 (1) A, 12...250 V~, min. load 250 mA, 12 V~
4) Max. stroke of drive = 10,0 mm

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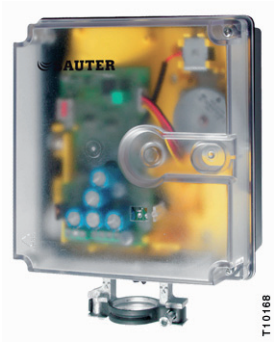
→ PDS 51.367

AVF 124: Valve drive with spring return



How energy efficiency is improved

Electric cut-off to save energy

Areas of application

Actuation of through and three-way valves in the VUN/BUN, VUD/BUD and VUE/BUE, DN 15 to DN 50 series. For controllers with a switching output (3-point control).

Features

- Actuator with spring return action and pushing force of 500 N
- The return spring moves the actuator back to a pre-determined end position in the event of a power failure or the power being switched off or whenever a limiter is activated
- Two versions; NC closes the valve, NO opens the valve if the spring is activated
- Stepping motor with electronic control unit and electronic load-dependent cut-off
- Maintenance-free gearbox and holding magnet
- LED display
- Coding switch for changing over running time (60, 120 s)

Technical description

- 230 V power supply
- Two-part housing made of self-extinguishing plastic, lower section black, cover transparent
- Body of gearbox and mounting bracket for fitting valve made of cast zinc
- Electrical connections (max. 1.5 mm²) with screw terminals
- Cable entry M20 × 1.5
- Installation position: vertical to horizontal, but not upside down

Type	Running time sec		Reset function	Pushing force 1)	Power	Weight
	Motor	Spring		N		kg
AVF 124 F130	60/120	18 ±10	closed (NC)	500	230 V~	2.4
AVF 124 F230	60/120	18 ±10	open (NO)	500	230 V~	2.4

Power supply	±15%, 50...60 Hz	Degree of protection 2)	IP 54 (EN 60529)
Power consumption		Protection class	II as per IEC 60730
F130	4,3 W 7 VA		
on starting	30 VA (max. 1s) 3)	Min. response time	200 ms
Nominal stroke	8 mm	Wiring diagram	A10102
Max. operating temperature	100 °C at valve	Dimension drawing	M07429
Permissible ambient temp.	5...60 °C		
Ambient humidity	< 95 %rh without condensation	Fitting instructions	MV 505851
		Declaration on materials	MD 51.367

Accessories

0370880 001 Mechanical stroke indicator; MV 505517
0370881 001* Auxiliary change-over contacts 4), simple; MV 505517
0370882 001* Auxiliary change-over contacts 4), simple, with pot. 2000 Ω, 1 W; 24 V; MV 505517
0370882 006* Auxiliary change-over contacts 4), simple, with pot. 1000 Ω, 1 W; 24 V; MV 505517
0370883 001* Potentiometer 2000 Ω, 1 W; 24 V; MV 505517
0370883 006* Potentiometer 1000 Ω, 1 W; 24 V; MV 505517
0372249 001* Intermediate piece required for media temperature >100 °C for BXN / VXN (recommended for temperature < 10 °C); MV 505932
0372460 001 Cable screw fitting (plastic M20×1,5) incl. locking nut and gasket, max. 2 pcs.

*) Dimension drawing or wiring diagram are available under the same number

1) Max. pushing force: 550 N or, with spring return, 1500 N
2) Degree of protection IP 54 only with cable screw fitting
3) On starting or after spring return operation
4) Infinitely variable, max. loading 2 (1) A, 12 ...250 V~, min. loading 250 mA, 12 V~

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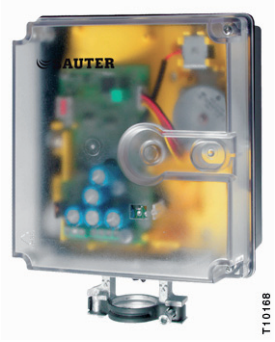
→ PDS 51.368

AVF 125S: Valve drive SUT with spring return

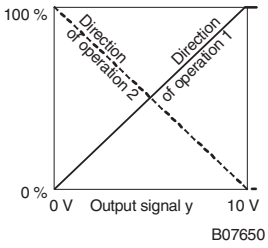


How energy efficiency is improved
Electric cut-off and auto-adjustment to save energy.

Areas of application
Actuation of through and three-way valves in the VXN/BXN, VUD/BUD and VUE/BUE, DN15 to DN50 series. For controllers with continuous output (0 - 10 V) or switching output (2-point or 3-point control).

Features
- Actuator with spring return and pushing force of 500 N
- The return spring moves the actuator back to a pre-determined end position in the event of a power failure or the power being switched off or whenever a limiter is activated
- Two versions; NC closes the valve, NO opens the valve if the spring is activated
- Stepping motor with SUT (Sauter Universal Technology) electronic control unit and electronic load-dependent cut-off
- Automatic detection of control signal applied (continuous or switching)
- The type of characteristic curve (linear, quadratic or equal percentage) can be adjusted in the drive
- Direction of travel can be selected via screw terminals when making electrical connection or remotely
- Coding switch for selection of characteristic and running time (60 or 120 sec.)
- Maintenance-free gearbox and holding magnet
- LED display

Technical description
- 24 V~ power supply
- Two-part housing made of self-extinguishing plastic, lower section black, cover transparent
- Body of gearbox and mounting bracket for fitting valve made of cast zinc
- Electrical connections (max. 1.5 mm²) with screw terminals
- Cable entry M20 × 1.5
- Installation position: vertical to horizontal, but not upside down



Type	Running time sec Motor	Running time sec Spring	Reset function	Pushing force [1] N	Power	Weight kg
For valves with equal-percentage characteristic, can be switched over to linear						
AVF 125S F132	60 / 120	18 ± 10	closed (NC)	500	24 V~	2.4
AVF 125S F232	60 / 120	18 ± 10	open (NO)	500	24 V~	2.4

Positioner:

Control signal 1	0...10V, R_i = 100 kΩ	Starting point U_0	0 or 10 V
Control signal 2	4...20 mA, R_i = 50 Ω	Control span ΔU	10 V
Position feedback signal	0...10V, load > 2,5 kΩ	Switching range X_{sh}	200 mV

Power supply 24 V~ [2]	± 20%, 50...60 Hz	Degree of protection [3]	IP 54 (EN 60529)
		Protection class	III as per IEC 60730
Power consumption			
AVF 12 . S F. 32	5 W 8.4 VA	Wiring diagram AVF 125	A10455
on starting	30 VA (max. 1s) [4]	Dimension drawing	M07429
Nominal stroke [5]			
AVF 125S	8,0 mm	Fitting instructions AVF 125	MV 506067
Max. media temperature	100 °C	Declaration on materials	MD 51.368
Permissible ambient temp.	-10...55 °C		
Ambient humidity	< 95 %rh without condensation		

1) Max. pushing force: 550 N or, with spring return, 1500 N
2) 24V= not possible
3) Degree of protection IP 54 only with M20 cable screw fitting
4) On starting or after spring return operation
5) Maximum stroke of drive = 10.0 mm

Accessories see next page >>>

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→ PDS 51.368

Accessories

0313529 001*	Split-range unit for settings sequences. MV 505671; A09421
0370880 001	Mechanical stroke indicator; MV 505517
0370881 001*	Auxiliary change-over contacts [1], simple; MV 505517
0370882 001*	Auxiliary change-over contacts [1], simple, and pot. 2000 Ω, 1 W; 24 V; MV 505517
0370882 006*	Auxiliary change-over contacts [1], simple, and pot. 1000 Ω, 1 W; 24 V; MV 505517
0370883 001*	Potentiometer 2000 Ω, 1 W; 24 V; MV 505517
0370883 006*	Potentiometer 1000 Ω, 1 W; 24 V; MV 505517
0372249 001*	Intermediate piece required for media temperature >100 °C for BXN / VXN (recommended for temperature < 10 °C); MV 505932
0372460 001	Cable screw fitting (plastic M20×1.5) incl. locking nut and gasket, max. 2 pcs.

*) Dimension drawing or wiring diagram are available under the same number

1) Infinitely variable; max. load 2 (1) A, 12...250 V~, min. load 250 mA, 12 V~

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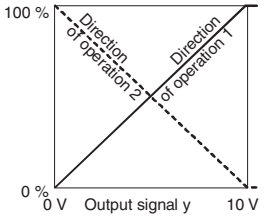
→ PDS 51.377

AVM 234S: Valve drive with SUT positioner

Y07552



B07650

How energy efficiency is improved

Automatic adaptation to valve, precision control and high energy efficiency with minimal operating noise.

Areas of application

Actuation of through or three-way valves in the V/BUD and V/BUE DN65 - 150 series, as well as V/BUG, V/BUS, VUP and V/B6R DN15 - 150. For controllers with continuous output (0 - 10 V or 4 - 20 mA) or switching output (2-point or 3-point control).

Features

- Pushing force of minimum 2500 N
- Stepping motor with SUT (Sauter Universal Technology) electronic control unit and electronic load-dependent cut-off
- Automatic detection of control signal applied (continuous or switching), display via 2 LEDs
- The type of characteristic curve (linear, quadratic or equal percentage) can be adjusted in the drive
- Independent adaptation to valve stroke between 8 and 49 mm, captive even if the power is turned off
- Direction of travel can be selected via screw terminals when making electrical connection or remotely
- Coding switch for selection of characteristic and running time (35, 60 or 120 sec.)
- Hand crank for external manual adjustment with motor cut-off and as trip for re-initialisation
- Easy assembly with valve, spindle connection takes place automatically after application of control voltage
- Many adaptors allow assembly on third-party valves

Technical description

- Power supply 230 V with modules or direct connection for 24 V~ or 24 V=, continuous activation also permissible at 230 V
- Two-part housing made of self-extinguishing yellow plastic and sealing to IP66 protection class
- Maintenance-free gearbox in sintered steel, gearbox base-plate in steel
- Patented drive-valve coupling
- Mounting column made of stainless steel and mounting bracket for fitting valve made of cast light alloy
- Electrical connections (max. 2.5 mm²) with screw terminals
- Three knock-out cable entries for M20 x 1.5 (2x) and M16 x1.5
- Installation position: vertical to horizontal, but not upside down

Type	Run time s/mm	Stroke mm	Thrust N	Voltage [1]	Weight kg
Valve drive for valves: VUD / BUD, VUE / BUE, VUG / BUG, VUS / BUS and VUP					
AVM 234S F132	2 / 4 / 6	14...40	2500	24 V~/=	4.1
matching with assembly for valve series: V / B6 and VXD, BXD, BXE					
AVM 234S F132-5	2 / 4 / 6	14	2500	24 V~/=	4.1
AVM 234S F132-6	2 / 4 / 6	40	2500	24 V~/=	4.6

Positioner: [1]			
Control signal 1	0...10 V, R_i > 100 kΩ	Starting point U_0	0 or 10 V
Control signal 2	4...20 mA, R_i = 50 Ω	Control span ΔU	10 V
Position feedback signal	0...10 V, load > 2.5 kΩ	Switching range X_{sh}	300 mV

Voltage supply	24 V~	± 20%, 50...60 Hz	Level of protection	IP 66 to EN 60529
	24 V=	± 15%	Protection class	III to IEC 60730
with accessories	230 V~	± 15%		
			Response time for 3-point	200 ms
Power consumption		10 W 18 VA [2]		
Stroke		8…49 mm	Connection diagram	A10357
Max. temperature of medium		130 °C [3]		
Permitted ambient temperature		–10...55(60) °C	Dimensional drawing	M10356
Permitted ambient humidity		< 95 %rh	Installation instructions	MV 505919
		without condensation	Declaration on materials	MD 51.377

1) Also for 2-point or 3-point depending on the connection for 24 V~
2) Design the transformers for this value, otherwise functional faults may occur.
3) An intermediate piece is required for higher medium temperatures, 180 °C or 240 °C (see Accessories)

Accessories see next page >>>

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→ PDS 51.377

Accessories

0313529 001* Split range unit to set sequences, MV 505671; A09421
Module, plug-in type, 3-point activation, additional power 2 VA
0372332 001* 230 V ± 15% voltage supply, MV 505901
0372332 002* 100 V ± 15% voltage supply, MV 505901
Auxiliary changeover switches (2 pcs. each) 12...250 V~
0372333 001* Continuously adjustable, min. 100 mA and 12 V, additional load 6(2) A, MV 505866
0372333 002* Gold-plated contacts, from 1 mA and up to 30 V; further range 3(1) A; MV 505866
0372334 001* Potentiometer 2000 Ω, 1 W, 24 V; installation as per MV 505894
0372334 002* Potentiometer 130 Ω, 1 W, 24 V; installation as per MV 505894
0372334 006* Potentiometer 1000 Ω, 1 W, 24 V; installation as per MV 505894
0372336 180* Intermediate piece [1)] (required for medium above 130 °C and up to 180 °C, MV 505902)
0372336 240* Intermediate piece [1)] (required for medium above 180 °C and up to 240 °C, MV 505902)
Installation kit for AVM 234S F132 on Sauter valves (for 0372338 002, no intermediate piece required)
0372338 001 V/B6 up to DN 50 and V/BXD, V/BXE up to DN 50 with stroke 14 mm. MV 505903
0372338 002 V/B6 of DN 65-150 and V/BXD, V/BXE from DN 65 with stroke 40 mm. MV 505903
0372338 003 Conversion kit for AVM 234S F132-5 on standard drive AVM 234S F132, MV 505903
0372338 004 Conversion kit for AVM 234S F132-6 on standard drive AVM 234S F132, MV 505903
Set of adaptors for non-Sauter valves
0372376 010 Siemens with 20 mm stroke or spindle ø10 mm, MV 505974
0372376 014 Siemens with 40 mm stroke or spindle ø14 mm, MV 505974
0372377 001 JCI DN15…150 with 14, 25 or 40 mm stroke or spindle ø10, 12 or 14 mm, MV 505975
0372378 001 Honeywell with 20 mm stroke, MV 506069
0372378 002 Honeywell with 38 mm stroke, MV 506069
0372386 001 LDM Typ RY113 R/M, MV P100000538
0372389 001 ITT-Dräger, DN 15…32, MV P100000376
0372389 002 ITT-Dräger, DN 40…50, MV P100000376
0378263 001 End stop guide (required for V/BXD, V/BXE DN15…50, V/B6 DN15 with kvs ≤ 1 m^3/h)
0386263 001 Screwed cable fitting, M16 ×1,5
0386263 002 Screwed cable fitting, M20 ×1,5

*) Dimension drawing or wiring diagram are available under the same number

1) Intermediate piece not required for the F132-6 version

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→ PDS 51.378

AVF 234S: SUT actuator with spring return

How energy efficiency is improved

Automatic adaptation to valve, precision control and high energy efficiency with minimal operating noise.

Areas of application

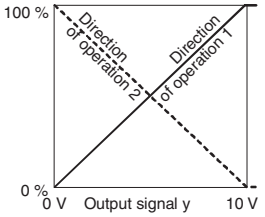
Actuation of through or three-way valves in the V/BUD and V/BUE DN65 - 150 series, as well as V/BUG, V/BUS, VUP and V/B6R DN15 - 150. For controllers with continuous output (0 - 10 V or 4 – 20 mA) or switching output (2-point or 3-point control).

Features

- Actuator with spring return action and pushing force of 2000 N, in 'normally closed' or 'normally open' versions
- DC motor with SUT (Sauter Universal Technology) electronic control unit and electronic load-dependent cut-off
- Automatic detection of control signal applied (continuous or switching), display via 2 LEDs
- The type of characteristic curve (linear, quadratic or equal percentage) can be adjusted in the drive
- Independent adaptation to valve stroke between 8 and 49 mm, captive even if the power is turned off
- Direction of travel can be selected via screw terminals when making electrical connection or remotely
- Coding switch for selection of characteristic and running time (35, 60 or 120 sec.)
- Hand crank for external manual adjustment with motor cut-off and as trip for re-initialisation
- Easy assembly with valve, spindle connection takes place automatically after application of control voltage
- Many adaptors allow assembly on third-party valves

Technical description

- Power supply 230 V with modules or direct connection for 24 V~ or 24 V=, continuous activation also permissible at 230 V
- Two-part housing made of self-extinguishing yellow plastic and sealing to IP66 protection class
- Maintenance-free gearbox in sintered steel, gearbox base-plate in steel
- Spring assembly in stainless steel
- Patented drive-valve coupling
- Mounting column made of stainless steel and mounting bracket for fitting valve made of cast light alloy
- Electrical connections (max. 2.5 mm²) with screw terminals
- Three knock-out cable entries for M20 x1.5 (2x) and M16 x1.5
- Fitting position: vertical to horizontal, but not upside down



Type	Running time Motor s/mm	Running time Spring s [1]	Pushing Force N	Stroke mm	Weight kg
Actuator spindle normally retracted NC with: VUD / BUD, VUE / BUE, VUG / BUG and BUS NO with: VUS and VUP					
AVF 234S F132	2 / 4 / 6	15...30	2000	14...40	5.6
NC with: V6 / B6 und VXD, VXE, BXD, BXE					
AVF 234S F132-5	2 / 4 / 6	15...30	2000	14	5.6
AVF 234S F132-6	2 / 4 / 6	15...30	2000	40	6.0
Actuator spindle normally extended NO with: VUD / BUD, VUE / BUE, VUG / BUG and BUS NC with: VUS and VUP					
AVF 234S F232	2 / 4 / 6	15...30	2000	0...40	5.6

Positioner: [2]			
Control signal 1	0...10 V, R_i = 100 kΩ	Starting point U_0	0 V, or 10 V
Control signal 2	4...20 mA, R_i = 50 Ω	Control span ΔU	10 V
Position feedback signal	0...10 V, load > 2,5 kΩ	Switching range X_{sh}	300 mV

1) The return time corresponds to a stroke of 14 to 40 mm and does not depend on the set run time
2) Also for 2-point or 3-point depending on the connection for 24 V~

For more technical specifications, documentation and accessories, see next page >>>

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→ PDS 51.378

Voltage supply	24 V~	± 20%, 50...60 Hz	Permitted ambient humidity	< 95 %rh
	24 V=	± 15%		without condensation
with accessories	230 V~	± 15%	Level of protection	IP 66 (EN 60529)
			Protection class	III to IEC 60730
Power consumption		7.5 W 20 VA [2]	Response time for 3-point	200 ms
Stroke		8…49 mm	Connection diagram	A10359
Number of spring returns		> 40.000	Dimensional drawing	M10355
Max. temperature of medium		130 °C [3]	Fitting instructions	MV 505920
Permitted ambient temperature		–10...55(60) °C	Declaration on materials	MD 51.378

Accessories

0313529 001* Split range unit to set sequences, MV 505671; A09421
Module, plug-in type, 3-point activation, additional power 2 VA
0372332 001* 230 V ± 15% voltage supply, MV 505901
0372332 002* 100 V ± 15% voltage supply, MV 505901
Auxiliary changeover switches (2 pcs. each) 12...250 V~
0372333 001* Continuously adjustable, min. 100 mA and 12 V, additional load 6(2) A, MV 505866
0372333 002* Gold-plated contacts, from 1 mA and up to 30 V; further range 3(1) A; MV 505866
0372334 001* Potentiometer 2000 Ω, 1 W, 24 V; installation as per MV 505894
0372334 002* Potentiometer 130 Ω, 1 W, 24 V; installation as per MV 505894
0372334 006* Potentiometer 1000 Ω, 1 W, 24 V; installation as per MV 505894
0372336 180* Adaptor [1] (required for medium above 130 °C and up to 180 °C, MV 505902)
0372336 240* Adaptor [1] (required for medium above 180 °C and up to 240 °C, MV 505902)
Installation kit for AVF 234S F132 on Sauter valves (for 0372338 002, no adaptor required)
0372338 001 V/B6 up to DN 50 and V/BXD, V/BXE up to DN 50 with stroke 14 mm. MV 505903
0372338 002 V/B6 of DN 65-150 and V/BXD, V/BXE from DN 65 with stroke 40 mm. MV 505903
0372338 003 Conversion kit for AVM 234S F132-5 on standard drive AVM 234S F132, MV 505903
0372338 004 Conversion kit for AVM 234S F132-6 on standard drive AVM 234S F132, MV 505903
Set of adaptors for non-Sauter valves
0372376 010 Siemens with 20 mm stroke or spindle ø10 mm, MV 505974
0372376 014 Siemens with 40 mm stroke or spindle ø14 mm, MV 505974
0372377 001 JCI DN15…150 with 14, 25 or 40 mm stroke or spindle ø10, 12 or 14 mm, MV 505975
0372378 001 Honeywell with 20 mm stroke, MV 506069
0372378 002 Honeywell with 38 mm stroke, MV 506069
0372386 001 LDM Typ RY113 R/M, MV P100000538
0372389 001 ITT-Dräger, DN 15…32, MV P100000376
0372389 002 ITT-Dräger, DN 40…50, MV P100000376
0378263 001 End stop guide (required for V/BXD, V/BXE DN15…50, V/B6 DN15 with kvs ≤ 1 m^3/h)
0386263 001 Screwed cable fitting, M16 ×1,5
0386263 002 Screwed cable fitting, M20 ×1,5

*) Dimension drawing or wiring diagram are available under the same number

1) Adaptor not required for the F132-6 version
2) Design the transformers for this value, otherwise functional faults may occur.
3) An adaptor is required for higher medium temperatures, 180 °C or 240 °C (see Accessories)

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→ PDS 51.379

AVN 224S: SUT actuator with safety function to DIN 32730

How energy efficiency is improved

Automatic adaptation to valve, precision control and high energy efficiency with minimal operating noise.

Areas of application

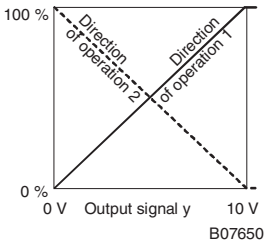
Actuation of through or three-way valves in the V/BUD and V/BUE DN65 - 150 series, as well as V/BUG, V/BUS, VUP and V/B6R DN15 - 150. For controllers with continuous output (0 - 10 V or 4 – 20 mA) or switching output (2-point or 3-point control).

Features

- Actuator with safety function and pushing force of 1100 N, in 'normally closed' or 'normally open' versions
- DC motor with SUT (Sauter Universal Technology) electronic control unit and electronic load-dependent cut-off
- Automatic detection of control signal applied (continuous or switching), display via 2 LEDs
- The type of characteristic curve (linear, quadratic or equal percentage) can be adjusted in the drive
- Independent adaptation to valve stroke between 8 and 49 mm, captive even if the power is turned off
- Direction of travel can be selected via screw terminals when making electrical connection or remotely
- Coding switch for selection of characteristic and running time (35, 60 or 120 sec.)
- Push-buttons on outside of housing for manual adjustment with motor cut-off and as trip for re-initialisation
- Easy assembly with valve, spindle connection takes place automatically after application of control voltage
- Many adaptors allow assembly on third-party valves

Technical description

- Power supply 230 V with modules or direct connection for 24 V~ or 24 V=, continuous activation also permissible at 230 V
- Two-part housing made of self-extinguishing yellow plastic and sealing to IP66 protection class
- Maintenance-free gearbox in sintered steel, gearbox base-plate in steel
- Spring assembly in stainless steel
- Patented drive-valve coupling
- Mounting column made of stainless steel and mounting bracket for fitting valve made of cast light alloy
- Electrical connections (max. 2.5 mm²) with screw terminals
- Three knock-out cable entries for M20 x1.5 (2x) and M16 x1.5
- Fitting position: vertical to horizontal, but not upside down



Type	Run-time Motor s/mm	Run-time Spring s[1)]	Pushing Force B	Stroke mm	Weight kg
Actuator spindle normally retracted					
NC with: VUE / BUE, VUG / BUG and BUS					
NO with: VUS and VUP					
AVN 224S F132	2 / 4 / 6	15...30	1100	14...40	5.6
NC with: V6 / B6 und VXD, VXE, BXD, BXE					
AVN 224S F132-5	2 / 4 / 6	15...30	1100	14	5.6
AVN 224S F132-6	2 / 4 / 6	15...30	1100	40	6.0
Actuator spindle normally extended					
NO with: VUE / BUE, VUG / BUG and BUS					
NC with: VUS and VUP					
AVN 224S F232	2 / 4 / 6	15...30	1100	0...40	5.6

Positioner: [2)]			
Control signal 1	0...10 V, R_i = 100 kΩ	Starting point U_0	0 V, or 10 V
Control signal 2	4...20 mA, R_i = 50 Ω	Control span ΔU	10 V
Position feedback signal	0...10 V, load > 2.5 kΩ	Switching range X_{sh}	300 mV

1) The return travel time corresponds to a stroke of 14 to 40 mm and does not depend on the run-time that is set
2) Also for 2-point or 3-point depending on connection for 24 V~

For more technical specifications, documentation and accessories, see next page >>>

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→ PDS 51.379

Supply voltage	24 V~	± 20%, 50...60 Hz	Permitted ambient humidity	< 95 %rh (no condensation)
	24 V=	± 15%		
with accessories	230 V~	± 15%	Degree of protection	IP 66 (EN 60529)
			Protection class	III to IEC 60730
Power consumption		7 W 18 VA [2]	Response time for 3-point	200 ms
Stroke		8…49 mm	Wiring diagram	A10384
Number of spring returns		> 40.000	Dimension drawing	M10400
Max. medium temperature		130 °C [3]	Fitting instructions	MV 505927
Permitted ambient temperature		–10...55(60) °C	Declaration of materials	MD 51.379

Accessories

0313529 001* Split range unit to set sequences, MV 505671; A09421

Module, plug-in type, 3-point activation, additional power 2 VA

0372332 001* 230 V ± 15% voltage supply, MV 505901

0372332 002* 100 V ± 15% voltage supply, MV 505901

Auxiliary changeover switches (2 pcs. each) 12...250 V~

0372333 001* Continuously adjustable, min. 100 mA and 12 V, additional load 6(2) A, MV 505866

0372333 002* Gold-plated contacts, from 1 mA and up to 30 V; further range 3(1) A; MV 505866

0372334 001* Potentiometer 2000 Ω, 1 W, 24 V; installation as per MV 505894

0372334 002* Potentiometer 130 Ω, 1 W, 24 V; installation as per MV 505894

0372334 006* Potentiometer 1000 Ω, 1 W, 24 V; installation as per MV 505894

0372336 180* Adaptor [1] (required for medium above 130 °C and up to 180 °C, MV 505902)

0372336 240* Adaptor [1] (required for medium above 180 °C and up to 240 °C, MV 505902)

Installation kit for AVN 224S F132 on Sauter valves (for 0372338 002, no adaptor required)

0372338 001 V/B6 up to DN 50 and V/BXD, V/BXE up to DN 50 with stroke 14 mm. MV 505903

0372338 002 V/B6 of DN 65-150 and V/BXD, V/BXE from DN 65 with stroke 40 mm. MV 505903

0372338 003 Conversion kit for AVM 234S F132-5 on standard drive AVM 234S F132, MV 505903

0372338 004 Conversion kit for AVM 234S F132-6 on standard drive AVM 234S F132, MV 505903

Set of adaptors for non-Sauter valves

0372376 010 Siemens with 20 mm stroke or spindle ø10 mm, MV 505974

0372376 014 Siemens with 40 mm stroke or spindle ø14 mm, MV 505974

0372377 001 JCI DN15…150 with 14, 25 or 40 mm stroke or spindle ø10, 12 or 14 mm, MV 505975

0372378 001 Honeywell with 20 mm stroke, MV 506069

0372378 002 Honeywell with 38 mm stroke, MV 506069

0372386 001 LDM Typ RY113 R/M, MV P100000538

0372389 001 ITT-Dräger, DN 15…32, MV P100000376

0372389 002 ITT-Dräger, DN 40…50, MV P100000376

0378263 001 End stop guide (required for valves DN15…50 VXD, VXE, BXD, BXE)

0378263 002 End stop guide (required for valves DN15 and reduction steps of types V / B6)

0386263 001 Screwed cable fitting, M16 ×1,5

0386263 002 Screwed cable fitting, M20 ×1,5

*) Dimension drawing or wiring diagram available under the same number

1) Adaptor is not required for the F132-6 version.
2) Engineer the transformers for this value, otherwise functional faults may occur.
3) For higher medium temperatures (180 °C or 240 °C), an adaptor is necessary (see Accessories).

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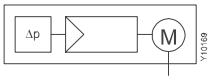
→ PDS 52.150

ASV 115: VAV compact controller for laboratory and pharmaceutical applications



How energy efficiency is improved

Provides demand-led control of the air volume to optimise energy consumption in ventilation systems. Differential pressures up to 1 Pa can be controlled, providing very small volume flows with extremely low duct pressures and energy consumption.

Areas of application

Controlling the exhaust air from fume cupboards, and controlling supply and exhaust air in laboratories, clean rooms, wards or operating theatres in conjunction with a volume flow box.

Features

- Static differential pressure recording based on the capacitive method of measurement
- Can be used in areas with dirty or contaminated exhaust air
- High-precision measurement of differential pressures with ranges of up to 300 Pa
- Calibrated version available for pharmaceutical applications
- Variable running times from 3 to 15 s for fast control loops
- Brushless DC motor provides the lowest possible energy consumption and a long service life
- Electronic/mechanical torque cut-off for safe operation
- Extremely simple installation due to self-centring shaft adaptor
- Transmission can be disengaged for manual adjustment and positioning of the damper
- Power cable 0.5 m long, 10 × 0.32 mm², fixed to housing
- Can easily be combined with RLE 150 F100 or NRT 300
- Fail-safe control for critical applications
- EIA-485 bus interface for up to 31 subscribers in a segment and SLC (SAUTER Local Communication) protocol
- Extremely easy to parameterise using the SAUTER CASE VAV software

Technical description

- Supply voltage 24 V~/=
- Variable differential pressure ranges:
  - 1…150 Pa
  - 1…300 Pa
- Efficient control algorithm for fast control loops
- Output signal 0…10 V for:
  - Volume flow, actual value r_q
  - Volume flow, control deviation $-e_q$ for signalling at fume cupboard
- Input signal 0…10 V for:
  - Command variable c_q
  - Setpoint shift $c_{q.ad}$ ($\Delta \dot{V}$)
- Priority control via switch contacts
- Zero point with calibration facility

Type	Torque Nm	Holding torque [1] Nm	Meas. range Δp (gain = 1) Pa	Power	Weight kg
ASV 115C F152D	10	2	0…150	24 V~/=	0.8
ASV 115C F152E	10	2	0…300	24 V~/=	0.8

Power supply	24 V~ ± 20%, 50...60 Hz 24 V= [2] ± 20%	Operating temp.	0…55 °C
Power consumption		Transport and storage temperature	–20…55 °C
during operation at 10 Nm	ca. 15 VA	Ambient humidity	< 85% rh no condensation
stationary [3]	ca. 4.5 VA		
Run time for 90° rotation angle	3…15 s [4]	Degree of protection (horizontal)	IP 30 (EN 60529)
Angle of rotation	90° [5]	Protection class	III (EN 60730)
Perm. damper shaft	Ø 8...16 mm; ☐ 6.5...12.7 mm	Degree of contamination	2 (EN 60730)
		Resistance to transient voltages	500 V (EN 60730)
Perm. damper shaft (hardness)	max. 300 HV	Operational noise	< 49 dB(A) at 3 s

1) Currentless retaining torque by means of interlocking in transmission
2) Analogue inputs that are not connected are rated with 0 V. The nominal torque is achieved within the specified tolerances.
3) Retaining torque approx. 5 Nm
4) Run-time adjustable via software
5) Maximum angle of rotation: 95° (without end stop)

For more technical specifications, documentation and accessories, see next page >>>

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→ PDS 52.150

Inputs		**Outputs**	
Analogue AI01	0…10 V (R_i = 100 kΩ)	Analogue AO03	0…10 V load >10 kΩ
Analogue AI02 1)	0…10 V (R_i = 100 kΩ)	Analogue AO02 1)	0…10 V load >10 kΩ
Digital DI04 2)	closed 0.5 V~,1 mA open > 2 V~		
Digital DI05 2)	closed 0.5 V~,1 mA open > 2 V~		

Δp Sensor			
Pressure range Type D	0…150 Pa	Reproducibility	0.2% FS
Pressure range Type E	0…300 Pa	Zero point stability at 20 °C	0.2% FS
Non-linearity	2% FS	Perm. positive pressure	± 10 kPa
Time constant	0.05 s	Perm. operating pressure	± 3 kPa 3)
Influence of position	± 1 Pa	p_{stat}	
Communication interface		Air connection	ø i = 3.5…6 mm 4)
RS485 not galv. separated	115 kbaud		
Protocol	SAUTER Local Communication		
Access method	master/slave		
Topology	Line		
Number of subscribers	31	Wiring diagram	A10519
Cable length:		Dimension drawing	M10457
without bus termination	up to 100 m, ø = 0.5 mm	CASE VAV manual	7010022001
with bus termination	up to 500 m, ø = 0.5 mm	Fitting instructions	MV506011
Cable type	twisted pair	Material declaration	MD52.150
Bus termination	> 100 m, 120 Ω both sides		

Accessories

0520450010*)	CASE VAV - USB connecting kit, including software
0520220010	CD CASE-VAV PC software
CERTIFICAT001	Manufacturer's test certificate type M including Δp sensor calibration data
0372300 001	Torsion protection, long (230 mm)
0372301 001	Shaft adaptor for square (x 15 mm) hollow profile (pack of 10)

*) Dimension drawing or wiring diagram is available under the same number

1) Input jack 02 is configurable as an analogue input or analogue output using SAUTER CASE VAV software
2) Digital inputs for external potential-free contacts (gold-plated recommended)
3) Short-term overload, sensor recalibration recommended
4) Recommended hose hardness < 40 ShA (e.g. silicone)

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→ PDS 54.008

DEF: Wafer butterfly valve, tightly-closing, PN 16

How energy efficiency is improved
Intelligent collar design for working without losses through leakage.

Areas of application
Continuous control of water, air and low-pressure steam up to 110°C, or for use as a shut-off valve.

Features
- Nominal pressure 16 bar
- Butterfly valve with 3-way brass bearing bush as spindle bearing
- Fits PN6, PN10 and PN16 flanges
- Nominal diameters DN25 to DN200
- K_{VS} values of 36 m³/h to 4000 m³/h available
- Suitable drives include motor drives of the AR30W and A44W type or ASF 122 and 123 damper drives with a spring return action and ASM 124, 134 with SUT Technology

Technical description
- Damper body made of cast iron
- Collar made of ethylene-propylene rubber
- Butterfly wafer made of stainless steel
- Spindle in stainless steel sealed with two O-rings
- Linear characteristic

Type	Nominal width DN	k_{VS} value m³/h	Weight kg
DEF 025 F200	25	36	1
DEF 032 F200	32	40	1.15
DEF 040 F200	40	50	2.75
DEF 050 F200	50	85	3.05
DEF 065 F200	65	215	4.05
DEF 080 F200	80	420	4.30
DEF 100 F200	100	800	4.85
DEF 125 F200	125	1010	7.20
DEF 150 F200	150	2100	9.50
DEF 200 F200	200	4000	12

Nominal pressure	PN 16	Dimension drawings	5M109
Max. perm. operating pressure	16 bar	Fitting instructions	MV 505826
Control characteristic	linear	Assembly ASF	MV 505833
Angle of butterfly rotation	90°	Assembly AR30	MV 505831
Leakage rate	< 0,0001% of k_{VS} 1)	Assembly A44	MV 505832
Permissible operating temperature	–10...130 °C	Assembly ASM 124, 134	P100000533

Accessories

0361632 . . . 2 counter flanges compl. PN 6 acc. to EN 1092-1

DN	25	32	40	50	65	80	100	125	150	200

0361633 . . . 2 counter flanges compl. PN 10 (DN 25...150) acc. to EN 1092-1
VSM 18717 (DIN 2632) and PN 16 (DN 25...200) acc. to EN 1092-1

DN	25	32	40	50	65	80	100	125	150	200

Specify when ordering: DN 25 = /025, DN 100 = /100

0361634 200 2 counter flanges compl. PN 10 (DN 200) acc. to EN 1092-1
0372455 001 Assembly kit; DEF DN 25…65 for ASM 124 F120, F122
0372455 002 Assembly kit; DEF DN 80…125 for ASM 124 or ASM 134
0372455 003 Assembly kit; DEF DN 150…200 for ASM 134
0378108 001 Assembly kit; DEF DN 25…65 for AR 30
0378109 001 Assembly kit; DEF DN 80…100 for AR 30
0378110 001 Assembly kit; DEF DN 25…65 for A44
0378111 001 Assembly kit; DEF DN 80…125 for A 44
0378112 001 Assembly kit; DEF DN 150…200 for A44
0378113 001 Assembly kit; DEF DN 25…100 for ASF 122/123

1) at Δp 1,5 bar

For combinations with electric drives, see next page >>>

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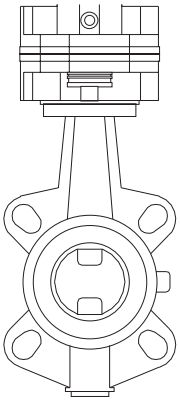
→ PDS 54.008

Combination with actuator with return spring:

Drive [1]			**ASF 122 F120**	**ASF 123 F122**	**ASF 123S F122**
		Input	**2-point**	**3-point**	**0...10 V**
		Running time	**90 s**	**90 s**	**90 s**
		Spring return	**15 s**	**15 s**	**15 s**
Butterfly valve:	Δp [2]	Δp_S [3]			
DEF 025 F200	10	10			
DEF 032 F200	10	10			
DEF 040 F200	10	10			
DEF 050 F200	10	10			
DEF 065 F200	7	7			
DEF 080 F200	4	4			
DEF 100 F200	2	2			

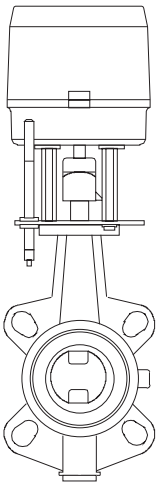


B06331

1) Assembly kit 0378113 001 required (weight 0,5 kg)
2) Max. permissible pressure difference in bar
3) Max. differential pressure at the butterfly valve in bar (in the event of malfunction) at which the drive can still close the butterfly.

Combination with electric motor drive AR30 W2.

Drive [1]		**AR30 W23**	**AR30 W23S**
	Input	**3-point**	**0...10 V**
	Running time	**120 s**	**120 s**
Butterfly valve	Δp [2]		
DEF 025 F200	10		
DEF 032 F200	10		
DEF 040 F200	10		
DEF 050 F200	10		
DEF 065 F200	7		
DEF 080 F200	4		
DEF 100 F200	2		

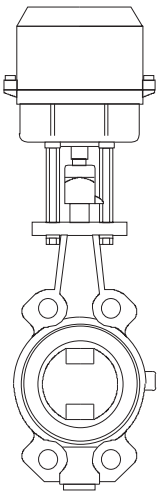


B01425a

1) For DN 25...65: Assembly kit 0378108 001 required (weight 0,4 kg)
   For DN 80 and 100: Assembly kit 0378109 001 required (weight 0,4 kg)
2) Permissible pressure difference in bar

Combination with electric motor drive A44

Drive [1]		**A44 W2**	**A44 W2S**
	Input	**3-point**	**0...10 V**
	Running time	**120 s**	**120 s**
Butterfly valve	Δp [2]		
DEF 025 F200	10		
DEF 032 F200	10		
DEF 040 F200	16		
DEF 050 F200	16		
DEF 065 F200	16		
DEF 080 F200	10		
DEF 100 F200	10		
DEF 125 F200	6		
DEF 150 F200	5		
DEF 200 F200	3		



B01426

1) For DN 25...65: Assembly kit 0378110 001 required (weight 0,2 kg)
   For DN 80...125: Assembly kit 0378111 001 required (weight 0,2 kg)
   For DN 150 and 200: Assembly kit 0378112 001 required (weight 0,2 kg)
2) Permissible pressure difference in bar

Complete type designation:	Butterfly valve and drive with corresponding F-version
Butterfly valve:	F-version, technical data and accessories: see table of types on page 1
Drive:	F-version, technical data and accessories: see section 51
Example:	DEF 65 F200/ASF 123S F122

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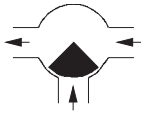
→ PDS 54.015

MH32F, MH42F: Flanged control valves, PN 6

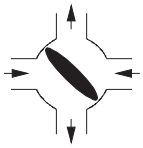
Y07546

Y07547

Tree-way valve


B01373

Four-way valve


B01374

How energy efficiency is improved

Flow from both sides and the linear characteristic make energy-efficient working possible.

Areas of application

Continuous control of flow temperature in heating systems, in which a specific loss through leakage is desirable.

Features

- Nominal pressure 6 bar
- MH32F: Three-way valves with nominal diameters DN20 to DN150
- MH42F: Four-way valves with nominal diameters DN32 to DN50
- Suitable drives include motor drives of the AR30 W, ASM 105, 115 and ASM 124 types
- Manual adjustment with lever

Technical description

- Cast iron body
- Spindle made of brass up to DN25 and stainless steel from DN32
- Brass gate valve
- Guaranteed leakproof at spindle thanks to stuffing box with double O-ring

Type	Nominal width DN	k_{VS}-value m^3/h	Max. leakage rate % of k_{vs}	Weight kg
Three-way valve;	Cover of zinc, shaft of brass			
MH32F 20 F200	20	12	1	2.7
MH32F 25 F200	25	18	1	3.5
Three-way valve;	Cover of grey cast iron, shaft of stainless steel			
MH32F 32 F200	32	28	1	4.6
MH32F 40 F200	40	44	1	5.6
MH32F 50 F200	50	66	1	7.9
MH32F 65 F200	65	100	1	9.2
MH32F 80 F200	80	150	1	14.2
MH32F 100 F200	100	225	1	19.0
MH32F 125 F200	125	310	1	25.8
MH32F 150 F200	150	420	1	35.5
Four-way valve;	Cover of grey cast iron, shaft of stainless steel			
MH42F 32 F200	32	28	1.5	5.7
MH42F 40 F200	40	44	1.5	7.1
MH42F 50 F200	50	66	1.5	8.3

Nominal pressure	PN 6	Permissible operating temp.	2...110 °C
Max. perm. operating pressure	6 bar	Dimension drawings	5M106
Control characteristic	linear	Combinations with AR30	MV 505472
Angle of shoe rotation	90°	ASM124	MV 505477
		ASM105/115	MV 505840

Accessories

0360392 . . . Counter flange, smooth, PN 6, incl. asbestos-free gasket.
Specify when ordering: DN 20 = /020, DN 25 = /025

DN	20	25	32	40	50	65	80	100	125	150

0361775 000 Assembly kit for drive AR30
0361977 001 Assembly kit for drive ASM 124
0361977 002 Assembly kit for drive ASM 105, 115

For combinations with electric drives, see next page >>>

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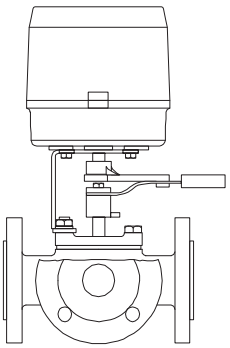
→ PDS 54.015

Combination with electric motor drive AR30 and actuator ASM:

Drive **Input** **Running time**		**AR30 W23** [1] **3-Pt. 120s**	**AR30 W23S** [1] **0...10 V 120s**	**ASM 105** [2] **2/3-Pt. 30s**	**ASM 105** [2] **2/3-Pt. 120s**	**ASM 105S** [2] **0...10 V 35/60/ 120s**	**ASM 115** [2] **2/3-Pt. 120s**	**ASM 115S** [2] **0...10 V 60/120s**	**ASM 124** [3] [4] **2/3-Pt. 120s**	**ASM 124S** [3] [4] **0...10 V 60/120s**
Three-way valve:	Δp_{max}									
MH32F 20 F200	1,0									
MH32F 25 F200	1,0									
MH32F 32 F200	1,0									
MH32F 40 F200	1,0									
MH32F 50 F200	0,5			-	-	-				
MH32F 65 F200	0,5			-	-	-				
MH32F 80 F200	0,5			-	-	-				
MH32F 100 F200	0,5			-	-	-	-	-		
MH32F 125 F200	0,5			-	-	-	-	-		
MH32F 150 F200	0,5			-	-	-	-	-		
Four-way valve:										
MH42F 32 F200	1,0			-	-	-	-	-		
MH42F 40 F200	1,0			-	-	-	-	-		
MH42F 50 F200	0,5			-	-	-	-	-		



B01375a

1) Assembly kit 0361775 000 required; included in the combination
2) Assembly kit 0361977 002 required; included in the combination
3) Assembly kit 0361977 001 required; included in the combination
4) In this combination, it is not possible to fit auxiliary contacts or a potentiometer

Complete type designation:	Valve and drive with corresponding F-version and assembly parts
Valve:	F-version, technical data and accessories, see table of types above
Drive:	F-version, technical data and accessories, see Section 51
Example:	MH32F 40 F200/AR30 W23 F001/0361775 000

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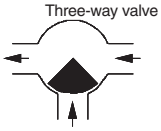
→ PDS 54.025

MH32R, MH42R: Screwed control valves, PN 6

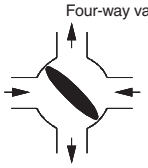
Y07546

Y07547

Three-way valve


B01373

Four-way valve


B01374

How energy efficiency is improved

Flow from both sides and the linear characteristic make energy-efficient working possible.

Areas of application

Continuous control of flow temperature control in heating systems, where a specific loss through leakage is desirable.

Features

- Nominal pressure 6 bar
- MH32F: Three-way valves with nominal diameters DN20 to DN150
- MH42F: Four-way valves with nominal diameters DN32 to DN50
- Suitable drives include motor drives of the AR30 W, ASM 105, 115 and ASM 124 types
- Manual adjustment with lever
- Suitable drives include motor drives of the AR30 W, ASM 105, 115 and ASM 124 types

Technical description

- Brass body for nominal diameters DN15 and DN20
- Cast iron body for nominal diameters above DN20
- Brass spindle, or stainless steel for DN50
- Brass gate valve
- Guaranteed leakproof at spindle thanks to stuffing box with double O-ring

Type	Nominal width DN	k_{VS}-value m^3/h	Max. leakage rate % of k_{vs}	Weight kg
Three-way valve;	Body, valve shoe and shaft of brass			
MH32R 15 F200	15	2,5	1.0	0.7
MH32R 20 F210	20	4	1.0	0.7
Three-way valve;	Body of grey cast iron, cover of zinc, shaft and valve shoe of brass [1]			
MH32R 20 F200	20	8	1.0	1.3
MH32R 25 F200	25	12	1.0	1.4
MH32R 32 F200	32	18	1.0	2.2
MH32R 40 F200	40	28	1.0	2.8
MH32R 50 F200	50	44	1.0	4.1
Four-way valve;	Body, valve shoe and shaft of brass			
MH42R 15 F200	15	2,5	1.0	0.9
MH42R 20 F210	20	4	1.0	0.9
Four-way valve;	Body of grey cast iron, cover of zinc, shaft and valve shoe of brass			
MH42R 20 F200	20	8	1.5	1.6
MH42R 25 F200	25	12	1.5	1.9
MH42R 32 F200	32	18	1.5	2.4
MH42R 40 F200	40	28	1.5	3.3

Nominal pressure	PN 6	Perm. operating temperature	2...110 °C
Max. perm. operating pressure	6 bar	Dimension drawings	5M107, 108
Control characteristic	linear	Combinations with AR30	MV 505472
Angle of rotation	90°	ASM124	MV 505477
		ASM105/115	MV 505840

Accessories

0361775 000 Assembly kit for drive AR30
0361977 001 Assembly kit for drive ASM 124
0361977 002 Assembly kit for drive ASM 105, 115

1) MH32R 50: spindle made of stainless steel

For combinations with electric drives, see next page >>>

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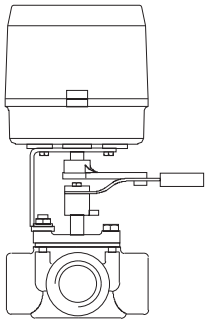
→ PDS 54.025

Combination with motor drive AR30 and actuator ASM:

Drive **Input** **Running time**		**AR30 W23** [1] **3-Pt. 120s**	**AR30 W23S** [1] **0...10 V 120s**	**ASM 105** [2] **2/3-Pt. 30s**	**ASM 105** [2] **2/3-Pt. 120s**	**ASM 105S** [2] **0...10 V 60/120s**	**ASM 115** [2] **2/3-Pt. 120s**	**ASM 115S** [2] **0...10 V 60/120s**	**ASM 124** [3] [4] **2/3-Pt. 120s**	**ASM 124S** [3] [4] **0...10 V 60/120s**
Three-way valve:	Δp_{max}									
MH32R 15 F200	2.0									
MH32R 20 F210	2.0									
MH32R 20 F200	1.0									
MH32R 25 F200	1.0									
MH32R 32 F200	1.0									
MH32R 40 F200	1.0									
MH32R 50 F200	0.5			-	-	-				
Four-way valve:										
MH42R 15 F200	2.0									
MH42R 20 F210	2.0									
MH42R 20 F200	1.0									
MH42R 25 F200	1.0									
MH42R 32 F200	1.0									
MH42R 40 F200	1.0									

1) Assembly kit 0361775 000 required; included in the combination
2) Assembly kit 0361977 002 required; included in the combination
3) Assembly kit 0361977 001 required; included in the combination
4) In this combination, it is not possible to fit auxiliary contacts or a potentiometer



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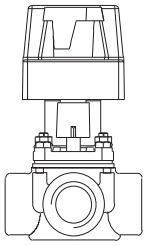

B07108

Complete type designation:	Valve and drive with corresponding F-version
Valve:	F-version, technical data and accessories, see table of types above
Drive:	F-version, technical data and accessories, see section 51
Example:	MH32R 40 F200/AR30 W23S F020/0361775 000

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→ PDS 54.026

M3R, M4R: Control valve with threaded connection, PN 10

T11026

M3R
Y07546

M4R
Y07547

How energy efficiency is improved

Flow from both sides, plus the linear characteristic, ensure that the valve provides excellent energy efficiency.

Areas of application

Continuous regulation of the flow temperature in heating systems where a certain amount of leakage is desirable.

Features

- Nominal pressure 10 bar
- M3R: three-way valves with nominal diameters of DN 15…32
- M4R: four-way valves with nominal diameters of DN 20…32
- Suitable for use with the motorised drives of type AR30W or ASM 105/115/124.
- Manual adjustment by means of lever and end stops

Technical description

- Body and gate of brass CW617N
- Double O-ring of EPDM guarantees the tightness of the seal at the spindle
- Lever of ABS
- Max. operating temperature 110 °C

Type	Nominal diameter DN	k_{VS} value m^3/h	Max. leakage rate as % of k_{VS}	Weight kg
Three-way valve, body, lid, gate and spindle of brass				
M3R015F200	15	2,5	1.0	0.7
M3R020F200	20	6	1.0	1.3
M3R025F200	25	12	1.0	1.4
M3R032F200	32	18	1.0	2.2
Four-way valve, body, lid, gate and spindle of brass				
M4R020F200	20	6	1.5	1.6
M4R025F200	25	12	1.5	1.9
M4R032F200	32	18	1.5	2.4

Nominal pressure	PN 10	Fitting instructions	P100004713
Max. operating pressure	10 bar	Dimension drawings	M11432, M11431
		Combination M3R/M4R with AR30	K01381c
Control characteristic	linear	Combination M3R/M4R with ASM124	K07110a
Angle of rotation	90°	Combination M3R/M4R with ASM105/115	K09975a
Perm. Operating temperature	2...110 °C	Material declaration	MD 54.026

Accessories

0361775 000 Assembly materials for AR30 actuator
0361977 001 Assembly materials for ASM124 actuator
0361977 002 Assembly materials for ASM105/115 actuator

For combinations with electric drives, see next page >>>

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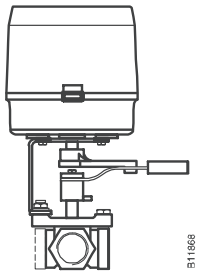
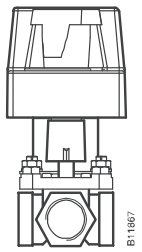
→ PDS 54.026

Combination with AR30 motorised drive and ASM actuator:

Actuator	**Input**	**AR30 W23** [1] **3-pt. 120s**	**AR30 W23S** [1] **0...10 V 120s**	**ASM 105** [2] **2/3-pt. 30s**	**ASM 105** [2] **2/3-pt. 120s**	**ASM 105S** [2] **0...10 V 60/120s**	**ASM 115** [2] **2/3-pt. 120s**	**ASM 115S** [2] **0...10 V 60/120s**	**ASM 124** [3] [4] **2/3-pt. 120s**	**ASM 124S** [3] [4] **0...10 V 60/120s**
Running time										
Tree-way control valve:	Δp_{max}									
M3R 15 F200	2.0						-	-	-	-
M3R 20 F210	2.0						-	-	-	-
M3R 20 F200	1.0						-	-	-	-
M3R 25 F200	1.0								-	-
M3R 32 F200	1.0									
Four-way control vlave:										
M4R 20 F200	1.0						-	-	-	-
M4R 25 F200	1.0								-	-
M4R 32 F200	1.0									

1) Assembly set 0361775000 required; included in the combination
2) Assembly set 0361977002 required; included in the combination
3) Assembly set 0361977001 required; included in the combination
4) In this combination, it is not possible to fit auxiliary contacts or a potentiometer





Complete type code:	Valve and actuator, each with F-variant
Valve:	For F-variant and technical specifications, see table of types above
Actuator:	For F-variant, technical specifications and accessories, see Section 51
Example:	M3R 20 F200/AR30 W23S F020/0361775 000

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→ PDS 55.010

AXM 117: Motorised drive for unit valves

How energy efficiency is improved

Reliable actuation in efficient control systems.

Areas of application

Actuation of through and three-way unit valves in the VUL, BUL, VXL and BXL series. For controllers with switched output (3-point-control) in combination with intelligent unitary control systems.

Features

- Pushing force 140 N (AXM 117 F200) or 120 N (AXM 117 F202)
- Fits onto valve with M30 x 1.5 thread
- Synchronous motor with magnetic clutch on AXM 117 F200
- Stepping motor with control and electronic cut-off on AXM 117 F202
- Maintenance-free gearbox
- Suitable for retrofitting existing installations using an appropriate adaptor
- Control of operating status using integrated LED display on AXM 117 F202

Technical description

- Two-part plastic housing, F200 is pure white (RAL 9010) and F202 is light grey (RAL 7035)
- Nickel-plated brass nut
- Connecting cable in light grey 1.50 m long, 3x 0.5 mm² for F200, 3x 0.25 mm² for F202
- Running time for 4 mm stroke: 100 sec. for F200 or 60 sec. for F202
- Installation position: vertical to horizontal, but not upside down

Type	Running time s	Stroke mm	Thrust N	Power	Weight kg
AXM 117 F200	100	4	140 [1]	230 V ~	0.3
AXM 117 F202	60	4	120 [2]	24 V=/~	0.15

Power supply		± 15%, 50...60 Hz	Degree of protection		IP 40 (EN 60529)
Power consumption	F200	7 VA	Protection class	F200	II (IEC 60730)
on starting	F200	7 VA		F202	III (IEC 60730)
Power consumption	F202	5 VA			
on starting	F202	5 VA	Wiring diagram		A06145
Max. operating temperature		100 °C at valve	Dimension drawing	F200	M10108
Ambient temperature		0...50 °C		F202	M06146
Ambient humidity		< 75 %rh	Fitting instructions	F200	MV 505816
				F202	MV 505456

Accessories

0371235 001	Adaptor for fitting to *Oventrop* valves (M30 × 1)
0371245 001	Adaptor for fitting to *Danfoss* RA 2000 valves (e.g. RA-N, Ø 22 mm)
0371356 001	Adaptor for fitting to *Beulco* or *Tobler* underfloor-heating distribution stations (M30 × 1)
0371359 001	Adaptor for fitting to *Danfoss* valves, type RAVL (Ø 26 mm)
0371360 001	Adaptor for fitting to *Danfoss* valves, type RAV (Ø 34 mm)
0371361 001	Adaptor for fitting to *Herz* valves, type Herz-TS'90 (M28 × 1,5)
0371363 001	Adaptor for fitting to *Tour & Andersson* valves, type TA/RVT (M28 × 1,5)

1) Thrust: min. 120 N, max. 180 N
2) Thrust: min. 100 N, max. 150 N

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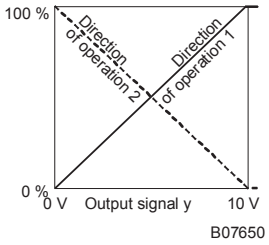
→ PDS 55.011

AXM 117S: Motorised drive (with positioner) for unit valves



How energy efficiency is improved

Automatic valve adjustment and intelligent cut-out enable maximum energy efficiency.

Areas of application

Actuation of through and three-way unit valves in the VUL, BUL, VXL and BXL series. For controllers with switched output (3-point-control) in combination with intelligent unitary control systems.

Features

- Pushing force 120 N
- Fits onto valve with M30 x 1.5 thread
- Stepping motor with control and electronic cut-off
- Version with control action A or B or adjustable
- Maintenance-free gearbox
- Suitable for retrofitting existing installations using an appropriate adaptor
- Operating status control using integrated LED display

Technical description

- Two-part plastic housing, light grey (RAL7035)
- Nickel-plated brass nut
- Connecting cable, light grey 1.50 m long, 3x 0.25 mm²
- Running time for 4 mm stroke: 60 s
- Installation position: vertical to horizontal, but not upside down

Type	Direction of operation[1)]	Running time	Stroke	Thrust	Power	Weight
		s	mm	N		kg
AXM 117S F202	1	60	4	120 [2)]	24 V=/~	0.15
AXM 117S F302	2	60	4	120 [2)]	24 V=/~	0.15
AXM 117S F402	1 or 2 [3)]	60	4	120 [2)]	24 V=/~	0.15

Power supply 24 V =/~	± 15%, 50...60 Hz	Ambient temperature	–0...50 °C
Power consumption	5 VA	Ambient humidity	< 75 %rh
on starting	5 VA	Degree of protection	IP 40 (EN 60529)
Control voltage	0...10 V; Ri = 20 kΩ	Protection class	III (IEC 60730)
Control voltage F402 [3)]	0...10 V; 5.2...10 V; 0...4.8 V	Wiring diagram	A06147
Control current	max. 0.5 mA	Dimension drawing	M06146
Max. operating temperature	100 °C at valve	Fitting instructions	MV 505456

Accessories

0371235 001	Adaptor for fitting to *Oventrop* valves (M30 × 1)
0371245 001	Adaptor for fitting to *Danfoss* RA 2000 valves (e.g. RA-N, Ø 22 mm)
0371356 001	Adaptor for fitting to *Beulco* or *Tobler* underfloor-heating distribution stations (M30 × 1)
0371359 001	Adaptor for fitting to *Danfoss* valves, type RAVL (Ø 26 mm)
0371360 001	Adaptor for fitting to *Danfoss* valves, type RAV (Ø 34 mm)
0371361 001	Adaptor for fitting to *Herz* valves, type Herz-TS'90 (M28 × 1,5)
0371363 001	Adaptor for fitting to *Tour & Andersson* valves, type TA/RVT (M28 × 1,5)

1) Direction of operation 1: rising 0…10V = drive retracts (VXL, VUL, BUL opens, BXL control passage closes).
Direction of operation 2: rising 0…10V = drive extends (VXL, VUL, BUL closes, BXL control passage opens).
2) Pushing force: min. 100 N, max. 150 N
3) The direction of operation and the setting of the control voltage can be set using jumpers

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→ PDS 55.012

AXT 111: Thermal drive for unit valves, with stroke indicator

How energy efficiency is improved
Reliable actuation in efficient control systems.

Areas of application
Actuation of through and three-way unit valves in the VUL, BUL, VXL and BXL series. For controllers with switching output, 2-point control or quasi-continuous control with 'pulse-pause' signal in combination with intelligent unitary control systems.

Features
- Pushing force 125 N
- Fits onto valve with M30 x 1.5 thread
- With extension element 230 V, 110 V or 24 V
- Position indication in drive housing
- Can be changed from NC to NO
- Versions with built-in auxiliary contact or different cable length
- Suitable for retrofitting existing installations using an appropriate adaptor

Technical description
- Housing made of self-extinguishing plastic, pure white as per RAL 9010
- Connection with valve using nickel-plated brass nut or plastic bayonet connector
- Connecting cable, white, standard length 1.2 m, 0.5 mm² up to 2 m or 0.75 mm² over 2 m cable length
- Running time for 4.5 mm stroke: 3 min
- Installation position: vertical to horizontal, but not upside down

Type	Running time [1] min	Max. stroke mm	Spring pressure N	Normally	Power	Weight kg
AXT 111 F200	3	4.5	125	closed (open)	230 V~	0.2
AXT 111 F201	3	4.5	125	closed (open)	110 V~	0.2
AXT 111 F202	3	4.5	125	closed (open)	24 V~/=	0.2
Actuator with bayonet connection						
AXT 111 F500	3	4.5	125	closed (open)	230 V~	0.2
AXT 111 F502	3	4.5	125	closed (open)	24V~/=	0.2
Drives with in-built auxiliary contacts [2] and bayonet connection						
AXT 111 F210	3	4.5	125	closed	230 V~	0.2
AXT 111 F212	3	4.5	125	closed	24V~/=	0.2

Power supply	230 V~	± 15%. 50...60 Hz		
	110 V~	± 10%, 50...60 Hz		
	24 V~/=	± 20%, 50...60 Hz		
Power consumption	**230 V**	**110 V**	**24 V**	
in operation	2.5 W	3.0 W	3 W	
on starting	36 W	25 W	6 W	
start-up current	150 mA	220 mA	250 mA	
Max. operating temp.	100°C at valve			
Ambient temperature	–5...50 °C			
Ambient humidity	< 95 %rh			

Degree of protection		IP 42 (EN 60529)
when fitted vertically		IP 44
with auxiliary contacts		IP 44 (EN 60529)
Connection diagram		A08924
with auxiliary contacts		A10006
Dimension drawing	F20.	M08925
with auxiliary contacts	F21.	M10083
	F50.	M10414
Fitting instructions	F20.	MV 505511
with auxiliary contacts	F21.	MV 505822
	F50.	MV 505923
Declaration of materials		MD 55.012/55.012H

1) For 3 mm stroke when starting from cold
2) Auxiliary contacts 5(2) A, 230 V; cut-in point 1,5 mm, stroke ± 0,75 mm

For variants and accessories, see next page >>>

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→ PDS 55.012

Variants

AXT 111 F220	As F200 (230 V~), but cable is 2 m and weight is 0.25 kg
AXT 111 F222	As F202 (24 V~), but cable is 2 m and weight is 0.25 kg
AXT 111 F230	As F200 (230 V~), but cable is 3m with Ø 0.75 mm^2 and weight is 0.38 kg
AXT 111 F232	As F202 (24 V~), but cable is 3 m and weight is 0.35 kg
AXT 111 F240	As F200 (230 V~), but cable is 4m with Ø 0.75 mm^2 and weight is 0.40 kg
AXT 111 F242	As F202 (24 V~), but cable is 4 m and weight is 0.38 kg
AXT 111 F250	As F200 (230 V~), but cable is 5m with Ø 0.75 mm^2 and weight is 0.45 kg
AXT 111 F252	As F202 (24 V~), but cable is 5 m and weight is 0.4 kg
AXT 111 F270	As F200 (230 V~), but cable is 7m with Ø 0.75 mm^2 and weight is 0.55 kg
AXT 111 F272	As F202 (24 V~), but cable is 7 m and weight is 0.5 kg
AXT 111 F280	As F200 (230 V~), but cable is 10mm with Ø 0.75 mm^2 and weight is 0.75 kg
AXT 111 F282	As F202 (24 V~), but cable is 10 m and weight is 0.7 kg
AXT 111 F290	As F200 (230 V~), but cable is 15m with Ø 0.75 mm^2 and weight is 0.95 kg
AXT 111 F292	As F202 (24 V~), but cable is 15 m and weight is 0.9 kg

Accessories

-FXV 006	Electric distributor for control signals; see Section 45
0371235 001	Adaptor for fitting onto Oventrop valves (M30 × 1)
0371245 001	Adaptor for fitting to *Danfoss* valves of type RA 2000 (e.g. RA-N, Ø 22 mm)
0371356 001	Adaptor for fitting to *Beulco* or *Tobler* underfloor-heating distributors (M30 × 1)
0371357 001	Adaptor for fitting to *Giacomini* valves of type R450, R452, R456 and 60 series
0371359 001	Adaptor for fitting to *Danfoss* valves of type RAVL (Ø 26 mm)
0371360 001	Adaptor for fitting to *Danfoss* valves of type RAV (Ø 34 mm)
0371361 001	Adaptor for fitting to *Herz* valves of type Herz-TS'90 (M28 × 1,5)
0371363 001	Adaptor for fitting to *Tour & Andersson* valves of type TA/RVT (M28 × 1.5)
0371916 001	Adaptor for fitting to *Markaryd* valves (Swedish product) (M28 × 1.5)
0371540 001*	Protective housing [1], against vandalism and theft for VUL, VXL and BUL valves. Not for F210; F212 and not for VXL015F500; VXL020F500 and BXL valves; MV 505656
0371557 001*	Auxiliary contacts; 5(2) A; 230 V; can be fitted later as per MV 505632 for the 'NC/NO' function; cut-in point 1.5 mm stroke ± 0.75 mm

*) Dimension drawing or wiring diagram are available under the same number

1) Also suitable for combinations with MNG or *Heimeier* valves or valves with a connection thread of M30 × 1,5

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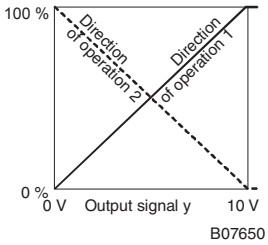
→ PDS 55.014

AXS 111S: Continuous drive (with positioner) for unit valves



How energy efficiency is improved
Reliable, precision actuation for efficient control.

Areas of application
Actuation of through and three-way unit valves in the VUL, BUL, VXL and BXL series. For controllers with continuous output (0 - 10 V) in combination with intelligent unitary control systems.

Features
- Pushing force 125 N
- Fits onto valve with M30 x 1.5 thread
- With extension element 24 V and continuous input
- Selection of control action A (0 - 10 V) or B (10 - 0 V) on power cable
- Position monitoring with magnetic sensor, does not require periodic re-adjustment
- Version for Sauter control valves with 4 mm stroke and version for on/off valves with 3 mm stroke
- Position indicator in drive housing
- Versions with alternative cable lengths
- Suitable for retrofitting existing installations using an appropriate adaptor

Technical description
- Housing made of self-extinguishing plastic, pure white as per RAL 9010
- Connection with valve using bayonet ring M30 x 1.5 and plastic bayonet nut
- Connecting cable, white 4x 0.25 mm2, cable length 2 m
- Running time 30 s/mm for control operations
- Installation position: vertical to horizontal, but not upside down

Type	Running time		Stroke [2]	Spring force	Power [3]	Weight
	Dead time [1]	Regulation	mm	N		kg
AXS 111S F202	80 s	30 s/mm	4,5 (Standard)	125	24 V~	0.15
AXS 111S F402	80 s	30 s/mm	3 (Standard)	125	24 V~	0.15

Power supply	24 V~	± 20%, 50...60 Hz	
Power consumption:-			
in operation		3 W	
on starting		6 W	
starting current		230 mA	
stand-by current		25 mA	
Control voltage		0...10 V; Ri ≥ 800 kΩ	
Max. operating temperature		100 °C at valve	

Ambient temperature	–5...50 °C
Ambient humidity	< 95 %rh
Degree of protection	IP 44 (EN 60529)
Protection class	III (IEC 60730)
Wiring diagram	A10007
Dimension drawing	M10083
Fitting instructions	MV 505821
Declaration of materials	MD 55.014

Variants
AXS 111S F252 As standard version F202 (24 V~), but length of cable is 5 m, weight is 0.4 kg
AXS 111S F272 As standard version F202 (24 V~), but length of cable is 7 m, weight is 0.7 kg

Accessories
0313529 001* Split-range unit for setting sequences; fitted as per MV 505671 in separate junction box
0371235 001 Adaptor for fitting to *Oventrop* valves (M30 × 1)
0371245 001 Adaptor for fitting to *Danfoss* RA 2000 valves (e.g. RA-N, Ø 22 mm)
0371356 001 Adaptor for fitting to *Beulco* or *Tobler* underfloor-heating distribution stations (M30 × 1)
0371357 001 Adaptor for fitting to *Giacomini* valves, type R450, R452, R456 and Programme 60
0371359 001 Adaptor for fitting to *Danfoss* valves, type RAVL (Ø 26 mm)
0371360 001 Adaptor for fitting to *Danfoss* valves, type RAV (Ø 34 mm)
0371361 001 Adaptor for fitting to *Herz* valves, type Herz-TS'90 (M28 × 1,5)
0371363 001 Adaptor for fitting to *Tour & Andersson* valves, type TA/RVT (M28 × 1.5)
0371916 001 Adaptor for fitting to *Markaryd* valves (Swedish product) (M28 × 1.5)

*) Dimension drawing and wiring diagram are available under the same number

1) After stand-by mode, the dead time must be added to the running time
2) Can be set in the factory to between 3 mm and 4,5 mm according to order
3) Direction of operation if power supply is interrupted: normally closed

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→ PDS 55.008

VUL: Unit through valve (regulating), PN 16

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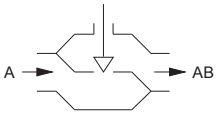

B01591

How energy efficiency is improved
Absolutely no losses through leakage, therefore energy consumption minimised.

Areas of application
Control valve for regulating heating zones, air secondary-treatment appliances and fan-coil units in combination with thermal unit valve drive AXT 111, continuous drive AXS 111S or motorised unit valve drive AXM 117(S).

Features
- Nominal pressure 16 bar
- Nominal diameter DN10 to DN20
- Equal percentage characteristic
- Stuffing box can be replaced with system still under pressure
- Flat sealing standard version or version with compression fitting for pipe ø15 mm with DN10
- If the spindle is depressed, the valve is closed
- Closes against the pressure

Technical description
- Valve with male thread as per DIN EN ISO 228-1, Class B
- Valve body made of nickel-plated brass casting for DN10 and gun metal for DN15 and DN20
- Stainless steel spindle
- Cone with soft seal made of EPDM
- Stuffing box with double O-ring seal

Type	Nominal dia. DN	k_{VS} value m^3/h	Connection	Weight kg
VUL 010 F340	10	0.16	G½B	0.19
VUL 010 F330	10	0.40	G½B	0.18
VUL 010 F320	10	0.63	G½B	0.18
VUL 010 F310	10	1.0	G½B	0.18
VUL 010 F300	10	1.6	G½B	0.18
VUL 015 F310	15	2.5	G¾B	0.28
VUL 015 F300	15	3,5	G¾B	0.28
VUL 020 F300	20	4.5	G1B	0.33
Version for compression fitting for pipe Ø 15 mm				
VUL 010 F630	10	0.40	–	0.18
VUL 010 F620	10	0.63	–	0.18
VUL 010 F610	10	1.0	–	0.18
VUL 010 F600	10	1.6	–	0.18

Nominal pressure	PN 16	Leakage rate	0.0001% of k_{vs}
Max. operating pressure	up to 120 °C, 16 bar	Dimension drawing	M10121
Operating temperature	2...120 °C	Fitting instructions	MV 505864
Characteristic	equal-percentage	fitted onto AXT 111	MV 505511
Valve stroke	4 mm 1)	with auxiliary contacts	MV 505822
		fitted onto AXS 111S	MV 505821
		fitted onto AXM 117/117S	MV 505456
		fitted onto AXM 117 F200	MV 505816
		Declaration of materials	MD 55.008

Accessories

0378133 010* 1 threaded sleeve, R ⅜ flat seal DN 10 with cap nut and flat seal
0378133 015* 1 threaded sleeve, R ½ flat seal DN 15 with cap nut and flat seal
0378133 020* 1 threaded sleeve, R ¾ flat seal DN 20 with cap nut and flat seal
0378134 010* 1 solder nipple, Ø 12; flat seal DN 10, with cap nut and flat seal
0378134 015* 1 solder nipple, Ø 15; flat seal DN 15, with cap nut and flat seal
0378134 020* 1 solder nipple, Ø 22; flat seal DN 20, with cap nut and flat seal
0378135 010 1 compression fitting for pipe Ø 15 mm, DN 10
0378145 015* 1 compression fitting for pipes of Ø 15 mm, DN 15, flat seal ¾ B
0378145 020* 1 compression fitting for pipes of Ø 22 mm, DN 20, flat seal 1 B
0378128 001 Stuffing box for VUL valves, can be replaced under pressure

*) Dimension drawing or wiring diagram are available under the same number

1) The stroke of the valve is limited by the valve drive

For combinations with electric drives, see next page >>>

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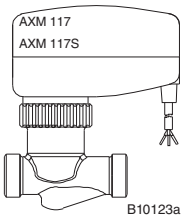
→ PDS 55.008

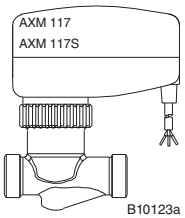
Combined with a 24 V electric drive

Actuator	Closes against the pressure			AXM 117 F202	AXM 117S F.0.
Valve	**Δp_{max}**	**Δp_s**	**close/off pressure**		
VUL 010 F340	4.0	–	6.0		
VUL 010 F330	4.0	–	6.0		
VUL 010 F630	4.0	–	6.0		
VUL 010 F320	4.0	–	6.0		
VUL 010 F620	4.0	–	6.0		
VUL 010 F310	3.8	–	4.0		
VUL 010 F610	3.8	–	4.0		
VUL 010 F300	3.8	–	4.0		
VUL 010 F600	3.8	–	4.0		
VUL 015 F310	1.1	–	1.1		
VUL 015 F300	1.1	–	1.1		
VUL 020 F300	1.1	–	1.1		



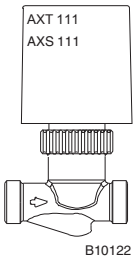
Combined with a 230 V electric drive

Actuator	Closes against the pressure			AXM 117 F200
Valve	**Δp_{max}**	**Δp_s**	**close/off pressure**	
VUL 010 F340	4.0	–	6.0	
VUL 010 F330	4.0	–	6.0	
VUL 010 F630	4.0	–	6.0	
VUL 010 F320	4.0	–	6.0	
VUL 010 F620	4.0	–	6.0	
VUL 010 F310	4.0	–	5.0	
VUL 010 F610	4.0	–	5.0	
VUL 010 F300	4.0	–	5.0	
VUL 010 F600	4.0	–	5.0	
VUL 015 F310	1.7	–	1.7	
VUL 015 F300	1.7	–	1.7	
VUL 020 F300	1.5	–	1.7	



Combined with a thermal and continuous drive

Actuator	Closes against the pressure			AXT 111 F200, F202	AXS 111S F.0.
Valve	**Δp_{max}**	**Δp_s**	**close/off pressure**		
VUL 010 F340	4.0	6.0	6.0		
VUL 010 F330	4.0	6.0	6.0		
VUL 010 F630	4.0	6.0	6.0		
VUL 010 F320	4.0	6.0	6.0		
VUL 010 F620	4.0	6.0	6.0		
VUL 010 F310	4.0	4.0	4.0		
VUL 010 F610	4.0	4.0	4.0		
VUL 010 F300	4.0	4.0	4.0		
VUL 010 F600	4.0	4.0	4.0		
VUL 015 F310	1.6	1.6	1.6		
VUL 015 F300	1.6	1.6	1.6		
VUL 020 F300	1.6	1.6	1.6		



Complete type code for valve and actuator with F variant

Valve: For F variant, technical data and accessories, see table of valve types

Actuator: For F variant, technical data, accessories and fitting position, see Section 55

Example: VUL 015 F310/AXM 117S F202

Δpmax [bar]=	Max. permissible pressure difference across the valve at which the actuator can still firmly open and close the valve. Figures stated are for a static pressure of 6 bar; at a static pressure of 16 bar, the values are reduced by 15%.
Δps [bar]= Close/off pressure	Max. permissible pressure difference across the valve at which, in the event of a malfunction, the actuator can close the valve. The pressure difference across the valve in control mode that the force of the drive can overcome. In this mode, a reduced serviceable life can be expected. Cavitation, erosion and pressure surges may damage the valve. The values stated apply only when the valve is fitted to the actuator.

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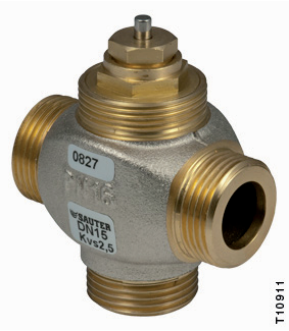
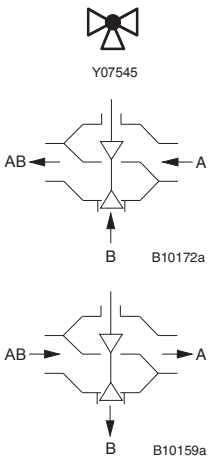
→ PDS 55.009

BUL: Unit three-way valve, PN 16





How energy efficiency is improved

Linear mixing and no losses through leakage for energy-efficient control.

Areas of application

Control valve for controlling heating zones, air secondary-treatment appliances, fan-coil units and two-wire systems with heat exchangers in combination with thermal unit valve drive AXT 111, continuous drive AXS 111S or motorised unit valve drive AXM 117(S).

Features

- Nominal pressure 16 bar
- Nominal diameter DN10 to DN20
- Equal percentage characteristic
- Linear reduced mixing passage characteristic
- Flat sealing standard version or version with compression fitting for pipe ø 15 mm with DN10
- Special version for fan-coil units with cast on bypass T-piece
- If the spindle is depressed, the control passage is closed
- Use as mixing valve, diverting valve and, thanks to tightly-closing third passage, as diverting valve

Technical description

- Valve with male thread as per DIN EN ISO 228-1, Class B
- Nickel-plated cast brass valve body
- Stainless steel spindle
- Cone with soft seal made of EPDM for control passage and mixing passage
- Stuffing box with double O-ring seal

Type [2]	Nominal dia. (DN)	kVS value [1] (m3/h)	Connection	Weight (kg)
BUL 010 F330	10	0.40	G½B	0.30
BUL 010 F320	10	0.63	G½B	0.30
BUL 010 F310	10	1.0	G½B	0.30
BUL 010 F300	10	1.6	G½B	0.30
BUL 015 F310	15	2.5	G¾B	0.33
BUL 015 F300	15	4.0	G¾B	0.33
BUL 020 F300	20	5.0	G1B	0.36
Version with T-piece bypass				
BUL 010 F430	10	0.40	G½B	0.38
BUL 010 F420	10	0.63	G½B	0.38
BUL 010 F410	10	1.0	G½B	0.38
BUL 010 F400	10	1.6	G½B	0.38
BUL 015 F410	15	2.5	G¾B	0.42
BUL 015 F400	15	4.0	G¾B	0.42
BUL 020 F400	20	5.0	G1B	0.50
Version with T-piece bypass for compression fitting for pipes of Ø 15 mm				
BUL 010 F630	10	0.40	–	0.38
BUL 010 F620	10	0.63	–	0.38
BUL 010 F610	10	1.0	–	0.38
BUL 010 F600	10	1.6	–	0.38

Nominal pressure	PN 16	Dimension drawings	M10004, M10005
Max. operating pressure	up to 120 °C 16 bar	Fitting instructions	MV 505864
Operating temperature	2...120 °C	fitted onto AXT 111	MV 505511
Characteristic:		with auxiliary contacts	MV 505822
control passage	equal-percentage	fitted onto AXS 111S	MV 505821
mixing passage	linear	fitted onto AXM 117/117S	MV 505456
Valve stroke	3.7 mm	fitted onto AXM 117 F200	MV 505816
Leakage rate		Declaration of materials	MD 55.009
control passage A-AB	0.0001% of kvs		
mixing passage B-AB	approx. 0.1% of kvs		

1) The kvs value of the mixing passage (B-AB) is lower by approx. 30%. Therefore, the max. throughflow is practically the same as in the load-related control passage.
2) Do not use as through valve.

For accessories and combinations with electric drives, see next page >>>

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→ PDS 55.009

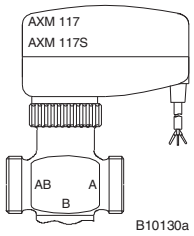
Accessories

0378133 010* 1 threaded sleeve, R ⅜ flat seal DN 10 with cap nut and flat seal
0378133 015* 1 threaded sleeve, R ½ flat seal DN 15 with cap nut and flat seal
0378133 020* 1 threaded sleeve, R ¾ flat seal DN 20 with cap nut and flat seal
0378134 010* 1 solder nipple, Ø 12; flat seal DN 10, with cap nut and flat seal
0378134 015* 1 solder nipple, Ø 15; flat seal DN 15, with cap nut and flat seal
0378134 020* 1 solder nipple, Ø 22; flat seal DN 20, with cap nut and flat seal
0378135 010 1 compression fitting for pipe Ø 15 mm, DN 10
0378145 **015*** 1 compression fitting for pipes of Ø 15 mm, DN 15, flat seal ¾ B
0378145 **020*** 1 compression fitting for pipes of Ø 22 mm, DN 20, flat seal 1 B
0378126 001 Stuffing box for BUL valves

*) Dimension drawing or wiring diagram are available under the same number

Combined with a 24 V electric drive

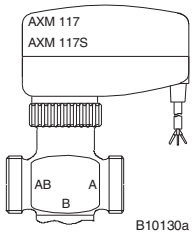
Actuator	Used as a control valve			Used as a diverting valve			AXM 117 F202	AXM 117S F.0.
Valve	Δp_{max}	Δp_s	close/off pressure	Δp_{max}	Δp_s	close/off pressure		
BUL 010 F…	1.7	–	1.8	1.9	–	2.3		
BUL 015 F.10	1.4	–	1.5	1.2	–	1.2		
BUL 015 F.00	1.2	–	1.3	1.2	–	1.2		
BUL 020 F.00	1.0	–	1.1	1.2	–	1.2		



B10130a

Combined with a 230 V electric drive

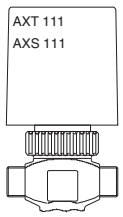
Actuator	Used as a control valve			Used as a diverting valve			AXM 117 F200
Valve	Δp_{max}	Δp_s	close/off pressure	Δp_{max}	Δp_s	close/off pressure	
BUL 010 F…	1.7	–	1.8	1.9	–	4.0	
BUL 015 F.10	1.4	–	1.5	1.6	–	2.1	
BUL 015 F.00	1.2	–	1.3	1.4	–	2.1	
BUL 020 F.00	1.0	–	1.1	1.2	–	2.0	



B10130a

Combined with a thermal and continuous drive

Actuator	Used as a control valve			Used as a diverting valve			AXT 111 F200, F202	AXS 111S F.0.
Valve	Δp_{max}	Δp_s	close/off pressure	Δp_{max}	Δp_s	close/off pressure		
BUL 010 F…	1.7	1.8	1.8	1.9	4.0	4.0		
BUL 015 F.10	1.4	1.5	1.5	1.6	2.1	2.1		
BUL 015 F.00	1.2	1.3	1.3	1.4	2.1	2.1		
BUL 020 F.00	1.0	1.1	1.1	1.2	2.0	2.0		



B10129

Complete type code for valve and actuator with F variant
Valve: For F variant, technical data and accessories, see table of valve types
Actuator: For F variant, technical data, accessories and fitting position, see Section 51
Example: BUL 015 F310 / AXM 117S F202

Δpmax [bar]= Max. permissible pressure difference across the valve at which the actuator can still firmly open and close the valve. Figures stated are for a static pressure of 6 bar; at a static pressure of 16 bar, the values are reduced by 15%.
Δps [bar]= Close/off pressure Max. permissible pressure difference across the valve at which, in the event of a malfunction, the actuator can close the valve. The pressure difference across the valve in control mode that the force of the drive can overcome. In this mode, a reduced serviceable life can be expected. Cavitation, erosion and pressure surges may damage the valve. The values stated apply only when the valve is fitted to the actuator.

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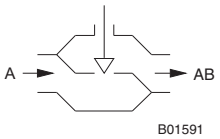
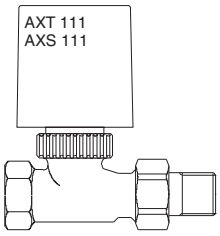
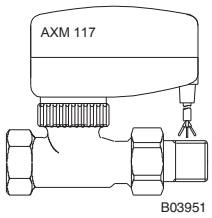
→ PDS 55.006

VXL: Unit through valve







How energy efficiency is improved

Absolutely no losses through leakage, therefore energy consumption minimised.

Areas of application

On-Off valve for regulating heating zones, air secondary-treatment appliances and fan-coil units in combination with thermal unit valve drive AXT 111, continuous drive AXS 111S or motorised unit valve drive AXM 117(S).

Features

- Nominal pressure 16 bar or as per DIN 3841 10 bar
- Nominal diameter DN10 to DN32
- Linear characteristic
- Adjustable kvs value in case of DN10 to DN15 standard version
- Standard valve and angle valve version
- Nominal diameter DN25 and DN32, decompressed
- Inlet female thread and outlet with box nut and connection nipple, conical seal (Euroconus) as per DIN 3841
- If the spindle is depressed, the control passage is closed
- Closes against the pressure

Technical description

- Valve body made of gun metal, DN10 to DN20 nickel-plated
- Stainless steel spindle
- Cone with soft seal made of EPDM
- Stuffing box with double O-ring seal
- Valve fitting width as per DIN3841-T1

Type	Nominal diameter	k_{vs}-value	Δp_{max} 1)	Nickel-plated body	Weight
	DN	m³/h	bar		kg
With stable k_{vs} value					
VXL 025 F200 2)	25	5.5	1.0	no	0.96
With variable k_{vs} value					
VXL 010 F260	10	0.04...0.72	2.0	yes	0.29
VXL 010 F250	10	0.25...1.70	1.0	yes	0.29
VXL 015 F260	15	0.04...0.72	2.0	yes	0.31
VXL 015 F250	15	0.25...1.85	1.0	yes	0.31
VXL 020 F260	20	0.04...0.72	2.0	yes	0.43
VXL 020 F250	20	0.25...1.95	1.0	yes	0.43
Pressure-relieved through valves					
VXL 025 F201 2)	25	5.5	4.0	no	1.0
VXL 032 F201 2)	32	10.0	3.5	no	1.5
Angle valve					
VXL 010 F510	10	0.36	2.2	yes	023
VXL 010 F500	10	0.8	2.2	yes	0.23
VXL 015 F520	15	0.8	2.2	yes	0.28
VXL 015 F510	15	2.2	4.0	yes	0.28
VXL 015 F500 2)	15	5.0	0.9	no	0.45
VXL 020 F500 2)	20	7.0	0.8	no	0.58

Nominal pressure	PN 16
Type of construction	DIN 3841-D
Max. operating pressure	16 bar at 130 °C
Characteristic curve	linear
Leakage rate	0.0001% of k_{VS}
Valve stroke	2.5 mm
Perm. operating temp.	2...130 °C

Dimension drawing	
VXL 010, 015, 020, F250, F260	M01890
VXL 025, 050, F200, F201	M01891
VXL 010, F500, F510	M04467
VXL 015, F510, F520	
VXL 015, F500	M04468
VXL 020, F500	
Fitting instructions	MV 505261
fitted onto AXT 111	MV 505511
with auxiliary contacts	MV 505822
fitted onto AXM 117/117S	MV 505456
fitted onto AXM 117 F200	MV 505816

Accessories

0378038 001 k_{vs} adjustment key for VXL...F260

1) Permissible pressure difference in bar at which the drive can still firmly close the valve.

2) Not suitable for assembling with AXS 111S

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→ PDS 55.007

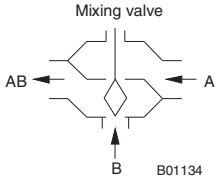
BXL: Three-way small (unit) valve

How energy efficiency is improved
Linear mixing for energy-efficient control.

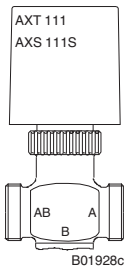
Areas of application
On-Off valve for regulating heating zones, air secondary-treatment appliances and fan-coil units in combination with thermal unit valve drive AXT 111, continuous drive AXS 111S or motorised unit valve drive AXM 117(S).

Features
- Nominal pressure 16 bar
- Nominal diameter DN25 and DN40
- Linear characteristic
- Complementary mixing passage characteristic, reduced
- With the spindle depressed, the control passage is open and the mixing passage closed
- Can be used as mixing valve or diverting valve

Technical description
- Valve with male thread as per DIN EN ISO 228-1, Class A
- Gun metal valve body
- Version with box nut and flat seal
- Stainless steel spindle
- Cone with soft seal made of EPDM
- Stuffing box with double O-ring seal

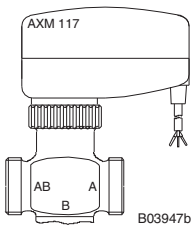


Type [2]	Nominal diameter DN	k_{VS}-value m^3/h	Δp_{max} [1] bar	Nickel-plated body	Weight kg
BXL 025 F200	25	6.5	0.5	no	1.2
BXL 040 F200	40	9.5	0.2	no	2.34



Nominal pressure	PN 16
Max. operating pressure	16 bar at 130 °C
Perm. operating temp.	2...130 °C
Characteristic curve	
control passage	linear
mixing passage	complementary, reduced
Valve stroke	2.9 mm

Leakage rate	
control passage	approx. 0.05 % of k_{VS}
mixing passage	approx. 0.2 % of k_{VS}
Dimension drawings	5M112
Fitting instructions	MV 505261
fitted onto AXT 111	MV 505511
with auxiliary contacts	MV 505822
fitted onto AXM 117/117S	MV 505456
fitted onto AXM 117 F200	MV 505816



Accessories
0361824025* 3 threaded sleeves R 1 flat sealing
0361824040* 3 threaded sleeves R 5/4 flat sealing
0361825028* 3 solder sleeves Ø 28; flat sealing DN25
0361825035* 3 solder sleeves Ø 35; flat sealing DN40
0361825042* 3 solder sleeves Ø 42; flat sealing DN40

*) Dimension drawing and wiring diagram are available under the same number

1) Permissible pressure difference in bar at which the drive can still firmly close the valve.
2) Do not use as through valve.

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→ PDS 55.100

AXT 201, 211: Thermal actuator for unit valves, with stroke indicator

How energy efficiency is improved
Safe operation within the scope of efficient closed-loop control

Areas of application
Operating through and three-way unit valves of the VUL, BUL, VXL and BXL series or other popular makes of unit valves. For controllers with a switching output, 2-point control quasi-continuous control with 'pulse-pause' signal, in combination with intelligent unitary control systems.

Features
- Pushing force up to 125 N
- Fitted to valve via M30 x 1.5 thread with automatic adaptation
- Easy to fit to Low-Force-Locking® (LFL) valve
- With 230 V or 24 V thermal expansion element
- Large, tangible and visible position indicator
- NC (normally closed) and NO (normally open) versions (with and without auxiliary contacts)
- Version with manual adjuster
- Silent and maintenance-free
- With modular plug for electrical connection (with various functions, cable lengths and cable types)
- Modern design

Technical description
- Housing made of high-quality fire-retardant plastic, pure white (RAL 9010) or black (RAL 9005), high-lustre surface (FV-0 as per EN 60707 & V-0 as per UL94)
- Connected to valve with plastic bayonet connection
- Bayonet nuts for connection to popular valves with threads M30 x 1.5 (black) M28 x 1.5 (grey) or M30 x 1.0 (white)
- Connecting cable, white or black, standard length 1 m, H03…, of PVC or halogen-free, Ø 0.5 mm²
- Run time for 'warm-up' for 4.5 mm stroke at 24 °C: min. 3.5 minutes (230 V), min. 4.5 min (24 V)
- Installation position: any, including upside-down

Type	Power supply	Max. stroke (mm)	Max. Spring force (N)	NC/NO	Min. Run-time (min)	Weight (kg)
White version, neutral, incl. bayonet nut M30 x 1.5, cable 1 m, pack of one						
AXT 201 F110	230 V	4.5	90	NC	3.5	0.18
AXT 201 F112	24 V	4.5	90	NC	4.5	0.18
White version, incl. bayonet nut M30 x 1.5, cable 1 m, pack of one						
AXT 211 F110	230 V	4.5	125	NC	3.5	0.18
AXT 211 F210	230 V	4.5	110	NO	3.5	0.18
AXT 211 F112	24 V	4.5	125	NC	4.5	0.18
AXT 211 F212	24 V	4.5	110	NO	4.5	0.18
Black version, incl. bayonet nut M30 x 1.5, cable 1 m, pack of one						
AXT 211 F110B	230 V	4.5	125	NC	3.5	0.18
AXT 211 F112B	24 V	4.5	125	NC	4.5	0.18
White version, with auxiliary contacts, incl. bayonet nut M30 x 1.5, cable 1 m, pack of one						
AXT 211 HF110	230 V	4.5	125	NC	3.5	0.21
AXT 211 HF210	230 V	4.5	110	NO	3.5	0.21
AXT 211 HF112	24 V	4.5	125	NC	4.5	0.21
AXT 211 HF212	24 V	4.5	110	NO	4.5	0.21
White version, with manual adjuster, incl. bayonet nut M30 x 1.5, cable 1 m, pack of one						
AXT 211 F110M	230 V	4.5	125	NC	3.5	0.18
AXT 211 F112M	24 V	4.5	125	NC	4.5	0.18
White version, packing unit 50 pcs., incl. 50 bayonet nuts M30 x 1.5, without cable						
AXT 211 F190	230 V	4.5	125	NC	3.5	0.10
AXT 211 F192	24 V	4.5	125	NC	4.5	0.10

Technical specifications and accessories, see next page >>>

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→ PDS 55.100

Power supply	230 V~ ± 15%, 50...60 Hz 24 V~/= ± 20%, 50...60 Hz		Protection type	IP 54 (EN 60730-1, -2, -14)
			Protection class 230 V	II (EN 60730-1)
Power consumption	**230 V**	**24 V**	Protection class 24 V	III (EN 60730-1)
during operation	2 W	2 W	CE conformity	
Activation power	approx. 40 W / 40 VA	5 W / 5VA	electrical safety	EN 60730-1, -2, -14
Courant d'enclenchement	250 mA	250 mA		EN 60335-1
max. operating temperature	100 °C (at the valve)		Fitting instructions with auxiliary contacts	P100002547
			Material declaration	MD55.100/M/HK
Operating temperature	0…50 °C		Dimension drawing	M10503a, M11422
Storage and transport temp.	-25…70 °C		Wiring diagram	A10525, A10524b
Ambient humidity	< 85% RH no condensation		with auxiliary contacts	A10560

Accessories

	Connectors with different cable lengths for thermal actuator
0550602801	Connector with 0.5 m cable, white, PVC H03VV, Ø 0.50 x 2
0550602021	Connector with 2 m cable, white, PVC H03VV, Ø 0.50 x 2
0550602032	Connector with 3 m cable, white, PVC H05VV, Ø 0.75 x 2
055060203B	Connector with 3 m cable, black, PVC H05VV, Ø 0.75 x 2
0550602042	Connector with 4 m cable, white, PVC H05VV, Ø 0.75 x 2
0550602052	Connector with 5 m cable, white, PVC H05VV, Ø 0.75 x 2
0550602052B	Connector with 5 m cable, black, PVC H05VV, Ø 0.75 x 2
0550602062	Connector with 6 m cable, white, PVC H05VV, Ø 0.75 x 2
0550602072	Connector with 7 m cable, white, PVC H05VV, Ø 0.75 x 2
0550602102	Connector with 10 m cable, white, PVC H05VV, Ø 0.75 x 2
0550602102B	Connector with 10 m cable, black, PVC H05VV, Ø 0.75 x 2
0550602152	Connector with 15 m cable, white, PVC H05VV, Ø 0.75 x 2
0550602152B	Connector with 15 m cable, black, PVC H05VV, Ø 0.75 x 2
0550602023	Connector with 2 m halogen-free cable, white, Hal F H05Z1Z1, Ø 0.75 x 2
0550602053	Connector with 5 m halogen-free cable, white, Hal F H05Z1Z1, Ø 0.75 x 2
0550602103	Connector with 10 m halogen-free cable, white, Hal F H05Z1Z1, Ø 0.75 x 2
	Connectors with auxiliary contacts
0550484121*	Connector, white with integrated auxiliary contacts for NC actuator, 2 m cable, PVC H03VV, Ø 0.5 x 4
0550484221*	Connector, white with integrated auxiliary contacts for NO actuator, 2 m cable, PVC H03VV, Ø 0.5 x 4
	Miscellaneous
0550240 001	Disassembly protection, white for AXT201/211 and AXS215 (prevents unauthorised disassembly of plug and actuator)
	Adaptors & adaptor sets
0550390001	Raised bayonet nut, M30 x 1.5 (black), with N (standard, black) and S (reduced, white) insert, for all valves with M30 x 1.5 thread plus corner valves or valves with measurement fitting. Dimensions of actuator +5 mm. Closing dimension depending on use: NC 4.5 mm to 18.5 mm and NO 8.5 mm to 22.5 mm
0550390101	Raised bayonet nut, M28 x 1.5 (grey), with N (standard, black) and S (reduced, white) insert, for all valves with M28 x 1.5 thread plus corner valves or valves with measurement fitting. Dimensions of actuator +5 mm. Closing dimension depending on use: NC 4.5 mm to 18.5 mm and NO 8.5 mm to 22.5 mm, e.g. Pettinaroli
0550390201	Raised bayonet nut, M30 x 1.0 (white), with N (standard, black) and S (reduced, white) insert, for all valves with M30 x 1.0 thread plus corner valves or valves of various makes. Dimensions of actuator +5 mm. Closing dimension depending on use: NC 4.5 mm to 18.5 mm and NO 8.5 mm to 22.5 mm, e.g. Oventrop (old), Beulco (old)
0550393001	Adaptor for fitting to Danfoss valves type RA 2000, 22 mm
0550393002	Adaptor for fitting to Danfoss valves type RAVL, 26 mm
0550393003	Adaptor for fitting to Danfoss valves type RAV, 34 mm
0550394001	Adaptor for fitting to Giacomini valves type R450, R452, R456 and programme 60
0550399001	Adaptor set consisting of raised bayonet nut, black, M30 x 1.5 (all makes, M30 x 1.5), raised bayonet nut, grey M28 x 1.5 (all makes, M28 x 1.5), raised bayonet nut, white M30 x 1.0 (e.g. Oventrop, Beulco), 2x insert N (black) and 2x insert S (white), Danfoss adaptor RA 2000 (Ø 22 mm), Giacomini adaptor

For more accessories, see next page >>>

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→ PDS 55.100

	Connectors with continuous actuation (for 24 V version only)
0550423121	Continuous activation **NC** can be set: 0 (2)…10 / 10…0 (2) V, split range 0…4.5 V or 5.5…10 V, for stroke of 4.5 mm or 3.2 mm, 2 m cable, white, PVC Ø 0.22 x 3
0550423221	Continuous activation **NO** can be set: 0 (2)…10 / 10…0 (2) V, split range 0…4.5 V or 5.5…10 V, for stroke of 4.5 mm or 3.2 mm, 2 m cable, white, PVC Ø 0.22 x 3
0550423151	Continuous activation **NC** can be set: 0 (2)…10 / 10…0 (2) V, split range 0…4.5 V or 5.5…10 V, for stroke of 4.5 mm or 3.2 mm, 5 m cable, white, PVC Ø 0.22 x 3
0550423251	Continuous activation **NO** can be set: 0 (2)…10 / 10…0 (2) V, split range 0…4.5 V or 5.5…10 V, for stroke of 4.5 mm or 3.2 mm, 5 m cable, white, PVC Ø 0.22 x 3
0550423171	Continuous activation **NC** can be set: 0 (2)…10 / 10…0 (2) V, split range 0…4.5 V or 5.5…10 V, for stroke of 4.5 mm or 3.2 mm, 7 m cable, white, PVC Ø 0.22 x 3
0550423271	Continuous activation **NO** can be set: 0 (2)…10 / 10…0 (2) V, split range 0…4.5 V or 5.5…10 V, for stroke of 4.5 mm or 3.2 mm, 7 m cable, white, PVC Ø 0.22 x 3
0550423123	Continuous activation **NC** can be set: 0 (2)…10 / 10…0 (2) V, split range 0…4.5 V or 5.5…10 V, for stroke of 4.5 mm or 3.2 mm, 2 m halogen-free cable, white, Ø 0.22 x 3
0550423153	Continuous activation **NC** can be set: 0 (2)…10 / 10…0 (2) V, split range 0…4.5 V or 5.5…10 V, for stroke of 4.5 mm or 3.2 mm, 5 m halogen-free cable, white, Ø 0.22 x 3
0550423173	Continuous activation **NC** can be set: 0 (2)…10 / 10…0 (2) V, split range 0…4.5 V or 5.5…10 V, for stroke of 4.5 mm or 3.2 mm, 7 m halogen-free cable, white, Ø 0.22 x 3

*) Wiring diagram available using the same number

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→ PDS 55.101

AXS 215S: Continuous actuator for unit valves, with stroke indicator

How energy efficiency is improved
Reliable and accurate operation as part of efficient closed-loop control systems.

Areas of application
The operation of through and three-way unit valves of the VUL, BUL, VXL and BXL series or other popular makes of unit valves. For controllers with a continuous output of 0(2)…10 V used in combination with intelligent unitary control systems.

Features
- Easy to fit to the valve by means of the Low-Force-Locking® (LFL) mechanism
- Fitted to valve via M30 x 1.5 thread with automatic adaptation
- Max. 125 N of pushing force
- With 24 V expansion element and accurate continuous input
- Choice of control action 0(2)…10 V / 10…(2)0 V and split-range function 0…4.5 V or 5.5…10 V
- Choice of stroke for 100% control signal 4.5 mm or 3 mm
- Position monitor with inductive, non-wearing sensor; needs no periodic re-adjustment
- Large, tangible and visible position indicator
- NC (normally closed) and NO (normally open) versions
- Silent and maintenance-free
- With modular connectors for electrical connection (with various functions, cable lengths and cable types)
- Modern design

Technical description
- Housing made of high-quality fire-retardant plastic, pure white (RAL 9010) or black (RAL 9005), high-lustre surface (FV-0 as per EN 60707 & V-0 as per UL94)
- Connected to valve with plastic bayonet connection
- Bayonet nuts for connection to popular valves with threads M30 x 1.5 (black) M28 x 1.5 (grey) or M30 x 1.0 (white); also suitable for refitting existing systems without adaptors.
- Connecting cable, white or black, standard length 2 m, H03VV, of PVC or halogen-free, Ø 0.22 mm²
- Run time: approx. 30 s/mm in control mode
- Installation position: any, including upside-down

Type	Voltage	Max. stroke (mm)	Max. spring pressure (N)	NC/NO	Min. running time [1] (s/mm)	Weight (kg)
White version, incl. Bayonet nut M30 x 1,5, cable 2 m, pack of one						
AXS 215S F122	24 V	4.5 / 3	125	NC	approx. 30	0.21
AXS 215S F222	24 V	4.5 / 3	110	NO	approx. 30	0.21
Black version, incl. Bayonet nut M30 x 1,5, cable 2 m, pack of one						
AXS 215S F122B	24 V	4.5 / 3	125	NC	approx. 30	0.21
AXS 215S F222B	24 V	4.5 / 3	110	NO	approx. 30	0.21

Power supply	24 V~ ± 20% 50...60 Hz
Power consumption during operation	approx. 2 W
Start-up power	approx. 4.8 W
Start-up current	approx. 250 mA
Stand-by current	approx. 6 mA
Operating current	approx. 90 mA
Max. operating temperature	100 °C (at the valve)
Control voltage	0…10V; R_i ≥100 kΩ
Operating temperature	0…50 °C
Storage and transport temp.	-25…70 °C
Ambient humidity	< 85% rh no condensation

Protection type	IP 54 (EN 60730)
Protection class (24 V)	III (EN 60730-1, -2, -14)
Fitting instructions, with auxiliary contacs	MV P100002547
Material declaration	MD55.100
Dimension drawing	M10503, M11422
Wiring diagram	A10581

Accessories see next page >>>

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→ PDS 55.101

Accessories

	Connectors with continuous actuation (for 24 V version only)
0550423121	Continuous activation **NC** can be set: 0 (2)…10 / 10…0 (2) V, split range 0…4.5 V or 5.5…10 V, for stroke of 4.5 mm or 3 mm, 2 m cable, white, PVC Ø 0.22 x 3
0550423221	Continuous activation **NO** can be set: 0 (2)…10 / 10…0 (2) V, split range 0…4.5 V or 5.5…10 V, for stroke of 4.5 mm or 3 mm, 2 m cable, white, PVC Ø 0.22 x 3
0550423151	Continuous activation **NC** can be set: 0 (2)…10 / 10…0 (2) V, split range 0…4.5 V or 5.5…10 V, for stroke of 4.5 mm or 3 mm, 5 m cable, white, PVC Ø 0.22 x 3
0550423251	Continuous activation **NO** can be set: 0 (2)…10 / 10…0 (2) V, split range 0…4.5 V or 5.5…10 V, for stroke of 4.5 mm or 3 mm, 5 m cable, white, PVC Ø 0.22 x 3
0550423171	Continuous activation **NC** can be set: 0 (2)…10 / 10…0 (2) V, split range 0…4.5 V or 5.5…10 V, for stroke of 4.5 mm or 3 mm, 7 m cable, white, PVC Ø 0.22 x 3
0550423271	Continuous activation **NO** can be set: 0 (2)…10 / 10…0 (2) V, split range 0…4.5 V or 5.5…10 V, for stroke of 4.5 mm or 3 mm, 7 m cable, white, PVC Ø 0.22 x 3
0550423123	Continuous activation **NC** can be set: 0 (2)…10 / 10…0 (2) V, split range 0…4.5 V or 5.5…10 V, for stroke of 4.5 mm or 3 mm, 2 m halogen-free cable, white Ø 0.22 x 3
0550423153	Continuous activation **NC** can be set: 0 (2)…10 / 10…0 (2) V, split range 0…4.5 V or 5.5…10 V, for stroke of 4.5 mm or 3 mm, 5 m halogen-free cable, white Ø 0.22 x 3
	Miscellaneous accessories
0550240001	Dismantling protection for AXT/AXS 211 (prevents unauthorised dismantling of plug and actuator)
	Adaptors & adaptor sets
0550390001	Raised bayonet nut, M30 x 1.5 (black), with N (standard, black) and S (reduced, white) insert, for all valves with M30 x 1.5 thread plus corner valves or valves with measurement fitting. Size of actuator +5 mm. Closing dimension depending on use: NC 4.5 mm to 18.5 mm and NO 8.5 mm to 22.5 mm
0550390101	Raised bayonet nut, M28 x 1.5 (grey), with N (standard, black) and S (reduced, white) insert, for all valves with M28 x 1.5 thread plus corner valves or valves with measurement fitting. Size of actuator +5 mm. Closing dimension depending on use: NC 4.5 mm to 18.5 mm and NO 8.5 mm to 22.5 mm, e.g. Pettinaroli
0550390201	Raised bayonet nut, M30 x 1.0 (white), with N (standard, black) and S (reduced, white) insert, for all valves with M30 x 1.0 thread plus corner valves or valves of various makes. Size of actuator +5 mm. Closing dimension depending on use: NC 4.5 mm to 18.5 mm and NO 8.5 mm to 22.5 mm, e.g. Oventrop old, Beulco old
0550393001	Adaptor for fitting to Danfoss valves type RA 2000, 22 mm
0550393002	Adaptor for fitting to Danfoss valves type RAVL, 26 mm
0550393003	Adaptor for fitting to Danfoss valves type RAV, 34 mm
0550394001	Adaptor for fitting to Giacomini valves type R450, R452, R456 and programme 60
0550399001	Adaptor set comprising: Raised bayonet nut, black, M30 x 1.5 (all makes, M30 x 1.5), raised bayonet nut, grey M28 x 1.5 (all makes, M28 x 1.5), raised bayonet nut, white M30 x 1.0 (e.g. Oventrop, Beulco), 2x insert N (black) and 2x insert S (white), Danfoss adaptor RA 2000 (Ø 22 mm), Giacomini adaptor

*) Wiring diagram available using the same number

1) The total time for 100% stroke is approx. 3.5…4.5 min (warm-up time) from cold or approx. 150 s in operating mode excluding dead time, i.e. in stand-by mode, add a dead time of approx. 110 s

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→ PDS 56.090

VKR: 2-way ball valve with female thread, PN 40

How energy efficiency is improved

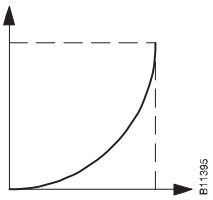
Precision control and working without losses through leakage means efficiency.

Areas of application

Control ball valve for continuous control of cold water, hot water or air in closed networks [1]. Water quality as per VDI 2035, the use of strainers is recommended. Together with actuators AKM 105, 115(S) and AKF 112, 113(S) as regulating unit.

Features

- Nominal pressure 40 bar [3]
- Nominal diameter DN15 to DN50
- Equal percentage ball valve characteristic, integrated directly into ball
- Characteristic can be set to linear or quadratic with SUT rotary drive
- Spindle with large sliding surface and Teflon glide ring
- High control ratio of 500:1
- Low torque thanks to collar with O-ring bearing



Equal-percentage characteristic curve

Technical description

- Ball valve with female thread as per ISO 7/1 Rp or NPT
- Body made of DZR (dezincification resistant) cast brass
- Axle made of DZR brass
- Ball made of DZR brass, chrome-plated and polished surface
- Axle seal with double O-ring made of EPDM
- Strainer and screw fitting available as accessories

Type ISO 7/1 Rp	Type NPT	Nom. Diam. DN	Connection ISO 7/1 Rp	k_{VS} Value m³/h	Weight kg
VKR 015 F350-FF	**VKR 015 F350-UU**	15	Rp ½"	1	0.29
VKR 015 F340-FF	**VKR 015 F340-UU**	15	Rp ½"	1.6	0.29
VKR 015 F330-FF	**VKR 015 F330-UU**	15	Rp ½"	2.5	0.29
VKR 015 F320-FF	**VKR 015 F320-UU**	15	Rp ½"	4	0.29
VKR 015 F310-FF	**VKR 015 F310-UU**	15	Rp ½"	6.3	0.29
VKR 015 F300-FF	**VKR 015 F300-UU**	15	Rp ½"	10	0.29
VKR 020 F320-FF	**VKR 020 F320-UU**	20	Rp ¾"	4	0.32
VKR 020 F310-FF	**VKR 020 F310-UU**	20	Rp ¾"	6.3	0.32
VKR 020 F300-FF	**VKR 020 F300-UU**	20	Rp ¾"	10	0.32
VKR 025 F320-FF	**VKR 025 F320-UU**	25	Rp 1"	6.3	0.49
VKR 025 F310-FF	**VKR 025 F310-UU**	25	Rp 1"	10	0.49
VKR 025 F300-FF	**VKR 025 F300-UU**	25	Rp 1"	16	0.49
VKR 032 F320-FF	**VKR 032 F320-UU**	32	Rp 1¼"	10	0.73
VKR 032 F310-FF	**VKR 032 F310-UU**	32	Rp 1¼"	16	0.73
VKR 032 F300-FF	**VKR 032 F300-UU**	32	Rp 1¼"	25	0.73
VKR 040 F320-FF	**VKR 040 F320-UU**	40	Rp 1½"	16	1.10
VKR 040 F310-FF	**VKR 040 F310-UU**	40	Rp 1½"	25	1.10
VKR 040 F300-FF	**VKR 040 F300-UU**	40	Rp 1½"	40	1.10
VKR 050 F320-FF	**VKR 050 F320-UU**	50	Rp 2"	25	1.76
VKR 050 F310-FF	**VKR 050 F310-UU**	50	Rp 2"	40	1.76
VKR 050 F300-FF	**VKR 050 F300-UU**	50	Rp 2"	63	1.76

Operating temperature [2]	-10...130 °C		Dimension drawing	M10498
Operating pressure	-10...50 °C	40 bar		
	+130 °C	35 bar	Installation guide	
Valve characteristic	Equal-percentage		VKR	P100002038
Ball valve rangeability	500:1 (typical)		AKM105, 115S	P100001578
Rangeability with drive	> 50:1 (typical)		AKF112, 113S	P100002659
Leakage rate	0.001% of k_{VS} value		Declaration on materials and the environment	MD 56.090
Rotation angle	90°			

1) See engineering and fitting notes for open circuits
2) No stuffing box heater required at temperature of less than 0 °C, use temperature adapter at temperatures above 100 °C (accessory).
3) For air, low-pressure steam: DN40 - PN25, DN50 - PN20

For accessories and combinations with electric drives, see next pages >>>

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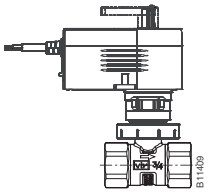
→ PDS 56.090

Accessories

0510420 001* Temperature adapter (>100 °C to max. 130 °C) for AKM and AKF, P100002660
0560283 015* 1 screw fitting made from brass for DN 15 female thread
0560283 020* 1 screw fitting made from brass for DN 20 female thread
0560283 025* 1 screw fitting made from brass for DN 25 female thread
0560283 032* 1 screw fitting made from brass for DN 32 female thread
0560283 040* 1 screw fitting made from brass for DN 40 female thread
0560283 050* 1 screw fitting made from brass for DN 50 female thread
0560332 015* Strainer made from gun metal, -10 - 150°C, mesh aperture 0,5 mm, DN15
0560332 020* Strainer made from gun metal, -10 - 150°C, mesh aperture 0,8 mm, DN20
0560332 025* Strainer made from gun metal, -10 - 150°C, mesh aperture 0,8 mm, DN25
0560332 032* Strainer made from gun metal, -10 - 150°C, mesh aperture 0,8 mm, DN32
0560332 040* Strainer made from gun metal, -10 - 150°C, mesh aperture 0,8 mm, DN40
0560332 050* Strainer made from gun metal, -10 - 150°C, mesh aperture 0,8 mm, DN50

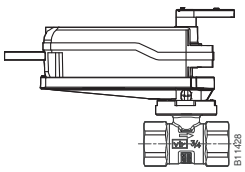
*) Dimension drawing or connection diagram available under same number

Combination of VKR and electric rotary drive



Drive Running time: Input:				**AKM 105** **35s** **2-/3-pt**				**AKM 115 F12.** **120s** **2-/3-pt**	**AKM 115S** **35 / 60 / 120 s** **2-/3-pt/0..10 V**
Ball Valve	Against pressure				Against pressure				
	Δpmax	**Δps**	**close/off pressure**		**Δpmax**	**Δps**	**close/off pressure**		
VKR 015	1.8	–	–		3.5	–	–		
VKR 020	1.8	–	–		3.5	–	–		
VKR 025	1.8	–	–		3.5	–	–		
VKR 032	1.2	–	–		2.4	–	–		
VKR 040	1.2	–	–		2.4	–	–		
VKR 050	1.2	–	–		2.4	–	–		

Combination of VKR and electric rotary drive with spring return



Drive Running time, Motor: spring: Input:				**AKF 112 F120** **90s** **15s** **2-pt - 230 V**	**AKF 112 F122** **90s** **15s** **2-pt - 24 V**	**AKF 113 F122** **90s** **15s** **3-pt - 24 V**	**AKF 113S F122** **90s** **15s** **0…10 V - 24 V**
Ball Valve	Against pressure						
	Δpmax	**Δps**	**close/off pressure**				
VKR 015	3.5	54	–				
VKR 020	3.5	54	–				
VKR 025	3.5	5.4	–				
VKR 032	2.4	3.5	–				
VKR 040	2.4	3.5	–				
VKR 050	2.4	3.5	–				

Valve: F variant, see valve type table for technical data and accessories
Drives: F variant, see section 51 for technical data, accessories and installation position
Example: VKR 015 F310 / AKM 115S F132

Δp_{max} [bar]	Maximum permissible pressure difference across the valve at which the drive can still reliably open and close the valve taking Δp_V into consideration.
Δp_S [bar]	Maximum permissible pressure difference across the valve in the event of a problem (pipeline break downstream of valve) at which the drive can reliably close with “fast” stroke passage
close/off pressure	Maximum possible pressure difference across the valve during control operation at which the drive can still open and close the valve. A shorter service life can be expected if this method is used. Cavitation, erosion and pressure surges can damage the valve. The values only apply to the assembled combination of the valve fitted to the drive.

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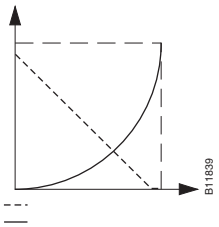
→ PDS 56.091

BKR: 3-way ball valve with female thread, PN 40



How energy efficiency is improved

Precision control and working without losses through leakage means efficiency.

Areas of application

Control ball valve for continuous control of cold water, hot water or air in closed networks[1]. Water quality as per VDI 2035, the use of strainers is recommended. Together with actuators AKM 105, 115(S) and AKF 112, 113(S) as regulating unit.

Features

- Nominal pressure 40 bar [2]
- Nominal diameter DN 15 to DN 50
- Equal percentage control passage ball valve characteristic, integrated directly into ball
- Linear mixing passage ball valve characteristic
- Control passage characteristic can be set to linear or quadratic with SUT rotary drive
- Spindle with large sliding surface and Teflon glide ring
- High control ratio of 500 : 1
- Low torque thanks to collar with O-ring bearing

Technical description

- Ball valve with female thread as per ISO 7/1 Rp or NPT
- Body made of DZR (dezincification resistant) cast brass
- Axle made of DZR brass
- Ball made of DZR brass, chrome-plated and polished surface
- Axle seal with double O-ring made of EPDM
- Strainer and screw fitting available as accessories

Type		Nom. Diam. DN	Connection		k_{VS} Value m^3/h	Weight kg	
ISO 7/1 Rp	NPT		ISO 7/1 Rp	NPT		ISO 7/1 Rp	NPT
BKR 015 F350-FF	**BKR 015 F350-UU**	15	Rp ½"	½ NPT	1.6	0.312	0.319
BKR 015 F340-FF	**BKR 015 F340-UU**	15	Rp ½"	½ NPT	2.5	0.312	0.319
BKR 015 F330-FF	**BKR 015 F330-UU**	15	Rp ½"	½ NPT	4	0.312	0.319
BKR 015 F320-FF	**BKR 015 F320-UU**	15	Rp ½"	½ NPT	6.3	0.328	0.336
BKR 020 F310-FF	**BKR 020 F310-UU**	20	Rp ¾"	¾ NPT	4	0.398	0.413
BKR 020 F300-FF	**BKR 020 F300-UU**	20	Rp ¾"	¾ NPT	6.3	0.398	0.413
BKR 025 F320-FF	**BKR 025 F320-UU**	25	Rp 1"	1 NPT	10	0.628	0.648
BKR 032 F310-FF	**BKR 032 F310-UU**	32	Rp 1¼"	1¼ NPT	16	0.966	0.997
BKR 040 F300-FF	**BKR 040 F300-UU**	40	Rp 1½"	1½ NPT	25	1.394	1.421
BKR 050 F320-FF	**BKR 050 F320-UU**	50	Rp 2"	2 NPT	40	2.267	2.292

Operating temperature [3]	-10...130 °C	
Operating pressure	-10...50 °C	40 bar
	+130 °C	35 bar
Valve characteristic		
Control passage	Equal-percentage	
Mixing passage	linear	
Ball valve rangeability	500:1 (typical)	
Rangeability with drive	> 50:1 (typical)	
Leakage rate		
Control passage	0.001% of k_{VS} value	
Mixing passage	< 1%	
Rotation angle	90°	

Dimension drawing	M11429
Installation guide	
BKR	P100002038
AKM105, 115S	P100001578
AKF112, 113S	P100002659
Declaration on materials and the environment	MD 56.090

1) See engineering and fitting notes for open circuits
2) For air, low-pressure steam: DN40 - PN25, DN50 - PN20
3) No stuffing box heater required at temperature of less than 0 °C, use temperature adapter at temperatures above 100 °C (accessory).

For accessories and combinations with electric drives, see next pages >>>

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→ PDS 56.091

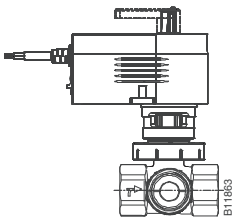
Accessories

0510420 001* Temperature adapter (>100 °C to max. 130 °C) for AKM and AKF, P100002660
0560283 015* 1 screw fitting made from brass for DN 15 female thread
0560283 020* 1 screw fitting made from brass for DN 20 female thread
0560283 025* 1 screw fitting made from brass for DN 25 female thread
0560283 032* 1 screw fitting made from brass for DN 32 female thread
0560283 040* 1 screw fitting made from brass for DN 40 female thread
0560283 050* 1 screw fitting made from brass for DN 50 female thread
0560332 015* Strainer made from gun metal, -10 - 150°C, mesh aperture 0.5 mm, DN 15
0560332 020* Strainer made from gun metal, -10 - 150°C, mesh aperture 0.8 mm, DN 20
0560332 025* Strainer made from gun metal, -10 - 150°C, mesh aperture 0.8 mm, DN 25
0560332 032* Strainer made from gun metal, -10 - 150°C, mesh aperture 0.8 mm, DN 32
0560332 040* Strainer made from gun metal, -10 - 150°C, mesh aperture 0.8 mm, DN 40
0560332 050* Strainer made from gun metal, -10 - 150°C, mesh aperture 0.8 mm, DN 50

*) Dimension drawing or connection diagram available under same number

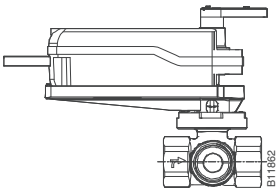
Combination of BKR and electric rotary drive

Drive Running time: Input:				**AKM 105** **35s** **2-/3-pt**				**AKM 115 F12.** **120s** **2-/3-pt**	**AKM 115S** **35 / 60 / 120 s** **2-/3-pt/0..10 V**
Ball Valve	Against pressure				Against pressure				
	Δpmax	**Δps**	**close/off pressure**		**Δpmax**	**Δps**	**close/off pressure**		
BKR 015	1.8	–	1.8		2	–	6		
BKR 020	1.8	–	1.8		2	–	6		
BKR 025	1.8	–	1.8		2	–	6		
BKR 032	1.2	–	1.2		2	–	6		
BKR 040	1.2	–	1.2		2	–	6		
BKR 050	1.2	–	1.2		2	–	6		



Combination of BKR and electric rotary drive with spring return

Drive Running time, Motor: spring: Input:				**AKF 112 F120** **90s** **15s** **2-pt - 230 V**	**AKF 112 F122** **90s** **15s** **2-pt - 24 V**	**AKF 113 F122** **90s** **15s** **3-pt - 24 V**	**AKF 113S F122** **90s** **15s** **0…10 V - 24 V**
Ball Valve	Against pressure						
	Δpmax	**Δps**	**close/off pressure**				
BKR 015	2	5.4	6				
BKR 020	2	5.4	6				
BKR 025	2	5.4	6				
BKR 032	2	3.5	6				
BKR 040	2	3.5	6				
BKR 050	2	3.5	6				



Valve: F variant, see valve type table for technical data and accessories
Drives: F variant, see section 51 for technical data, accessories and installation position
Example: BKR 015 F310 / AKM 115S F132

Δp_{max} [bar]= Maximum permissible pressure difference across the valve at which the drive can still reliably open and close the valve taking Δp_V into consideration.

Δp_S [bar]= Maximum permissible pressure difference across the valve in the event of a problem (pipeline break downstream of valve) at which the drive can reliably close with “fast” stroke passage

close/off pressure [bar]= Maximum possible pressure difference across the valve during control operation at which the drive can still open and close the valve. A shorter service life can be expected if this method is used. Cavitation, erosion and pressure surges can damage the valve. The values only apply to the assembled combination of the valve fitted to the drive.

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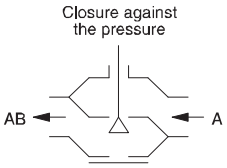
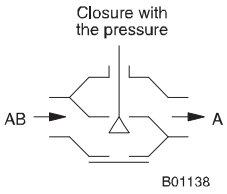
→ PDS 56.100

VUN: Through valve with male thread, PN 16





How energy efficiency is improved

Reliable actuation in efficient control systems.

Areas of application

Control valve for continuous control of cold water, hot water or air in closed networks [1]. Water quality as per VDI 2035. Together with AVM 105(S), 115(S), 124, 125S and AVF 124, 125S as regulating unit.

Features

- Nominal pressure 16 bar
- Nominal diameter DN15 to DN50
- Control valve, contains no silicone grease
- Equal percentage characteristic, adjustable with SUT actuators to linear or quadratic
- If the spindle is retracted, the valve is closed
- Closing procedure against or with pressure

Technical description

- Valve with male thread as per DIN EN ISO 228-1
- Valve body and seat made of DZR (dezincification resistant) cast brass
- Stainless steel spindle
- Cone made of DZR brass with glass-fibre reinforced Teflon sealing ring
- Stuffing box made of DZR brass with wiper ring and double O-ring seal in EPDM

Type	Nominal Diameter DN	Connection	k_{VS}-Value m^3/h	Weight kg
VUN 015 F350	15	G 1B	0.4	0.82
VUN 015 F340	15	G 1B	0.63	0.82
VUN 015 F330	15	G 1B	1	0.82
VUN 015 F320	15	G 1B	1.6	0.82
VUN 015 F310	15	G 1B	2.5	0.82
VUN 015 F300	15	G 1B	4	0.82
VUN 020 F300	20	G 1¼B	6.3	1.00
VUN 025 F300	25	G 1½B	10	1.30
VUN 032 F300	32	G 2B	16	1.74
VUN 040 F300	40	G 2¼B	22	2.52
VUN 050 F300	50	G 2¾B	28	3.44
VUN 050 F200	50	G 2¾B	40	3.44

Operating temperature [2]		-15...150 °C
Operating pressure		up to 120 °C 16 bar
		up to 130 °C 13 bar
		up to 150 °C 10 bar
Valve characteristic	F200	linear
	F3 .0	Equal-percentage
Control ratio		> 50:1 (typical)
Leakage rate		≤ 0.02% of k_{VS}-Value
Nominal stroke		8 mm

Dimension drawing	M10491
Fitting instructions	P100001118
AVM 105(S), 115(S)	MV506065
AVM 124	MV505809
AVM 125S	MV506066
AVF 124	MV505851
AVF 125S	MV506067
Declaration on materials and the environment	MD 56.100

Accessories

0361951 015*	1 screw fitting for male thread with flat seal DN 15
0361951 020*	1 screw fitting for male thread with flat seal DN 20
0361951 025*	1 screw fitting for male thread with flat seal DN 25
0361951 032*	1 screw fitting for male thread with flat seal DN 32
0361951 040*	1 screw fitting for male thread with flat seal DN 40
0361951 050*	1 screw fitting for male thread with flat seal DN 50
0372240 001*	Manual adjustment for valves with 8 mm stroke; MV 505813
0372249 001*	Temperature adapter (>100 °C up to max. 130 °C) for AVM, DN 15...50, MV 505932
0372249 002*	Temperature adapter (>130 °C up to max. 150 °C) for AVM, DN 15...50, MV 505932
0378284 100*	Stuffing box heater 230 V~; 15W, for Media below 0 °C, DN 15...50, MV 505978
0378284 102*	Stuffing box heater 24 V~; 15W, for Media below 0 °C, DN 15...50, MV 505978
0378368 001	Complete spare stuffing box for DN 15 to DN 50

*) Dimension drawing or wiring diagram available under the same number

1) See engineering and fitting notes for open circuits
2) At temperatures of less than 0 °C use stuffing box, above 100 °C use temperature adapter (accessory).

For combinations with electric drives, see next page >>>

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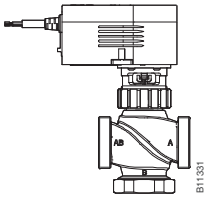
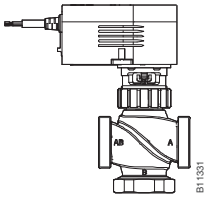
→ PDS 56.100

Combination VUN with electrical drive

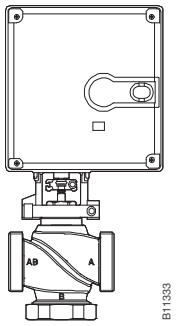
Drive	250 N pushing force						
Type:	**AVM 105 F . . .**		**AVM 105S F . . .**				
Running time:	30 s /120 s		35 s / 60 s / 120 s				
Input:	2pt / 3pt		0…10 V				
Valve	Against the pressure			**AVM 105 F12 .**	**AVM 105 F100**	**AVM 105S F . . .**	
	Δpmax	**Δps**	**close/off pressure**				
VUN 015	4	–	6				
VUN 020	4	–	6				
VUN 025	4	–	5				
VUN 032	3	–	3				
VUN 040	1.9	–	1.9				
VUN 050	1	–	1.2				



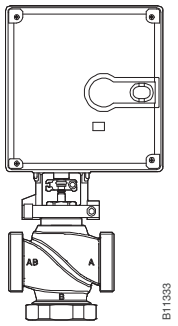
Drive	500 N pushing force							
Type:	**AVM 115 F . . .**		**AVM 115S F . . .**					
Running time:	120 s		60 s / 120 s					
Input:	2pt / 3pt		0…10 V					
Valve	Against the pressure			With the pressure			**AVM 115**	**AVM 115S**
	Δpmax	**Δps**	**close/off pressure**	**Δpmax**	**Δps**	**close/off pressure**		
VUN 015	6	–	15	–	–	–		
VUN 020	5	–	10	–	–	–		
VUN 025	4	–	7.5	–	–	–		
VUN 032	3.5	–	6	–	–	–		
VUN 040	3	–	3.6	–	–	–		
VUN 050	2.4	–	2.4	–	–	–		



Drive	800 N pushing force							
Type:	**AVM 124 F . . .**		**AVM 125S F . . .**					
Running time:	30 s / 60 s / 120 s		30 s / 60 s / 120 s					
Input:	3pt		0…10 V or 2pt or 3pt					
Valve	Against the pressure			With the pressure			**AVM 124**	**AVM 125S**
	Δpmax	**Δps**	**close/off pressure**	**Δpmax**	**Δps**	**close/off pressure**		
VUN 015	8	–	15	6	–	15		
VUN 020	8	–	10	6	–	10		
VUN 025	8	–	9	5	–	9		
VUN 032	6	–	7	4	–	7		
VUN 040	5	–	6	2.5	–	6		
VUN 050	3	–	3.5	1.5	–	3.5		



Drive	500 N pushing force							
Type:	**AVF 124 F . . .**		**AVF 125S F . . .**					
Running time:	60 s / 120 s		60 s / 120 s					
Input:	3pt		0…10 V or 2pt or 3pt					
Spring return:	18 ± 10 s		18 ± 10 s					
Valve	Against the pressure			With the pressure			**AVF 124**	**AVF 125S**
	Δpmax	**Δps**	**close/off pressure**	**Δpmax**	**Δps**	**close/off pressure**		
VUN 015	6	16	16	4	16	16		
VUN 020	5	12	12	2.8	16	12		
VUN 025	4	8	8	2.8	16	8		
VUN 032	3.5	6	6	2	16	6		
VUN 040	3	3.5	3.6	1.5	16	3.5		
VUN 050	2.4	2.4	2.4	0.8	16	2.4		



Valve: Variant F, for technical data and accessories see Valve Type Table
Drive: Variant F, for technical data, accessories and installation position see section 51
Example: VUN 015 F310 / AVM 115S F132

Δp_{max} [bar]	Maximum permitted pressure difference over the valve at which the drive can still reliably open and close the valve, taking account of Δp_V.
Δp_S [bar]	Maximum permitted pressure difference over the valve in case of a fault (pipe break downstream of the valve) at which the drive can close the valve reliably with "fast" performance of the stroke.
close/off pressure	Maximum possible pressure difference over the valve in control mode, at which the drive can still open and close the valve. A reduced lifetime must be expected with this mode. Cavitation, erosion and pressure surges can damage the valve. The values are only valid for the assembled combination valve fitted on the drive.

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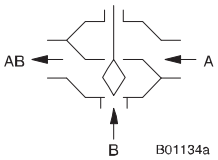
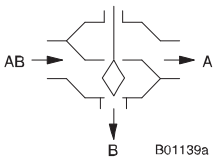
→ PDS 56.101

BUN: Three-way valve with male thread, PN 16

Y07545





How energy efficiency is improved

Reliable actuation in efficient control systems.

Areas of application

Control valve for continuous control of cold water, hot water or air in closed networks [1]. Water quality as per VDI 2035. Together with AVM 105(S), 115(S), 124, 125S and AVF 124, 125S as regulating unit.

Features

- Nominal pressure 16 bar
- Nominal diameter DN15 to DN50
- Control valve, contains no silicone grease
- Equal percentage characteristic, adjustable with SUT actuators to linear or quadratic
- Linear mixing passage characteristic
- If the spindle is retracted, the valve is closed
- Can be used as mixing valve or diverting valve

Technical description

- Valve with male thread as per DIN EN ISO 228-1
- Valve body and seat made of DZR (dezincification resistant) cast brass
- Stainless steel spindle
- Cone made of DZR brass with glass-fibre reinforced Teflon sealing ring
- Stuffing box made of DZR brass with wiper ring and double O-ring seal in EPDM

Type	Nominal Diameter DN	Connection	k_{VS} Value m³/h	Weight kg
BUN 015 F330	15	G 1B	1	0.82
BUN 015 F320	15	G 1B	1.6	0.82
BUN 015 F310	15	G 1B	2.5	0.82
BUN 015 F300	15	G 1B	4	0.82
BUN 020 F300	20	G 1¼B	6.3	1.00
BUN 025 F300	25	G 1½B	10	1.30
BUN 032 F300	32	G 2B	16	1.74
BUN 040 F300	40	G 2¼B	22	2.52
BUN 050 F300	50	G 2¾B	28	3.44
BUN 050 F200	50	G 2¾B	40	3.44

Operating temperature [2]	-15…150 °C	Dimension drawing	M10492
Operating pressure	up to 120 °C 16 bar		
	up to 130 °C 13 bar	Installation guide	P100001118
	up to 150 °C 10 bar	AVM 105(S), 115(S)	MV506065
Valve characteristic		AVM 124	MV505809
Control passage F200	linear	AVM 125S	MV506066
F3 . 0	equal-percentage	AVF 124	MV505851
Mixing passage	linear	AVF 125S	MV506067
Control ratio	> 50:1 (typical)		
Leakage rate		Declaration on materials and the environment	MD 56.101
Control passage	≤ 0.05% of k_{vs} value		
Mixing passage	≤ 1% of k_{vs} value		
Nominal stroke	8 mm		

Accessories

0361951 015* 1 screw fitting for male thread with flat seal DN 15
0361951 020* 1 screw fitting for male thread with flat seal DN 20
0361951 025* 1 screw fitting for male thread with flat seal DN 25
0361951 032* 1 screw fitting for male thread with flat seal DN 32
0361951 040* 1 screw fitting for male thread with flat seal DN 40
0361951 050* 1 screw fitting for male thread with flat seal DN 50
0372240 001* Manual adjustment for valves with 8 mm stroke, MV 505813
0372249 001* Temperature adapter (>100 °C up to max. 130 °C) for AVM, DN 15 to 50, MV 505932
0372249 002* Temperature adapter (>130 °C up to max. 150 °C) for AVM, DN 15 to 50, MV 505932
0378284 100* Stuffing box heater 230 V~; 15W, for media below 0 °C, DN 15 to 50, MV 505978
0378284 102* Stuffing box heater 24 V~; 15W, for media below 0 °C, DN 15 to 50, MV 505978
0378368 001 Complete spare stuffing box for DN 15 to DN 50

*) Dimension drawing or connection diagram available under same number

1) See engineering and fitting notes for open circuits
2) At temperatures of less than 0 °C use stuffing box, above 100 °C use temperature adapter (accessory).

For combinations with electric drives, see next page >>>

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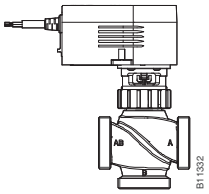
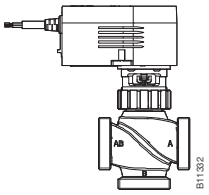
→ PDS 56.101

BUN combination with electric drive

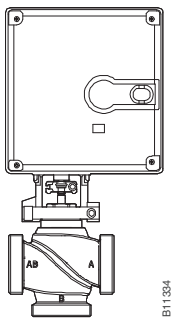
Drive	250 N pushing force						
Model:	**AVM 105 F . . .**		**AVM 105S F . . .**				
Running time:	30 s /120 s		35 s / 60 s / 120 s				
Input:	2pt / 3pt		0...10 V				
Valve	Use as mixing valve			**AVM 105 F12 .**	**AVM 105 F100**	**AVM 105S F . . .**	
	Δpmax	**Δps**	**close/off pressure**				
BUN 015	4	–	6				
BUN 020	4	–	4.3				
BUN 025	3	–	3				
BUN 032	2	–	2				
BUN 040	1.2	–	1.2				
BUN 050	0.8	–	0.8				



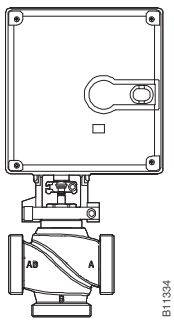
Drive	500 N pushing force							
Model:	**AVM 115 F . . .**			**AVM 115S F . . .**				
Running time:	120 s			60 s / 120 s				
Input:	2pt / 3pt			0...10 V				
Valve	Use as mixing valve			Use as distribution valve			**AVM 115**	**AVM 115S**
	Δpmax	**Δps**	**close/off pressure**	**Δpmax**	**Δps**	**close/off pressure**		
BUN 015	6	–	15	–	–	–		
BUN 020	5	–	9.4	–	–	–		
BUN 025	4	–	6.5	–	–	–		
BUN 032	3.7	–	4.3	–	–	–		
BUN 040	2.7	–	2.7	–	–	–		
BUN 050	1.8	–	1.8	–	–	–		



Drive	800 N pushing force							
Model:	**AVM 124 F . . .**			**AVM 125S F . . .**				
Running time:	30 s / 60 s / 120 s			30 s / 60 s / 120 s				
Input:	3pt			0...10 V or 2pt or 3pt				
Valve	Use as mixing valve			Use as distribution valve			**AVM 124**	**AVM 125S**
	Δpmax	**Δps**	**close/off pressure**	**Δpmax**	**Δps**	**close/off pressure**		
BUN 015	8	–	15	6	–	15		
BUN 020	8	–	10	6	–	10		
BUN 025	8	–	9	5	–	9		
BUN 032	6	–	7	4	–	7		
BUN 040	4.4	–	4.4	2.5	–	4.4		
BUN 050	3	–	3	1.5	–	3		



Drive	500 N pushing force							
Model:	**AVF 124 F . . .**			**AVF 125S F . . .**				
Running time:	60 s /120 s			60 s / 120 s				
Input:	3pt			0...10 V or 2pt or 3pt				
Spring return:	18 ± 10 s			18 ± 10 s				
Valve	Use as mixing valve			Use as distribution valve			**AVF 124**	**AVM 125S**
	Δpmax	**Δps**	**close/off pressure**	**Δpmax**	**Δps**	**close/off pressure**		
BUN 015	6	16	16	4	16	16		
BUN 020	5	9.4	9.5	2.8	16	9.5		
BUN 025	4	6.5	6.5	2.8	16	6.5		
BUN 032	3.7	4.3	4.3	2	16	4.3		
BUN 040	2.7	2.7	2.7	1.5	16	2.7		
BUN 050	1.8	1.8	1.8	0.8	16	1.8		



Valve: F variant, see valve type table for technical data and accessories
Drive: F variant, see section 51 for technical data, accessories and installation position
Example: BUN 015 F310 / AVM 115S F132

Δp_{max} [bar] Maximum permissible pressure difference across the valve at which the drive can still reliably open and close the valve taking Δp_V into consideration.

Δp_S [bar] Maximum permissible pressure difference across the valve in the event of a problem (pipeline break downstream of valve) at which the drive can reliably close with “fast” stroke passage

close/off pressure Maximum possible pressure difference across the valve during control operation at which the drive can still open and close the valve. A shorter service life can be expected if this method is used. Cavitation, erosion and pressure surges can damage the valve. The values only apply to the assembled combination of the valve fitted to the drive.

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→ PDS 56.460

V6R: Through valve with female thread, PN 16

Y07544

How energy efficiency is improved

Precision control with high level of reliability means efficiency.

Areas of application

Continuous control of cold and hot water or air in closed networks [1]. Water quality as per VDI 2035. Together with actuators AVM 234S-5, AVF 234S-5 and AVN 224S-5 as regulating unit.

Features

- Nominal pressure PN 16
- Nominal diameter DN15, DN25, DN40 and DN50 with reduction steps
- Basic characteristic equal percentage (F3 ...) or linear (F2 ...)
- Equal percentage characteristic or linear, adjustable with SUT actuators to linear, equal percentage or quadratic
- If the spindle is retracted, the valve is closed
- Closing procedure against or with pressure

Technical description

- Valve with female thread as per DIN EN ISO 228-1 G
- Valve body and seat made of gun metal
- Stainless steel spindle
- Cone made of stainless steel for DN15 and brass from DN20
- Stuffing box made of brass with wiper ring and double O-ring seal in EPDM

Type	Nominal diameter DN	k_{VS} value m³/h	Valve plug material	Weight kg
V6R 15 F350	15	0.4	stainless steel	1.2
V6R 15 F340	15	0.63	stainless steel	1.2
V6R 15 F330	15	1	stainless steel	1.2
V6R 15 F320	15	1.6	stainless steel	1.2
V6R 15 F310	15	2.5	brass	1.2
V6R 15 F300	15	4	brass	1.2
V6R 25 F310	25	6.3	brass	1.6
V6R 25 F300	25	10	brass	1.6
V6R 40 F310	40	16	brass	3.4
V6R 40 F300	40	25	brass	3.4
V6R 50 F300	50	35	brass	4.6

Operating temperature [1]	–15...130 °C		Leakage rate	≤ 0.05% of k_{VS} value
Operating pressure	up to 120 °C	16 bar		
	up to 130 °C	13 bar	Dimension drawings	5M100
Valve curve	equal-percentage or linear		Fitting instructions	MV 505580
Control ratio	50 (typical)		AVM 234 / Assembly	MV 505919
Valve stroke	14 mm		AVF 234 / Assembly	MV 505920
			AVN 224 / Assembly	MV 505927

Variants

-F2 . . . Valve linear curve (available from DM 15, k_{vs} 4 m³/h only), price and pressure same as **V6R..F3..**

Accessories

0217268 . . . Heating for stuffing box, 15 W; N.B. 24 V = /001, 230 V = /004, MV 505498

0360391 . . . Union piece including asbestos-free seal, 2 pieces required.
Specify when ordering: DN 15 = /015, DN 25 = /025 etc.

DN	15	25	40	50

0360421 000 Label for changing flow to 'Closes with the pressure'

0378034 001 Valve with stuffing box, silicon-free; synthetic lubricant; max. 130 °C

1) At temperatures under 0 °C, use stuffing-box heating (accessory)

For combinations with electric drives, see next page >>>

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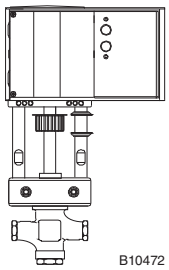
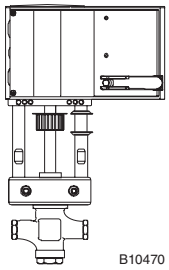
→ PDS 56.460

Combination: V6R with electric drive, pushing force 2500 N


B10472

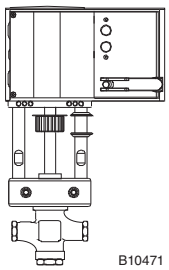
Actuator	**AVM 234S F132-5**					
Input	**2-/3-pt.; 0...10 V / 4...20 mA; 24 V / with accessories 230 V**					
Running time:	**28 / 56 / 84 s**					
Valve	Closes against the pressure			Closes with the pressure		
	Δp_{max}	**Close/off pressure**		**Δp_{max}**	**Close/off pressure**	
V6R 15 F300	4	16		3	16	
V6R 25 F300	4	16		2	16	
V6R 40 F300	3	14.4		1.5	13.1	
V6R 50 F300	2	10.8		1	10.3	

Combination: V6R with electric drive, with spring return, pushing force 2000 N


B10470

Actuator	**AVF 234S F132-5**							
Input	**2-/3-pt.; 0...10 V / 4...20 mA; 24 V / with accessories 230 V**							
Running time:	**28 / 56 / 84 s**							
Spring return:	**15 - 30 s (NC)**[1]							
Valve	Closes against the pressure				Closes with the pressure			
	Δp_{max}	**Δp_s**	**Close/off pressure**		**Δp_{max}**	**Δp_s**	**Close/off pressure**	
V6R 15 F300	4	16	16		3	16	16	
V6R 25 F300	4	16	16		2	16	16	
V6R 40 F300	3	11.5	11.5		1.5	16	10.4	
V6R 50 F300	2	8.6	8.6		1	16	7.9	

Combination: V6R with electric drive, with safety function, pushing force 1100 N


B10471

Actuator	**AVN 224S F132-5**							
Input	**2-/3-pt.; 0...10 V / 4...20 mA; 24 V / with accessories 230 V**							
Running time:	**28 / 56 / 84 s**							
Safe function:	**15 - 30 s (NC)**[1)]							
Valve	Closes against the pressure				Closes with the pressure			
	Δp_{max}	**Δp_s**	**Close/off pressure**		**Δp_{max}**	**Δp_s**	**Close/off pressure**	
V6R 15 F300	4	16	16		3	16	16	
V6R 25 F300	4	16	16		2	16	16	
V6R 40 F300	3	6.3	6.3		1.5	16	5.5	
V6R 50 F300	2	4.7	4.7		1	16	4.2	

Δpmax[bar]=	Max. permissible pressure difference across the valve at which the drive can still firmly open and close the valve.
Δps [bar]=	Max. permissible pressure difference across the valve at which, in the event of a malfunction, the drive can close the valve.
Close/off pressure	The pressure difference across the valve in control mode that can overcome the force of the drive. In this mode, a reduced serviceable life can be expected. Cavitation, erosion and pressure surges may damage the valve. The values stated apply only when the valve is fitted on the drive.

1) Spring return or safety function (NO) with AVF 234S F232 or AVN 224S F232 and mounting kit

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→ PDS 56.461

B6R: Three-way valve with female thread, PN 16

Y07545

How energy efficiency is improved

Precision control with high level of reliability means efficiency.

Areas of application

Continuous control of cold and hot water or air in closed networks [1]. Water quality as per VDI 2035. Together with actuators AVM 234S-5, AVF 234S-5 and AVN 224S-5 as a regulating unit.

Features

- Nominal pressure PN 16
- Nominal diameter DN15, DN25, DN40 and DN50 with reduction steps
- Basic characteristic equal percentage (F3 …) or linear (F2 ...)
- Linear mixing passage characteristic
- Equal percentage characteristic or linear, adjustable with SUT actuators to linear, equal percentage or quadratic
- If the spindle is retracted, the valve is closed
- Can be used as control valve or diverting valve

Technical description

- Valve with female thread as per DIN EN ISO 228-1 G
- Valve body and seat made of gun metal
- Stainless steel spindle
- Cone made of stainless steel for DN15 and brass from DN20.
- Stuffing box made of brass with wiper ring and double O-ring seal in EPDM

Type	Nominal diameter DN	k_{VS} value m^3/h	Valve plug material	Weight kg
B6R 15 F330	15	1	stainless steel	1,2
B6R 15 F320	15	1.6	stainless steel	1.2
B6R 15 F310	15	2.5	brass	1.2
B6R 15 F300	15	4	brass	1.2
B6R 25 F310	25	6.3	brass	1.6
B6R 25 F300	25	10	brass	1.6
B6R 40 F310	40	16	brass	3.4
B6R 40 F300	40	25	brass	3.4
B6R 50 F300	50	35	brass	4.6

Operating temperature [1]	–15...130 °C	Leakage rate flow A-AB	≤ 0.05% of k_{VS} value
Operating pressure	up to 120 °C 16 bar	Mixing flow B-AB	≤ 1% of k_{VS} value
	up to 130 °C 13 bar	Dimension drawings	5M100
Valve curve	equal-percentage or linear	Fitting instructions	MV 505574
Control ratio	50 (typical)	AVM 234 / Assembly	MV 505919
Valve stroke	14 mm	AVF 234 / Assembly	MV 505920
		AVN 224 / Assembly	MV 505927

Variants

-F2 . . . Valve linear curve (available from DM 15, k_{VS} 4 m^3/h only), price and pressure same as **B6R..F3..**

Accessories

0217268 . . . Stuffing-box heating 15 W; N.B. 24 V = /001, 230 V = /004, MV 505498

0360429 000 Sticker for diverting valve

0360391 . . . Union piece incl. asbestos-free seal, 3 pieces required;
specify when ordering: DN 15 = /015, DN 25 = /025 etc.

DN	15	25	40	50

0360429 000 Label for diverting valve

0378034 001 Valve with stuffing box, silicone-free; synthetic lubricant; max. 130 °C

[1] At temperatures under 0 °C, use stuffing-box heater (accessory)

For combinations with electric drives, see next page >>>

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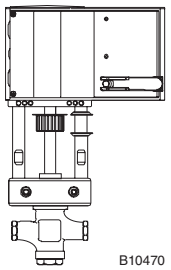
→ PDS 56.461

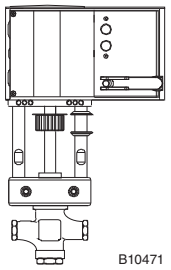
Combination: B6R with electric drive, pushing force 2500 N

Actuator						
Type:	**AVM 234S F132-5**					
Running time:	**28 / 56 / 84 s**					
Input:	**2-/3-pt.; 0…10 V / 4…20 mA**					
Valve	Closes against the pressure			Closes with the pressure. 360429 incl.		
	Δp_{max}	**Close/off pressure**		**Δp_{max}**	**Close/off pressure**	
B6R 15	4	16		3	16	
B6R 25	4	16		2	16	
B6R 40	3	14.4		1.5	13.1	
B6R 50	2	10.8		1	10.3	


B10470

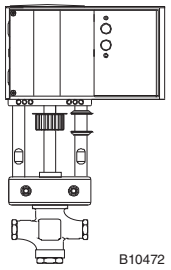
Combination: B6R with electric drive, with spring return, pushing force 2000 N

Actuator								
Type:	**AVF 234S F132-5**							
Running time:	**28 / 56 / 84 s**							
Input:	**2-/3-pt.; 0…10 V / 4…20 mA**							
Spring return:	**15 - 30 s (NC)** [1]							
Valve	Closes against the pressure				Closes with the pressure. 360429 incl.			
	Δp_{max}	**Δp_s**	**Close/off pressure**		**Δp_{max}**	**Δp_s**	**Close/off pressure**	
B6R 15	4	16	16		3	16	16	
B6R 25	4	12	16		2	16	16	
B6R 40	3	3	11.5		1.5	16	10.4	
B6R 50	2	2	8.6		1	16	7.9	


B10471

Combination: B6R with electric drive, with safety function, pushing force 1100 N

Actuator								
Type:	**AVN 224S F132-5**							
Running time:	**28 / 56 / 84 s**							
Input:	**2-/3-pt.; 0…10 V / 4…20 mA**							
Safe function:	**15 - 30 s (NC)** [1]							
Valve	Closes against the pressure				Closes with the pressure			
	Δp_{max}	**Δp_s**	**Close/off pressure**		**Δp_{max}**	**Δp_s**	**Close/off pressure**	
B6R 15	4	16			3	16	16	
B6R 25	4	16			2	16	16	
B6R 40	3	6.3			1.5	16	5.5	
B6R 50	2	4.7			1	16	4.2	


B10472

Δpmax[bar]=	Max. permissible pressure difference across the valve at which the drive can still firmly open and close the valve.
Δps [bar]=	Max. permissible pressure difference across the valve at which, in the event of a malfunction, the drive can close the valve.
Close/off pressure	The pressure difference across the valve in control mode that can overcome the force of the drive. In this mode, a reduced serviceable life can be expected. Cavitation, erosion and pressure surges may damage the valve. The values stated apply only when the valve is fitted on the drive.

1) Spring return or safety function (NO) with AVF 234S F232 or. AVN 224S F232 and mounting kit

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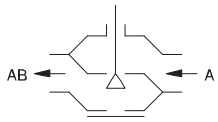
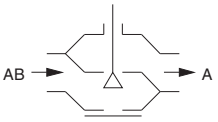
→ PDS 56.110

VUD: Flanged through valve, PN 6

Y07544



B01133a



B01138a

How energy efficiency is improved

For efficient use in continuous control systems.

Areas of application

Continuous control of cold and hot water and air in closed networks[1] and flow temperature control in heating systems. Water quality as per VDI 2035. Together with actuators AVM 105, AVM 115, AVM 124/125, AVF 124/125, AVM 234S, AVF 234S and AVN 224S as regulating unit.

Features

- Nominal pressure 6 bar
- Control valve, contains no silicone grease; painted black
- Nominal diameters DN15 to DN100
- Equal percentage characteristic, adjustable with SUT actuators to linear or quadratic
- With the spindle retracted, the valve is closed
- Closing procedure: against the pressure DN15 to DN100 or with the pressure DN15 to DN50

Technical description

- Valve with flange connection as per EN 1092-2, Form B, raised face
- Valve body and seat made of cast iron
- Stainless steel spindle
- Nominal diameter DN15 to DN50 cones in brass with glass-fibre reinforced Teflon sealing ring
- Nominal diameter DN65 to DN100 cones in brass, with metal-to-metal seal
- Stuffing box made of brass with wiper ring and double O-ring seal in EPDM

Type	Nominal diameter DN	Connection	k_{VS} value m^3/h	Weight kg
VUD 015 F320	15	PN 6	1.6	3.2
VUD 015 F310	15	PN 6	2,5	3.2
VUD 015 F300	15	PN 6	4.0	3.2
VUD 020 F300	20	PN 6	6.3	4.1
VUD 025 F300	25	PN 6	10	4.7
VUD 032 F300	32	PN 6	16	7.3
VUD 040 F300	40	PN 6	22	8.6
VUD 050 F300	50	PN 6	28	11.2
VUD 050 F200	50	PN 6	40	11.2
VUD 065 F300	65	PN 6	49	11.9
VUD 065 F200	65	PN 6	63	11.9
VUD 080 F300	80	PN 6	78	17.7
VUD 080 F200	80	PN 6	100	17.7
VUD 100 F300	100	PN 6	124	26.0
VUD 100 F200	100	PN 6	160	26.0

Operating temperature	–10....150 °C [2]
Operating pressure	6 bar
Valve characteristic F200	linear
F300	equal-percentage
Valve control ratio	> 50:1
Stuffing box	2-O-rings, EPDM
Leakage rate at max. Δp_S	≤ 0.05% of k_{VS} value
Valve stroke DN 15....50	8 mm
Valve stroke DN 65....80	20 mm
Valve stroke DN 100	40 mm

Dimension drawing	
DN 15....50	M10470
DN 65....100	M10438
Installation instructions	
DN 15....50	MV 506008
DN 65...100	MV 505964
AVM 104S, 114S	MV 505790
AVM 105, 115, 105S, 115S	MV 506065
AVM 124, 124S	MV 505809
AVM 125S	MV 506066
AVF 124, 124S	MV 505851
AVF 125S	MV 506067
AVM 234 assembly	MV 505919
AVF 234 assembly	MV 505920
Declaration on materials	MD 56.110

1) Air humidity must not exceed 75%
2) At temperatures below 0 °C, use the stuffing box heater; at temperatures above 100 °C, use the temperature adaptor (accessory).

For accessories and combinations with electric drives, see next pages >>>

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→ PDS 56.110

Accessories

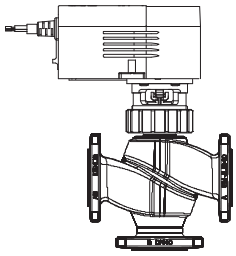
0372240 001* Manual adjustment for valves with stroke of 8 mm; MV 505813
0372249 001* Intermediate piece required for media temperature >100 °C up to max. 130°C (recommended for temperature < 10 °C), DN15…50, MV 505932
0372249 002* Intermediate piece required for media temperature >130 °C up to max. 150°C, DN 15…50, MV 505932
0372336 180 Intermediate piece required for media temperature >130 °C / >150°C from DN 65, MV 505902
0378284 100* Stuffing box heater, 230 V~; 15 W, for media below 0 °C, DN 15....100, MV 505978
0378284 102* Stuffing box heater, 24 V~; 15 W, for media below 0 °C, DN 15....100, MV 505978
0378368 001 Complete replacement stuffing box for DN 15 to DN 50
0378369 001 Complete replacement stuffing box for DN 65 to DN 100

*) Dimension drawing or wiring diagram available under the same number

Warranty The technical data and pressure differences indicated here are only applicable in combination with Sauter valve drives. Any warranty shall lapse if valve drives from other manufacturers are used.

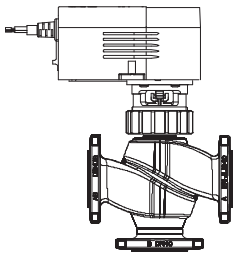
Combination: VUD with electric drive, 250 N pushing force

Drive Input: Running time:	**AVM 105 F12.** **2-/3-point** **120 s**		**AVM 105 F100** **2-/3-point** **30 s**	**AVM 105S** **2-/3-point, 0....10 V** **35/60/120 s**	**> 100°C** **accessories** **required**
Valve	Against the pressure				
	Δp_{max}	**Δp_s**	**Close/off pressure**		
VUD 015	4	–	6		
VUD 020	4	–	4.3		
VUD 025	2.8	–	2.8		
VUD 032	2.1	–	2.1		
VUD 040	1.2	–	1.2		
VUD 050	0.9	–	0.9		


B10668

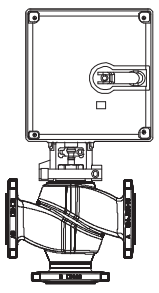
Combination: VUD with electric drive, 500 N pushing force

Drive Input: Running time:	**AVM 115 F12.** **2-/3-point** **120 s**			**AVM 115S** **2-/3-point, 0...10 V** **60 / 120 s**			**> 100°C** **accessories** **required**	
Valve	Against the pressure			With the pressure				
	Δp_{max}	**Δp_s**	**Close/off pressure**	**Δp_{max}**	**Δp_s**	**Close/off pressure**		
VUD 015	6	–	6	–	–	–		
VUD 020	6	–	6	–	–	–		
VUD 025	6	–	6	–	–	–		
VUD 032	5.2	–	5.2	–	–	–		
VUD 040	3.3	–	3.3	–	–	–		
VUD 050	2	–	2	–	–	–		


B10668

Combination: VUD with electric drive, 800 N pushing force

Drive Input: Running time:	**AVM 124** **2-/3-point** **120 s**			**AVM 125S** **2-/3-point, 0...10 V** **30 / 60 / 120 s**			**> 100°C** **accessories** **required**	
Valve	Against the pressure			With the pressure				
	Δp_{max}	**Δp_s**	**Close/off pressure**	**Δp_{max}**	**Δp_s**	**Close/off pressure**		
VUD 015	6	–	6	6	–	6		
VUD 020	6	–	6	6	–	6		
VUD 025	6	–	6	5	–	6		
VUD 032	6	–	6	4	–	6		
VUD 040	5.7	–	5.7	2.5	–	5.3		
VUD 050	3.4	–	3.4	1.5	–	3.2		


B10669

For more combinations with electric drives, see next page >>>

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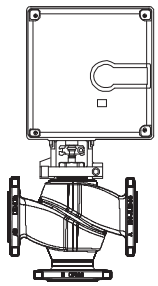
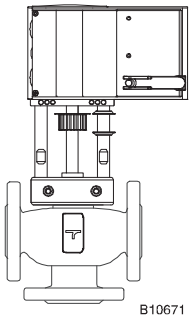
→ PDS 56.110

Combination: VUD with electric drive, with spring return, pushing force 500 N


B10670

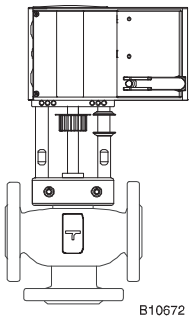
Drive Input: Running time: Spring return:	AVF 124 3-point 60 / 120 s 18 ± 10 s			AVF 125S 2-/3-point, 0...10 V 60 / 120 s 18 ± 10 s			> 100°C accessories required	
Valve	Against the pressure			With the pressure				
	Δp_{max}	Δp_s	Close/off pressure	Δp_{max}	Δp_s	Close/off pressure		
VUD 015	6	6	6	6	6	6		
VUD 020	6	6	6	6	6	6		
VUD 025	6	6	6	5	6	6		
VUD 032	5.2	5.2	5.2	4	6	5.1		
VUD 040	3.3	3.3	3.3	2.5	6	3.1		
VUD 050	2.0	2.0	2.0	1.5	6	1.9		

Combination: VUD with electric drive, pushing force 2500 N


B10671

Drive Input: Running time DN 65 / 80: Running time DN 100:	AVM 234S F132 2-/3-pt.; 0...10 V / 4...20 mA; 24 V; with accessories 3-pt. 230 V 40 / 80 / 120 s 80 / 160 / 240 s						> 130°C accessories required	
Valve	Against the pressure			With the pressure				
	Δp_{max}	Δp_s	Close/off pressure	Δp_{max}	Δp_s	Close/off pressure		
VUD 065	3	–	6	–	–	–		
VUD 080	3	–	4.4	–	–	–		
VUD 100	2	–	2.8	–	–	–		

Combination: VUD with electric drive, with spring return, pushing force 2000 N


B10672

Drive Input: Running time DN 65 / 80: Running time DN 100: Spring return:	AVF 234S F132, F232 2-/3-pt.; 0...10 V / 4...20 mA; 24 V; with accessories 3-pt. 230 V 40 / 80 / 120 s 80 / 160 / 240 s 15 - 30 s, with F132 NC, with F232 NO						> 130°C accessories required	
Valve	Against the pressure			With the pressure				
	Δp_{max}	Δp_s	Close/off pressure	Δp_{max}	Δp_s	Close/off pressure		
VUD 065	3	5.1	5.1	–	–	–		
VUD 080	3	3.4	3.4	–	–	–		
VUD 100	2	2.2	2.2	–	–	–		

Valve: Variant F, for technical data and accessories see Valve Type Table
Drive: Variant F, for technical data, accessories and installation position see section 51
Example: VUD 065 F300 / AVM 234 S F132

Δpmax [bar]=	Maximum permitted pressure difference over the valve at which the drive can still reliably open and close the valve, taking account of Δpv.
Δps [bar]=	Maximum permitted pressure difference over the valve in case of a fault (pipe break downstream of the valve) at which the drive can close the valve reliably with 'fast' performance of the stroke.
Close/off pressure [bar]=	Maximum possible pressure difference over the valve in control mode, at which the drive can still open and close the valve. A reduced lifetime must be expected with this mode. Cavitation, erosion and pressure surges can damage the valve. The values are only valid for the assembled combination valve fitted on the drive.

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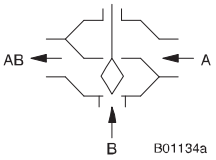
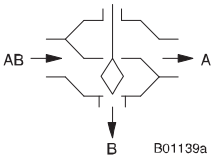
→ PDS 56.111

BUD: Flanged three-way valves, PN 6

Y07545





How energy efficiency is improved

Precision control with high level of reliability means efficiency.

Areas of application

Continuous control of cold and hot water and air in closed networks 1) and flow temperature in heating systems. Water quality as per VDI 2035. Together with actuators AVM 105, AVM 115, AVM 124/125, AVF 124/125, AVM 234S, AVF 234S and AVN 224S as regulating unit.

Features

- Nominal pressure 6 bar
- Control valve, contains no silicone grease; painted black
- Nominal diameters DN15 to DN100
- Equal percentage characteristic, adjustable with SUT actuators to linear or quadratic
- Linear mixing passage characteristic
- With the spindle retracted, the valve is closed
- Can be used as control valve or diverting valve

Technical description

- Valve with flange connection as per EN 1092-2, Form B, raised face
- Valve body and seat made of cast iron
- Stainless steel spindle
- Nominal diameter DN15 to DN50 cones in brass with glass-fibre reinforced Teflon sealing ring
- Cone nominal diameter DN65 to DN100 in brass, metal-to-metal seal
- Stuffing box made of brass with wiper ring and double O-ring seal in EPDM

Type	Nominal diameter DN	Connection PN	k_{VS} value m^3/h	Weight kg
BUD 015 F320	15	6	1.6	3.2
BUD 015 F310	15	6	2.5	3.2
BUD 015 F300	15	6	4.0	3.2
BUD 020 F300	20	6	6.3	4.1
BUD 025 F300	25	6	10	4.7
BUD 032 F300	32	6	16	7.1
BUD 040 F300	40	6	22	8.4
BUD 050 F300	50	6	28	10.9
BUD 050 F200	50	6	40	11.2
BUD 065 F300	65	6	49	11.9
BUD 065 F200	65	6	63	11.9
BUD 080 F300	80	6	78	17.7
BUD 080 F200	80	6	100	17.7
BUD 100 F300	100	6	124	26.0
BUD 100 F200	100	6	160	26.0

Operating temperature		–10....150 °C 2)
Operating pressure		6 bar
Valve characteristic for		
control passage	F200	linear
	F300	equal-percentage
mixing passage		linear
Valve control ratio		> 50:1
Stuffing box		2 O-rings, EPDM
Leakage rate for		
control passage		≤ 0.05% of k_{VS} value
mixing passage		≤ 1% of k_{VS} value
Valve stroke DN 15....50		8 mm
Valve stroke DN 65....80		20 mm
Valve stroke DN 100		40 mm

Dimension drawing	
DN 15....50	M10470
DN 65....100	M10440
Fitting instructions	
DN 15....50	MV 506008
DN 65...100	MV 505964
AVM 104S, 114S	MV 505790
AVM 105, 115, 105S, 115S	MV 506065
AVM 124, 124S	MV 505809
AVM 125S	MV 506066
AVF 124, 124S	MV 505851
AVF 125S	MV 506067
AVM 234 S assembly	MV 505919
AVF 234 S assembly	MV 505920
Declaration on materials	MD 56.111

1) Air humidity must not exceed 75%
2) At temperatures below 0 °C, use the stuffing box heater; at temperatures above 100 °C, use the temperature adaptor (accessory).

For accessories and combinations with electric drives, see next pages >>>

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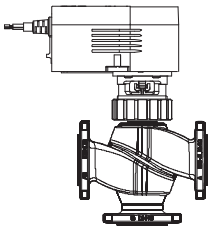
→ PDS 56.111

Accessories

0372240 001* Manual adjuster for valves with stroke of 8 mm; MV505813
0372249 001* Intermediate piece required for media temperature >100 °C up to max. 130 °C (recommended for temperature < 10 °C), for AVM, DN 15....50, MV505932
0372249 002* Intermediate piece required for media temperature >130 °C up to max. 150 °C for AVM, DN 15....50, MV505932
0372336 180 Intermediate piece required for media temperature >130 °C / <150 °C from DN 65 MV505902
0378284 100* Stuffing box heater, 230 V~; 15 W, for media below 0 °C, DN 15....100, MV505978
0378284 102* Stuffing box heater, 24 V~; 15 W, for media below 0 °C, DN 15....100, MV505978
0378368 001 Complete replacement stuffing box for DN 15 to DN 50
0378369 001 Complete replacement stuffing box for DN 65 to DN 100

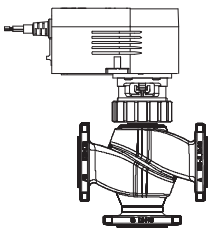
*) Dimension drawing or wiring diagram available under the same number

Warranty The technical data and pressure differences indicated here are only applicable in combination with Sauter valve drives. Any warranty shall lapse if valve drives from other manufacturers are used.


B10668

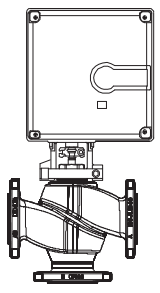
Combination: BUD with electric drive, pushing force 250 N

Drive Input: Running time:	**> 100°C accessories required**			**AVM 105 F12. 2-/3-point 120 s**	**AVM 105 F100 2-/3-point 30 s**	**AVM 105S 2-/3-point, 0...10 V 35 / 60 / 120 s**
Valve	Used as control valve					
	Δp_{max}	**Δp_s**	**close/off pressure**			
BUD 015	4	–	6			
BUD 020	4	–	4.3			
BUD 025	2.8	–	2.8			
BUD 032	2.1	–	2.1			
BUD 040	1.2	–	1.2			
BUD 050	0.9	–	0.9			


B10668

Combination: BUD with electric drive, pushing force 500 N

Drive Input: Running time:	**> 100°C accessories required**			**AVM 115 F12. 2-/3-point 120 s**	**AVM 115S 2-/3-point, 0...10 V 60 / 120 s**
Valve	Used as control valve				
	Δp_{max}	**Δp_s**	**close/off pressure**		
BUD 015	6	–	6		
BUD 020	6	–	6		
BUD 025	6	–	6		
BUD 032	5.2	–	5.2		
BUD 040	3.3	–	3.3		
BUD 050	2	–	2		


B10670

Combination: BUD with electric drive, pushing force 800 N

Drive Input: Running time:	**> 100°C accessories required**						**AVM 124 2-/3-point 120 s**	**AVM 125S 2-/3-point, 0...10 V 30 / 60 / 120 s**
Valve	Application as control valve			as diverting valve				
	Δp_{max}	**Δp_s**	**close/off pressure**	**Δp_{max}**	**Δp_s**	**close/off pressure**		
BUD 015	6	–	6	6	–	6		
BUD 020	6	–	6	6	–	6		
BUD 025	6	–	6	5	–	6		
BUD 032	6	–	6	4	–	6		
BUD 040	5.7	–	5.7	2.5	–	5.3		
BUD 050	3.4	–	3.4	1.5	–	3.2		

For more combinations with electric drives, see next page >>>

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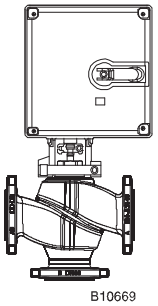
→ PDS 56.111

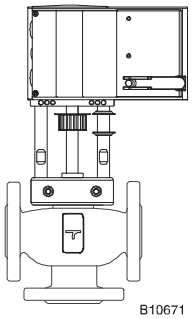
Combination: BUD with electric drive, with spring return, pushing force 500 N

Drive Input: Running time: Spring return:	**> 100°C accessories required**						**AVF 124** **3-point** **60 / 120 s** **18 ± 10 s**	**AVF 125S** **2-/3-point, 0....10 V** **60 / 120 s** **18 ± 10 s**
Valve	Application as control valve			as diverting valve			Application	
	Δp_{max}	**Δp_s**	**close/off pressure**	**Δp_{max}**	**Δp_s**	**close/off pressure**		
BUD 015	6	6	6	6	6	6		
BUD 020	6	6	6	6	6	6		
BUD 025	6	6	6	5	6	6		
BUD 032	5.2	5.2	5.2	4	6	5.1		
BUD 040	3.3	3.3	3.3	2.5	6	3.1		
BUD 050	2.0	2.0	2.0	1.5	6	1.9		


B10669

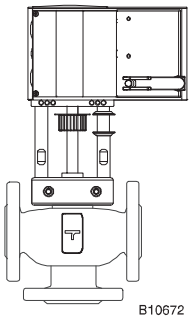
Combination: BUD with electric drive, pushing force 2500 N

Drive Input: Running time DN 65 / 80: Running time DN 100:	**AVM 234S F132** **2-/3-pt.; 0...10 V / 4...20 mA; 24 V; with accessories 3-pt. 230 V** **40 / 80 / 120 s** **80 / 160 / 240 s**						**> 130°C accessories required**
Valve	Application as control valve			as diverting valve			
	Δp_{max}	**Δp_s**	**close/off pressure**	**Δp_{max}**	**Δp_s**	**close/off pressure**	
BUD 065	3	–	6	1	–	6	
BUD 080	3	–	4.4	0.7	–	4.6	
BUD 100	2	–	2.8	0.5	–	2.9	


B10671

Combination: BUD with electric drive, with spring return, pushing force 2000 N

Drive Input: Running time DN 65 / 80: Running time DN 100: Spring return:	**AVF 234S F132, F232** **2-/3-pt.; 0...10 V / 4...20 mA; 24 V; with accessories 3-pt. 230 V** **40 / 80 / 120 s** **80 / 160 / 240 s** **15 - 30 s, with F132 NC, with F232 NO**						**> 130°C accessories required**
Valve	Application as control valve			as control valve			
	Δp_{max}	**Δp_s**	**close/off pressure**	**Δp_{max}**	**Δp_s**	**close/off pressure**	
BUD 065	3	5.1	5.1	1	6	5.4	
BUD 080	3	3.4	3.4	0.7	6	3.6	
BUD 100	2	2.2	2.2	0.5	6	2.3	


B10672

Valve: Variant F, for technical data and accessories see Valve Type Table
Drive: Variant F, for technical data, accessories and installation position see section 51
Example: BUD 065 F300 / AVM 234 S F132

Δp_{max} [bar]=	Maximum permitted pressure difference across the valve at which the drive can still reliably open and close the valve, taking account of Δp_V.
Δp_S [bar]=	Maximum permitted pressure difference across the valve in case of a fault (pipe break downstream of the valve) at which the drive can close the valve reliably with "fast" performance of the stroke.
close/off pressure [bar]=	Maximum possible pressure difference over the valve in control mode, at which the drive can still open and close the valve. A reduced lifetime must be expected with this mode. Cavitation, erosion and pressure surges can damage the valve. The values are only valid for the assembled combination valve fitted on the drive.
1)	Spring return NO with AVF234F232

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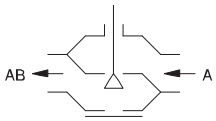
→ PDS 56.115

VUE: Flanged through valves, PN 16/10

Y07544



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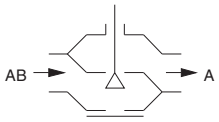

B01138a

How energy efficiency is improved

Precision control with high level of reliability means efficiency.

Areas of application

Continuous control of cold and hot water, air and low pressure steam up to 115°C in closed networks[1]. Water quality as per VDI 2035. Together with actuators AVM 105, AVM 115, AVM 124/125, AVF 124/125, AVM 234S, AVF 234S and AVN 224S as regulating unit.

Features

- Nominal pressure 16 bar
- Control valve, contains no silicone grease; painted black
- Nominal diameters DN15 to DN150
- Equal percentage characteristic in the case of F300, adjustable with SUT actuators to linear or quadratic
- Linear characteristic in the case of F200 from DN50 with increased kvs value, adjustable with SUT actuators to equal percentage or quadratic
- With the spindle retracted, the valve is closed
- Closing procedure against pressure DN15 to DN150 or with the pressure DN15 to DN50

Technical description

- Valve with flange connection as per EN 1092-2, Form B, raised face, for PN16 and PN10
- Valve body and seat made of cast iron
- Stainless steel spindle
- Nominal diameter DN15 to DN50 cones in brass with glass-fibre-reinforced Teflon sealing ring
- Cone nominal diameter DN65 to DN150 in brass, metal-to-metal seal
- Stuffing box made of brass with wiper ring and double O-ring seal in EPDM

Type	Nominal diameter DN	Connection PN	k_{VS} value m^3/h	Weight kg
VUE 015 F350	15	16 / 10	0.4	3.2
VUE 015 F340	15	16 / 10	0.63	3.2
VUE 015 F330	15	16 / 10	1.0	3.2
VUE 015 F320	15	16 / 10	1.6	3.2
VUE 015 F310	15	16 / 10	2.5	3.2
VUE 015 F300	15	16 / 10	4.0	3.2
VUE 020 F300	20	16 / 10	6.3	4.1
VUE 025 F300	25	16 / 10	10	4.7
VUE 032 F300	32	16 / 10	16	7.3
VUE 040 F300	40	16 / 10	22	8.6
VUE 050 F300	50	16 / 10	28	11.2
VUE 050 F200	50	16 / 10	40	11.2
VUE 065 F300	65	16 / 10	49	17.3
VUE 065 F200	65	16 / 10	63	17.3
VUE 080 F300	80	16 / 10	78	22.9
VUE 080 F200	80	16 / 10	100	22.9
VUE 100 F300	100	16 / 10	124	33.0
VUE 100 F200	100	16 / 10	160	33.0
VUE 125 F300	125	16 / 10	200	48.0
VUE 125 F200	125	16 / 10	240	48.0
VUE 150 F300	150	16 / 10	300	68.0
VUE 150 F200	150	16 / 10	320	68.0

Operating temperature	–10....150 °C [2]	Dimension drawing	
Operating pressure	up to 120 °C 16 bar	DN 15....50	M10437
	up to 130 °C 13 bar	DN 65....150	M10439
	up to 150 °C 10 bar	Fitting instructions	
Valve characteristic F200	linear	DN 15....50	MV 506008
F300	equal-percentage	DN 65...150	MV 505964
Valve control ratio	> 50:1	AVM 104S, 114S	MV 505790
Stuffing box	2 O-rings, EPDM	AVM 105, 115, 105S, 115S	MV 506065
Leakage rate at max. Δp_S	≤ 0.05% of k_{VS} value	AVM 124, 124S	MV 505809
Valve stroke DN 15....50	8 mm	AVM 125S	MV 506066
Valve stroke DN 65....80	20 mm	AVF 124, 124S	MV 505851
Valve stroke DN 100....150	40 mm	AVF 125S	MV 506067
		AVM 234 assembly	MV 505919
Declaration on materials	MD 56.115	AVF 234 assembly	MV 505920

1) Air humidity must not exceed 75%
2) At temperatures below 0 °C, use the stuffing box heater; at temperatures above 100 °C, use the temperature adaptor (accessory).

For accessories and combinations with electric drives, see next pages >>>

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→ PDS 56.115

Accessories

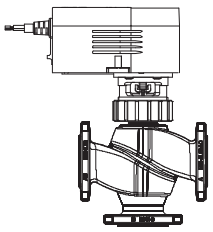
0372240 001* Manual adjustment for valves with stroke of 8 mm; MV 505813
0372249 001* Intermediate piece required for media temperature >100 °C up to 130°C (recommended at a temperature of < 10 °C), DN 15…50, MV 505932
0372249 002* Intermediate piece required for media temperature >130 °C up to 150°C , DN 15…50, MV 505932
0372336 180 Intermediate piece required for media temperature >130 °C / >150°C from DN 65, MV 505902
0378284 100* Stuffing box heater, 230 V~; 15 W, for media below 0 °C, DN 15....150, MV 505978
0378284 102* Stuffing box heater, 24 V~; 15 W, for media below 0 °C, DN 15....150, MV 505978
0378368 001 Complete replacement stuffing box for DN 15 to DN 50
0378369 001 Complete replacement stuffing box for DN 65 to DN 150

*) Dimension drawing or wiring diagram available under the same number

Warranty The technical data and pressure differences indicated here are only applicable in combination with Sauter actuators. Any warranty shall lapse if actuators from other manufacturers are used.

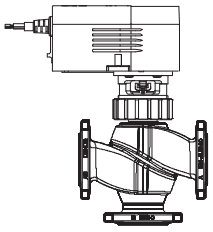
Combination: VUE with electric drive, pushing force 250 N

Drive Input: Running time:	**> 100°C accessories required**			**AVM 105 F12. 2-/3-point 120 s**	**AVM 105 F100 2-/3-point 30 s**	**AVM 105S 2-/3-point, 0....10 V 35 / 60 / 120 s**
Valve	against the pressure					
	Δp_{max}	**Δp_s**	**close/off pressure**			
VUE 015	4	–	6.7			
VUE 020	4	–	4.5			
VUE 025	2.8	–	2.8			
VUE 032	2.1	–	2.1			
VUE 040	1.4	–	1.4			
VUE 050	0.9	–	0.9			


B10668

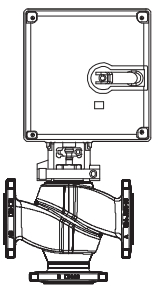
Combination: VUE with electric drive, pushing force 500 N

Drive Input: Running time:	**> 100°C accessories required**			**AVM 115 F12. 2-/3-point 120 s**	**AVM 115S 2-/3-point, 0...10 V 60 / 120 s**
Valve	against the pressure				
	Δp_{max}	**Δp_s**	**close/off pressure**		
VUE 015	6	–	16		
VUE 020	6	–	11		
VUE 025	6	–	6.8		
VUE 032	5.2	–	5.2		
VUE 040	3.3	–	3.3		
VUE 050	2	–	2		


B10668

Combination: VUE with electric drive, pushing force 800 N

Drive Input: Running time:	**> 100°C accessories required**						**AVM 124 2-/3-point 120 s**	**AVM 125S 2-/3-point, 0...10 V 30 / 60 / 120 s**
Valve	against the pressure			with the pressure				
	Δp_{max}	**Δp_s**	**close/off pressure**	**Δp_{max}**	**Δp_s**	**close/off pressure**		
VUE 015	10	–	16	6	–	16		
VUE 020	10	–	16	6	–	16		
VUE 025	10	–	11.7	5	–	13.8		
VUE 032	9	–	9	4	–	8.7		
VUE 040	5.7	–	5.7	2.5	–	5.3		
VUE 050	3.4	–	3.4	1.5	–	3.2		


B10669

For more combinations with electric drives, see next page >>>

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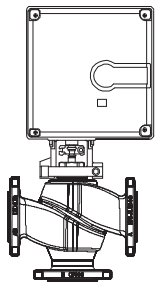
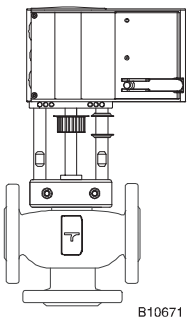
→ PDS 56.115


B10670

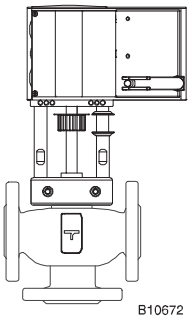
Combination: VUE with electric drive, with spring return, pushing force 500 N

Drive Input: Running time: Spring return:	**> 100°C accessories required**						**AVF 124** **3-point** **60 / 120 s** **18 ± 10 s**	**AVF 125S** **2-/3-point, 0...10 V** **60 / 120 s** **18 ± 10 s**
Valve	against the pressure			with the pressure				
	Δp_{max}	**Δp_s**	**close/off pressure**	**Δp_{max}**	**Δp_s**	**close/off pressure**		
VUE 015	6	16	16	6	16	16		
VUE 020	6	11	11	6	16	14		
VUE 025	6	6.8	6.8	5	16	8.5		
VUE 032	5.2	5.2	5.2	4	16	5.1		
VUE 040	3.3	3.3	3.3	2.5	16	3.1		
VUE 050	2	2.0	2.0	1.5	16	1.9		


B10671

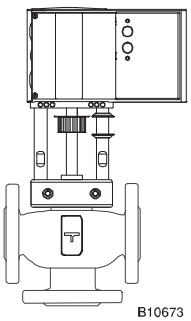
Combination: VUE with electric drive, pushing force 2500 N

Drive Input: Running time DN 65/80: Running time DN 100...150:	**AVM 234S F132** **2-/3-pt.; 0...10 V / 4...20 mA; 24 V; with accessories 3-pt. 230 V** **40 / 80 / 120 s** **80 / 160 / 240 s**			**> 130°C accessories required**
Valve	against the pressure			
	Δp_{max}	**Δp_s**	**close/off pressure**	
VUE 065	3	–	6.5	
VUE 080	3	–	4.4	
VUE 100	2	–	2.8	
VUE 125	1.5	–	1.8	
VUE 150	1	–	1.4	


B10672

Combination: VUE with electric drive, with spring return, pushing force 2000N

Drive Input: Running time DN 65/80: Running time DN 100...150: Spring return:	**AVF 234S F132, F232** **2-/3-pt.; 0...10 V / 4...20 mA; 24 V; with accessories 3-pt. 230 V** **40 / 80 / 120 s** **80 / 160 / 240 s** **15 - 30 s, with F132 NC, with F232 NO**			**> 130°C accessories required**
Valve	against the pressure			
	Δp_{max}	**Δp_s**	**close/off pressure**	
VUE 065	3	5.1	5.1	
VUE 080	3	3.4	3.4	
VUE 100	2	2.2	2.2	
VUE 125	1.4	1.4	1.4	
VUE 150	1	1.1	1.1	


B10673

Combination: VUE with electric drive, with safety function, pushing force 1100N

Drive Input: Running time DN 65/80: Running time DN 100...150: Safety function:	**AVN 224S F132, F232** **2-/3-pt.; 0...10 V / 4...20 mA; 24 V; with accessories 3-pt. 230 V** **40 / 80 / 120 s** **80 / 160 / 240 s** **15 - 30 s, with F132 NC, with F232 NO**			**> 130°C accessories required**
Valve	against the pressure			
	Δp_{max}	**Δp_s**	**close/off pressure**	
VUE 065	2.6	2.6	2.6	
VUE 080	1.8	1.8	1.8	
VUE 100	1.1	1.1	1.1	
VUE 125	0.7	0.7	0.7	
VUE 150	0.6	0.6	0.6	

Valve: Variant F, for technical data and accessories see Valve Type Table
Drive: Variant F, for technical data, accessories and installation position see section 51
Example: VUE 065 F300 / AVM 234 S F132

Δp_{max} [bar]= Maximum permitted pressure difference across the valve at which the drive can still reliably open and close the valve, taking account of Δp_V.

Δp_S [bar]= Maximum permitted pressure difference across the valve in case of a fault (pipe break downstream of the valve) at which the drive can close the valve reliably with 'fast' performance of the stroke.

Close/off pressure [bar]= Maximum possible pressure difference over the valve in control mode, at which the drive can still open and close the valve. A reduced lifetime must be expected with this mode. Cavitation, erosion and pressure surges can damage the valve. The values are only valid for the assembled combination valve fitted on the drive.

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→ PDS 56.116

BUE: Flanged three-way valves, PN 16 / 10

How energy efficiency is improved

Precision control with high level of reliability means efficiency.

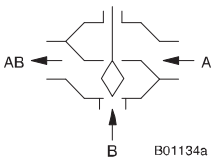
Areas of application

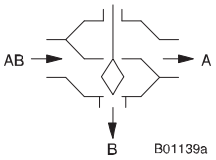
Continuous control of cold and hot water, air and low pressure steam up to 115°C in closed networks[1]. Water quality as per VDI 2035. Together with actuators AVM 105, AVM 115, AVM 124/125, AVF 124/125, AVM 234S, AVF 234S and AVN 224S as regulating unit.

Features

- Nominal pressure 16 bar
- Control valve, contains no silicone grease; painted black
- Nominal diameters DN15 to DN150
- Equal percentage characteristic in the case of F300, adjustable with SUT actuators to linear or quadratic
- Linear characteristic in the case of F200 from DN50 with increased kvs value, adjustable with SUT actuators to equal percentage or quadratic
- Linear mixing passage characteristic
- With the spindle retracted, the valve is closed
- Can be used as control valve or diverting valve

Y07545





Technical description

- Valve with flange connection as per EN 1092-2, Form B, raised face, for PN16 and PN10
- Valve body and seat made of cast iron
- Stainless steel spindle
- Nominal diameter DN15 to DN50 cones in brass with glass-fibre reinforced Teflon sealing ring
- Cone nominal diameter DN65 to DN150 in brass, metal-to-metal seal
- Stuffing box made of brass with wiper ring and double O-ring seal in EPDM

Type	Nominal diameter DN	Connection PN	k_{VS} value m^3/h	Weight kg
BUE 015 F330	15	16 / 10	1.0	3.2
BUE 015 F320	15	16 / 10	1.6	3.2
BUE 015 F310	15	16 / 10	2.5	3.2
BUE 015 F300	15	16 / 10	4.0	3.2
BUE 020 F300	20	16 / 10	6.3	4.1
BUE 025 F300	25	16 / 10	10	4.7
BUE 032 F300	32	16 / 10	16	7.1
BUE 040 F300	40	16 / 10	22	8.4
BUE 050 F300	50	16 / 10	28	11.2
BUE 050 F200	50	16 / 10	40	11.2
BUE 065 F300	65	16 / 10	49	17.3
BUE 065 F200	65	16 / 10	63	17.3
BUE 080 F300	80	16 / 10	78	22.9
BUE 080 F200	80	16 / 10	100	22.9
BUE 100 F300	100	16 / 10	124	33.0
BUE 100 F200	100	16 / 10	160	33.0
BUE 125 F300	125	16 / 10	200	48.0
BUE 125 F200	125	16 / 10	240	48.0
BUE 150 F300	150	16 / 10	300	68.0
BUE 150 F200	150	16 / 10	320	68.0

Operating temperature	–10....150 °C [2]	Dimension drawing	
Operating pressure	up to 120 °C 16 bar	DN 15....50	M10437
	up to 130 °C 13 bar	DN 65....150	M10441
	up to 150 °C 10 bar	Fitting instructions	
Valve characteristic for		DN 15....50	MV 506008
control passage F200	linear	DN 65....100	MV 505964
F300	equal-percentage	AVM 105, 115, 105S, 115S	MV 506065
mixing passage	linear	AVM 124	MV 505809
Valve control ratio	> 50:1	AVM 125S	MV 506066
Stuffing box	2 O-rings, EPDM	AVF 124	MV 505851
Leakage rate for		AVF 125S	MV 506067
control passage	≤ 0.05% of k_{VS} value	AVM 234 assembly	MV 505919
mixing passage	≤ 1% of k_{VS} value	AVF 234 assembly	MV 505920
Valve stroke DN 15....50	8 mm	AVN 224 assembly	MV 505927
Valve stroke DN 65....80	20 mm		
Valve stroke DN 100....150	40 mm	Declaration on materials	MD 56.116

1) Air humidity must not exceed 75%

2) At temperatures below 0 °C, use the stuffing box heater; at temperatures above 100 °C, use the temperature adaptor (accessory).

For accessories and combinations with electric drives, see next pages >>>

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→ PDS 56.116

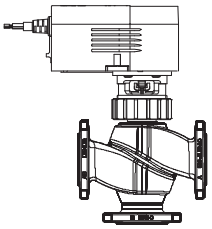
Accessories

0372240 001* Manual adjustment for valves with stroke of 8 mm; MV 505813
0372249 001* Intermediate piece required for media temperature >100 °C up to 130°C (recommended at a temperature of < 10 °C), DN 15…50, MV 505932
0372249 002* Intermediate piece required for media temperature >130 °C up to 150°C , DN 15…50, MV 505932
0372336 180 Intermediate piece required for media temperature >130 °C / >150°C from DN 65, MV 505902
0378284 100* Stuffing box heater, 230 V~; 15 W, for media below 0 °C, DN 15....150, MV 505978
0378284 102* Stuffing box heater, 24 V~; 15 W, for media below 0 °C, DN 15....150, MV 505978
0378368 001 Complete replacement stuffing box for DN 15 to DN 50
0378369 001 Complete replacement stuffing box for DN 65 to DN 150

*) Dimension drawing or wiring diagram available under the same number

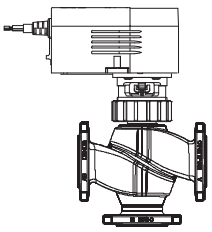
Warranty The technical data and pressure differences indicated here are only applicable in combination with Sauter actuators. Any warranty shall lapse if actuators from other manufacturers are used.

Combination: BUE with electric drive, pushing force 250 N


B10668

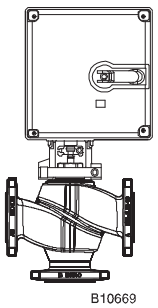
Drive Input: Running time:	**> 100°C accessories required**			**AVM 105 F12. 2-/3-point 120 s**	**AVM 105 F100 2-/3-point 30 s**	**AVM 105S 2-/3-point, 0....10 V 35 / 60 / 120 s**
Valve	Used as control valve					
	Δp_{max}	**Δp_s**	**close/off pressure**			
BUE 015	4	–	6.7			
BUE 020	4	–	4.5			
BUE 025	2.8	–	2.8			
BUE 032	2.1	–	2.1			
BUE 040	1.4	–	1.4			
BUE 050	0.9	–	0.9			

Combination: BUE with electric drive, pushing force 500 N


B10668

Drive Input: Running time:	**> 100°C accessories required**			**AVM 115 F12. 2-/3-point 120 s**	**AVM 115S 2-/3-point, 0...10 V 60 / 120 s**
Valve	Used as control valve				
	Δp_{max}	**Δp_s**	**close/off pressure**		
BUE 015	6	–	16		
BUE 020	6	–	11		
BUE 025	6	–	6.8		
BUE 032	5.2	–	5.2		
BUE 040	3.3	–	3.3		
BUE 050	2	–	2		

Combination: BUE with electric drive, pushing force 800 N


B10669

Drive Input: Running time:	**> 100°C accessories required**						**AVM 124 2-/3-point 120 s**	**AVM 125S 2-/3-point, 0...10 V 30 / 60 / 120 s**
Valve	Application as control valve			as diverting valve				
	Δp_{max}	**Δp_s**	**close/off pressure**	**Δp_{max}**	**Δp_s**	**close/off pressure**		
BUE 015	10	–	16	6	–	16		
BUE 020	10	–	16	6	–	16		
BUE 025	10	–	11.7	5	–	13.8		
BUE 032	9	–	9	4	–	8.7		
BUE 040	5.7	–	5.7	2.5	–	5.3		
BUE 050	3.4	–	3.4	1.5	–	3.2		

For more combinations with electric drives, see next page >>>

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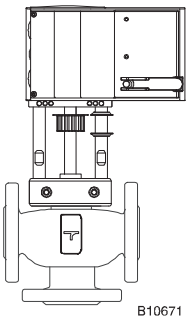
→ PDS 56.116

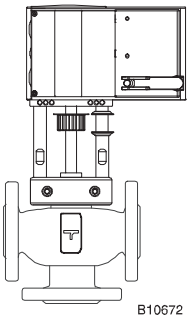
Combination: BUE with electric drive, with spring return, pushing force 500 N

Drive Input: Running time: Spring return:	**> 100°C accessories required**						**AVF 124** **3-pt.** **60 / 120 s** **18 ± 10 s**	**AVF 125S** **2-/3-pt., 0...10 V** **60 / 120 s** **18 ± 10 s**
Valve	Application							
	as control valve			as diverting valve				
	Δp_{max}	**Δp_s**	**close/off pressure**	**Δp_{max}**	**Δp_s**	**close/off pressure**		
BUE 015	6	16	16	6	16	16		
BUE 020	6	11	11	6	16	14		
BUE 025	6	6.8	6.8	5	16	8.5		
BUE 032	5.2	5.2	5.2	4	16	5.1		
BUE 040	3.3	3.3	3.3	2.5	16	3.1		
BUE 050	2	2.0	2.0	1.5	16	1.9		


B10671

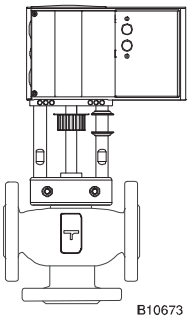
Combination: BUE with electric drive, pushing force 2500 N

Drive Input: Running time DN 65/80: Running time DN 100...150:	**AVM 234S F132** **2-/3-pt.; 0...10 V / 4...20 mA; 24 V; with accessories 3-pt. 230 V** **40 / 80 / 120 s** **80 / 160 / 240 s**						**> 130°C accessories required**
Valve	Application						
	as control valve			as diverting valve			
	Δp_{max}	**Δp_s**	**close/off pressure**	**Δp_{max}**	**Δp_s**	**close/off pressure**	
BUE 065	3	–	6.5	1	–	6.9	
BUE 080	3	–	4.4	0.7	–	4.6	
BUE 100	2	–	2.8	0.5	–	2.9	
BUE 125	1.5	–	1.8	0.5	–	1.9	
BUE 150	1	–	1.4	0.5	–	1.3	


B10672

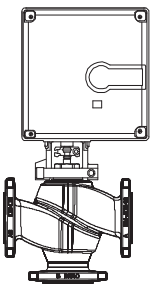
Combination: BUE with electric drive, with spring return, pushing force 2000 N

Drive Input: Running time DN 65/80: Running time DN 100...150: Spring return:	**AVF 234S F132, F232** **2-/3-pt.; 0...10 V / 4...20 mA; 24 V; with accessories 3-pt. 230 V** **40 / 80 / 120 s** **80 / 160 / 240 s** **15 - 30 s, with F132 NC, with F232 NO**						**> 130°C accessories required**
Valve	Application						
	as control valve			as diverting valve			
	Δp_{max}	**Δp_s**	**close/off pressure**	**Δp_{max}**	**Δp_s**	**close/off pressure**	
BUE 065	3	5.1	5.1	1	16	5.4	
BUE 080	3	3.4	3.4	0.7	16	3.6	
BUE 100	2	2.2	2.2	0.5	16	2.3	
BUE 125	1.4	1.4	1.4	0.5	16	1.5	
BUE 150	1	1.1	1.1	0.5	16	1.0	


B10673

Combination: BUE with electric drive, with safety function, pushing force 1100 N

Drive Input: Running time DN 65 / 80: Running time DN 100...150: Safety function:	**AVN 224S F132, F232** **2-/3-pt.; 0...10 V / 4...20 mA; 24 V; with accessories 3-pt. 230 V** **40 / 80 / 120 s** **80 / 160 / 240 s** **15 - 30 s, with F132 NC, with F232 NO**						**> 130°C accessories required**
Valve	Application						
	as control valve			as diverting valve			
	Δp_{max}	**Δp_s**	**close/off pressure**	**Δp_{max}**	**Δp_s**	**close/off pressure**	
BUE 065	2.6	2.6	2.6	1	16	2.8	
BUE 080	1.8	1.8	1.8	0.7	16	1.9	
BUE 100	1.1	1.1	1.1	0.5	16	1.2	
BUE 125	0.7	0.7	0.7	0.5	16	0.8	
BUE 150	0.6	0.6	0.6	0.5	16	0.5	


B10670

Valve: Variant F, for technical data and accessories see Valve Type Table
Drive: Variant F, for technical data, accessories and installation position see section 51
Example: BUE 065 F300 / AVM 234 S F132

Δp_{max} [bar]= Maximum permitted pressure difference across the valve at which the drive can still reliably open and close the valve, taking account of Δp_V.

Δp_S [bar]= Maximum permitted pressure difference across the valve in case of a fault (pipe break downstream of the valve) at which the drive can close the valve reliably with "fast" performance of the stroke.

Close/off pressure [bar]= Maximum possible pressure difference over the valve in control mode, at which the drive can still open and close the valve. A reduced lifetime must be expected with this mode. Cavitation, erosion and pressure surges can damage the valve. The values are only valid for the assembled combination valve fitted on the drive.

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→ PDS 56.120

VUG: Flanged through valves, PN 25 / 16

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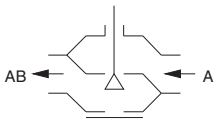

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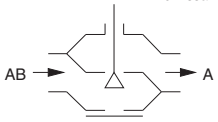

B01138a

How energy efficiency is improved
Precision control with high level of reliability means efficiency.

Areas of application
Continuous control of cold, warm and hot water, steam and air in HVAC systems, in closed networks. Water quality as per VDI 2035. Together with actuators AVM 234S, AVF 234S and AVN 224S as regulating unit.

Features
- Nominal pressure 25 bar for DN15 to DN150, nominal pressure 16 bar for DN15 to DN80
- Complies with standard for regulating units as per DIN 32730 1) 2) 3)
- Control valve, contains no silicone grease; painted black
- Nominal diameters DN15 to DN150
- Equal percentage characteristic, adjustable with SUT actuators to linear or quadratic
- With the spindle retracted, the valve is closed
- Closing procedure against or with pressure
- Temperature range up to 240°C

Technical description
- Valve with flange connection as per EN 1092-2, Form B, raised face, for PN25 and PN16 depending on type
- Valve body made of ductile cast iron
- Stainless steel valve seat
- Stainless steel spindle
- Nominal diameter DN15 to DN50 cones in stainless steel with glass-fibre reinforced Teflon sealing ring
- Cone nominal diameter DN65 to DN150 in stainless steel, metal-to-metal seal
- Maintenance-free brass stuffing box with spring-loaded Teflon washer

Type	Nominal diameter DN	Connection PN	k_{VS} value m^3/h	Weight kg
VUG 015 F374	15	25 / 16	0.16	4.0
VUG 015 F364	15	25 / 16	0.25	4.0
VUG 015 F354	15	25 / 16	0.40	4.0
VUG 015 F344	15	25 / 16	0.63	4.0
VUG 015 F334	15	25 / 16	1	4.0
VUG 015 F324	15	25 / 16	1.6	4.0
VUG 015 F314	15	25 / 16	2.5	4.0
VUG 015 F304	15	25 / 16	4	4.0
VUG 020 F304	20	25 / 16	6.3	5.0
VUG 025 F304	25	25 / 16	10	5.6
VUG 032 F304	32	25 / 16	16	9.1
VUG 040 F304	40	25 / 16	25	11.2
VUG 050 F304	50	25 / 16	40	13.8
VUG 065 F316	65	16	63	25
VUG 065 F304	65	25	63	25
VUG 080 F304	80	25 / 16	100	37
VUG 100 F304	100	25	160	50
VUG 125 F304	125	25	250	75
VUG 150 F304	150	25	340	100

Operating temperature 1)	–20...240 °C	Packing box	Brass/Teflon
Operating pressure	up to 120 °C 25 bar	Leakage rate at max. Δps:	≤ 0.05% of k_{vs} value
	up to 240 °C 20 bar	Valve stroke	
	–20...–10 °C 18 bar	DN 15...50	20 mm
Valve characteristic	equal-percentage	DN 65...150	40 mm
Valve's control ratio	> 50:1		

1) At temperatures below 0 °C, use packing-box heater (accessory). At temperatures above 130 °C or 180 °C, use the appropriate adaptor (accessory). Up to –10 °C as per AD notice W 10, water with de-icing agent and brine.
For use in accordance with DIN 32730, the permissible temperature of the medium is > 0 °C.

2) The VUG 065 F316 valve do not have TÜV approval. They do not bear the test institute's code and are classified under Category I of the Directive on Pressure Equipment. These valves can be employed with the AVN 224S F… actuator, but not as a safety unit

3) DIN 32730 has been substituted by DIN EN 14597.

For documentation, accessories and combinations with electric drives, see next pages >>>

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→ PDS 56.120

Dimension drawing		Fitting instructions	
DN 15...50 (65)	M10427	DN 15...50	MV 505947
DN 65...150	M10447	DN 65...150	MV 505973
		AVM 234/assembly	MV 505919
Declaration on materials	MD 56.120	AVF 234/assembly	MV 505920
		AVN 224/assembly	MV 505927

Accessories

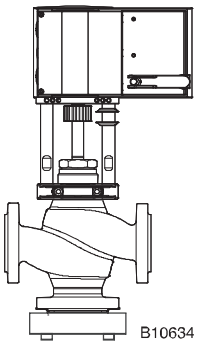
0372336 180* Adaptor (required for media > 130 °C / < 180 °C; MV 505902)
0372336 240* Adaptor (required for media > 180 °C / < 240 °C; MV 505902)
0378283 001 Replacement packing for packing box of diameter DN 15-150; MV 505950
0378284 100* Heater for packing box 230 V~, 15 W for media below 0 °C; MV 505978
0378284 102* Heater for packing box 24 V~, 15 W for media below 0 °C; MV 505978
0378285 001 Packing box, stainless steel/Teflon DN 15…150
0378384 001 Anti-torsion device DN 65…150

*) Dimension drawing or wiring diagram are available under the same number

Warranty The technical data and pressure differences stated above apply only when used in combination with Sauter actuators. If used together with actuators of a different manufacturer, the warranty becomes invalid.

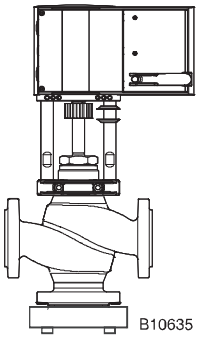
Combination: VUG with electric drive, pushing force 2500 N

Drive							
Input:	**AVM 234S F132**						**> 130°C**
Running time DN 15 50:	**2-/3-pt.; 0..10 V / 4..20 mA; 24 V; with accessories 3-pt. 230 V**						**accessories**
Running time DN 65..150:	**40 / 80 / 120 s**						**required**
	80 / 160 / 240 s						
Valve	against the pressure			with the pressure			
	Δp_{max}	**Δp_s**	**close/off pressure**	**Δp_{max}**	**Δp_s**	**close/off pressure**	
VUG 015	16	–	25	6	–	25	
VUG 020	16	–	25	6	–	25	
VUG 025	16	–	25	6	–	25	
VUG 032	16	–	25	6	–	24	
VUG 040	16	–	17	6	–	15.5	
VUG 050	11	–	11	6	–	10	
VUG 065 F…	7.1	–	7.1	4.5	–	6.5	
VUG 080	4.7	–	4.7	3.5	–	4.4	
VUG 100	3.0	–	3.0	3.0	–	2.8	
VUG 125	2.0	–	2.0	2.0	–	2.0	
VUG 150	1.5	–	1.5	1.0	–	1.5	


B10634

Combination: VUG with electric drive, with spring return, pushing force 2000 N

Drive							
Input:	**AVF 234S F132, F232**						**> 130°C**
Running time DN 15 50:	**2-/3-pt.; 0..10 V / 4..20 mA; 24 V; with accessories 3-pt. 230 V**						**accessories**
Running time DN 65..150:	**40 / 80 / 120 s**						**required**
Spring return:	**80 / 160 / 240 s**						
	15 - 30 s, with F132 NC, with F232 NO						
Valve	against the pressure			with the pressure			
	Δp_{max}	**Δp_s**	**close/off pressure**	**Δp_{max}**	**Δp_s**	**close/off pressure**	
VUG 015	16	25	25	6	25	25	
VUG 020	16	25	25	6	25	25	
VUG 025	16	25	25	6	25	25	
VUG 032	16	21	21	6	25	18	
VUG 040	13.5	13.5	13.5	6	25	12	
VUG 050	8.5	8.5	8.5	6	25	7.5	
VUG 065 F…	5.6	5.6	5.6	4.5	25	5.1	
VUG 080	3.4	3.4	3.4	3.4	25	3.4	
VUG 100	2.2	2.2	2.2	2.2	25	2.2	
VUG 125	1.6	1.6	1.6	1.6	25	1.6	
VUG 150	1.2	1.2	1.2	1.0	25	1.2	


B10635

For more combinations with electric drives, see next page >>>

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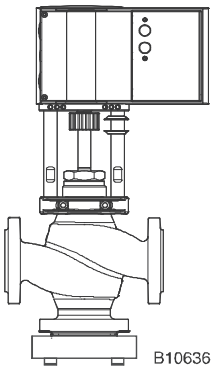
→ PDS 56.120

Combination: VUG with electric drive, with safety function (DIN), pushing force 1100 N


B10636

Drive Input: Running time DN 15 50: Running time DN 65..150: Safety function:	**AVN 224S F132, F232** **2-/3-pt.; 0..10 V / 4..20 mA; 24 V; with accessories 3-pt. 230 V** **40 / 80 / 120 s** **80 / 160 / 240 s** **15 - 30 s, with F132 NC, with F232 NO**						**> 130°C accessories required**
Valve	Against the pressure			With the pressure			
	Δp_{max}	**Δp_s**	**close/off pressure**	**Δp_{max}**	**Δp_s**	**close/off pressure**	
VUG 015	16	25	25	6	25	25	
VUG 020	16	25	25	6	25	22	
VUG 025	16	17	17	6	25	14.5	
VUG 032	10.5	10.5	10.5	6	25	9.4	
VUG 040	6.5	6.5	6.5	6	25	6.5	
VUG 050	4	4.0	4.0	4	25	4.0	
VUG 065 F304	3.0	3.0	3.0	2.6	25	2.6	
VUG 080	2.0	2.0	2.0	1.7	25	1.7	
VUG 100	1.1	1.1	1.1	1.1	25	1.1	
VUG 125	0.8	0.8	0.8	0.8	25	0.8	
VUG 150	0.6	0.6	0.6	0.6	25	0.6	

Valve: For F-variant, technical data and accessories, see table of valve types.
Actuator: For F-variant, technical data, accessories and fitting position, see table of valve types.
Example: VUG 040 F304 / AVM 234 S F132

Δpmax [bar]=	Max. permissible pressure difference across the valve at which the drive can still firmly open and close the valve while taking Δpv into account.
Δps [bar]=	Max. permissible pressure difference across the valve at which, in the event of a malfunction (pipe break after the valve), the drive can close the valve firmly and quickly.
close/off pressure [bar]=	Max. possible pressure difference across the valve (in control mode) at which the drive can still firmly open and close the valve In this mode, the serviceable life may be reduced. Cavitation, erosion and surges may damage the valve. The values apply only when the valve is fitted to the drive as a unit.

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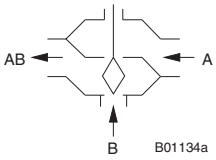
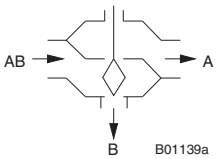
→ PDS 56.121

BUG: Flanged three-way valves, PN 25 / 16

Y07545





How energy efficiency is improved

Precision control with high level of reliability means efficiency.

Areas of application

Continuous control of cold, warm and hot water, steam and air in HVAC systems, in closed networks. Water quality as per VDI 2035. Together with actuators AVM 234S, AVF 234S and AVN 224S as regulating unit.

Features

- Nominal pressure 25 bar for DN15 to DN150, nominal pressure 16 bar for DN15 to DN80
- Complies with standard for regulating units as per DIN 32730 [1) 2) 3)]
- Control valve, contains no silicone grease; painted black
- Nominal diameters DN15 to DN150
- Equal percentage characteristic, adjustable with SUT actuators to linear or quadratic
- Linear mixing passage characteristic
- With the spindle retracted, the valve is closed
- Can be used as control valve or diverting valve
- Temperature range up to 240°C

Technical description

- Valve with flange connection as per EN 1092-2, Form B, raised face, for PN25 and PN16 depending on type
- Ductile cast iron valve body
- Stainless steel valve seat
- Stainless steel spindle
- Nominal diameter DN15 to DN50 cones in stainless steel with glass-fibre reinforced Teflon sealing ring
- Cone nominal diameter DN65 to DN150 in stainless steel, metal-to-metal seal
- Maintenance-free brass stuffing box with spring-loaded Teflon washer

Type	Nominal diameter DN	Connection PN	k_{VS} value m^3/h	Weight kg
BUG 015 F334	15	25 / 16	1	3.1
BUG 015 F324	15	25 / 16	1.6	3.1
BUG 015 F314	15	25 / 16	2.5	3.1
BUG 015 F304	15	25 / 16	4	3.1
BUG 020 F304	20	25 / 16	6.3	4.0
BUG 025 F304	25	25 / 16	10	4.7
BUG 032 F304	32	25 / 16	16	7.2
BUG 040 F304	40	25 / 16	25	9.2
BUG 050 F304	50	25 / 16	40	11.9
BUG 065 F316 [2)]	65	16	63	26.8
BUG 065 F304	65	25	63	27.1
BUG 080 F304	80	25 / 16	100	36.3
BUG 100 F304	100	25	160	53
BUG 125 F304	125	25	250	79.1
BUG 150 F304	150	25	340	108.7

Operating temperature [1)]	–20...240 °C	Valve stroke	
Operating pressure	up to 120 °C 25 bar	DN 15...50	20 mm
	up to 240 °C 20 bar	DN 65...150	40 mm
	–20...–10 °C 18 bar	Dimension drawing	
Valve characteristic for		DN 15...50 (65)	M10425
control passage	equal-percentage	DN 65...150	M10446
mixing passage	linear	Fitting instructions	
Control ratio	> 50:1	DN 15...50	MV 505947
Stuffing box	brass / Teflon	DN 65...150	MV 505973
Leakage rate at max. Δp_s:		AVM 234 / assembly	MV 505919
control passage	≤ 0.05% of k_{VS} value	AVF 234 / assembly	MV 505920
mixing passage	≤ 1.0% of k_{VS} value	AVN 224 / assembly	MV 505927
		Declaration on materials	MD 56.121

1) At temperatures below 0 °C, use the stuffing box heater; at temperatures above130 °C or 180 °C use the appropriate intermediate piece (accessory).
Down to –10 °C, as per AD code of practice W 10. Water with anti-frost products and brines
For use in accordance with DIN 32730, the permissible temperature of the medium is > 0 °C.

2) The BUG 065 F316 valves do not have TÜV approval. They do not bear the test institute's code and are classified under Category I of the Directive on Pressure Equipment. These valves can be employed with the AVN 224S F… actuator, but not as a safety unit

3) DIN 32730 has been substituted by DIN EN 14597.

For accessories and combinations with electric drives, see next pages >>>

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→ PDS 56.121

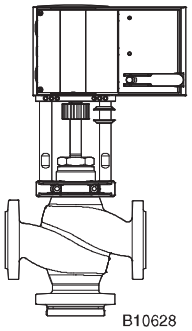
Accessories

0372336 180* Adaptor (required for medium > 130 °C / < 180 °C; MV 505902)
0372336 240* Adaptor (required for medium > 180 °C / < 240 °C; MV 505902)
0378283 001 Replacement pack for stuffing box, nominal diameter DN 15-150; MV 505950
0378284 100* Stuffing box heater, 230 V~; 15 W, for media below 0 °C; MV 505978
0378284 102* Stuffing box heater, 24 V~; 15 W, for media below 0 °C; MV 505978
0378285 001 Stuffing box, stainless steel /Teflon DN 15…150
0378384 001 Anti-torsion device DN 65…150

*) Dimension drawing or wiring diagram available under the same number

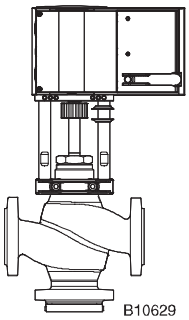
Warranty The technical data and pressure differences indicated here are applicable only when used with Sauter valve drives. Any warranty shall lapse if valve drives from other manufacturers are used.

Combination: BUG with electric drive, 2500 N pushing force


B10628

Drive Input: Running time DN15..50: Running time DN65..150:	**AVM 234S F132 (24 V)** **2pt / 3pt / 0…10 V / 4…20 mA; with accessories 3-pt. 230 V** **40 / 80 / 120 s** **80 / 160 / 240 s**						**> 130°C accessories required**
Valve	Used as a control valve			Used as a diverting valve			
	Δp_{max}	**Δp_s**	**Close/off pressure**	**Δp_{max}**	**Δp_s**	**Close/off pressure**	
BUG 015	16	–	25	6	–	25	
BUG 020	16	–	25	6	–	25	
BUG 025	16	–	25	6	–	25	
BUG 032	16	–	25	6	–	24	
BUG 040	16	–	17	6	–	15.5	
BUG 050	11	–	11	6	–	10	
BUG 065 F…	7.1	–	7.1	4.5	–	6.5	
BUG 080	4.7	–	4.7	3.5	–	4.4	
BUG 100	3.0	–	3.0	3.0	–	2.8	
BUG 125	2.0	–	2.0	2.0	–	2.0	
BUG 150	1.5	–	1.5	1.0	–	1.5	

Combination: BUG with electric drive, with spring return, 2000 N pushing force


B10629

Drive Input: Running time DN15..50: Running time DN65..150: Spring return:	**AVF 234S F132, F232** **2-/3-pt.; 0..10 V / 4..20 mA; 24 V; with accessories 3-pt. 230 V** **40 / 80 / 120 s** **80 / 160 / 240 s** **15 - 30 s, with F132 (NC), with F232 (NO**						**> 130°C accessories required**
Valve	Used as a control valve			Used as a diverting valve			
	Δp_{max}	**Δp_s**	**Close/off pressure**	**Δp_{max}**	**Δp_s**	**Close/off pressure**	
BUG 015	16	25	25	6	25	25	
BUG 020	16	25	25	6	25	25	
BUG 025	16	25	25	6	25	25	
BUG 032	16	21	21	6	25	18	
BUG 040	13.5	13.5	13.5	6	25	12	
BUG 050	8.5	8.5	8.5	6	25	7.5	
BUG 065 F…	5.6	5.6	5.6	4.5	25	5.1	
BUG 080	3.4	3.4	3.4	3.4	25	3.4	
BUG 100	2.2	2.2	2.2	2.2	25	2.2	
BUG 125	1.6	1.6	1.6	1.6	25	1.6	
BUG 150	1.2	1.2	1.2	1.0	25	1.2	

For more combinations with electric drives, see next page >>>

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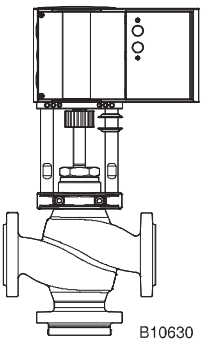
→ PDS 56.121

Combination: BUG with electric drive, with safety function (DIN), 1100 N pushing force

Drive Input: Running time DN 15 50: Running time DN 65..150: Safety function:	**AVN 224S F132, F232** **2-/3-pt.; 0..10 V / 4..20 mA; 24 V; with accessories 3-pt. 230 V** **40 / 80 / 120 s** **80 / 160 / 240 s** **15 - 30 s, with F132 (NC), with F232 (NO)**						**> 130°C accessories required**
Valve	Used as a control valve			Used as a diverting valve			
	Δp_{max}	**Δp_s**	**Close/off pressure**	**Δp_{max}**	**Δp_s**	**Close/off pressure**	
BUG 015	16	25	25	6	25	25	
BUG 020	16	25	25	6	25	22	
BUG 025	16	17	17	6	25	14.5	
BUG 032	10.5	10.5	10.5	6	25	9.4	
BUG 040	6.5	6.5	6.5	6	25	6.5	
BUG 050	4	4	4	4	25	4.0	
BUG 065 F304	3.0	3	3.0	2.6	25	2.6	
BUG 080	2.0	2.0	2.0	1.7	25	1.7	
BUG 100	1.1	1.1	1.1	1.1	25	1.1	
BUG 125	0.8	0.8	0.8	0.8	25	0.8	
BUG 150	0.6	0.6	0.6	0.6	25	0.6	


B10630

Valve: Variant F, for technical data and accessories see Valve Type Table
Drive: Variant F, for technical data, accessories and installation position see section 51
Example: BUG 040 F304 / AVM 234 S F132

Δpmax [bar]=	Maximum permitted pressure difference across the valve at which the drive can still reliably open and close the valve, taking account of Δpv.
Δps [bar]=	Maximum permitted pressure difference across the valve in case of a fault (pipe break downstream of the valve) at which the drive can close the valve reliably with "fast" performance of the stroke.
Close/off pressure [bar]=	Maximum possible pressure difference over the valve in control mode, at which the drive can still open and close the valve. A reduced lifetime must be expected with this mode. Cavitation, erosion and pressure surges can damage the valve. The values are only valid for the assembled combination valve fitted on the drive.

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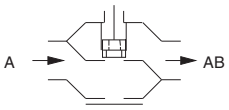
→ PDS 56.122

VUP: Pressure-relieved through valve, flanged, PN 25



B10637a

How energy efficiency is improved
Thanks to the pressure compensation, savings can be made as early as the actuator, precision and reliability go without saying.

Areas of application
Continuous control of cold, warm and hot water, steam and air in HVAC systems, in closed networks. Water quality as per VDI 2035. Together with actuators AVM 234S, AVF 234S and AVN 224S as regulating unit.

Features
- Nominal pressure 25 bar
- Complies with standard for regulating units as per DIN 32730[1) 2)]
- Control valve, contains no silicone grease, with pressure compensation, galvanised and painted black
- Nominal diameters DN40 to DN150
- Equal percentage characteristic, adjustable with SUT actuators to linear or quadratic
- With the spindle retracted, the valve is closed
- Closing procedure only against pressure
- Temperature range up to 200°C

Technical description
- Valve with flange connection as per EN 1092-2, Form B, raised face
- Ductile cast iron valve body
- Stainless steel valve seat
- Stainless steel spindle
- Stainless steel cone
- Maintenance-free brass stuffing box with spring-loaded Teflon/Viton/Teflon washer

Type	Nominal diameter DN	Connection PN	k_{VS} value m^3/h	Weight kg
VUP 040 F304	40	25	25	10
VUP 050 F304	50	25	40	14
VUP 065 F304	65	25	63	18
VUP 080 F304	80	25	100	25.5
VUP 100 F304	100	25	160	36.5
VUP 125 F304	125	25	250	56.5
VUP 150 F304	150	25	350	84.5

Operating temperature [1)]	–20...200 °C	Valve stroke	
Operating pressure	up to 120 °C 25 bar	DN 40	14 mm
	up to 200 °C 20 bar	DN 50…80	25 mm
	–20...–10 °C 18 bar	DN 100…150	40 mm
Valve characteristic	equal-percentage	Dimension drawing	M10426
control ratio	> 100:1	Fitting instructions	MV 505963
Stuffing box	brass/Teflon/Viton	AVM 234 / assembly	MV 505919
Leakage rate at max. Δps:	≤ 0.05% of k_{VS} value	AVF 234 / assembly	MV 505920
		AVN 224 / assembly	MV 505927
		Declaration on materials	MD 56.122

Accessories

0372336 180*	Adaptor (required for medium > 130 °C / < 180 °C; MV 505902)
0372336 240*	Adaptor (required for medium > 180 °C / < 200 °C; MV 505902)
0378284 100*	Stuffing box heater, 230 V~; 15 W, for media below 0 °C; MV 505978
0378284 102*	Stuffing box heater, 24 V~; 15 W, for media below 0 °C; MV 505978
0378356 001	Replacement pack for stuffing box, nominal diameter DN 40-80; MV 505972
0378357 001	Replacement pack for stuffing box, nominal diameter DN 100-150; MV 505972

*) Dimension drawing or wiring diagram available under the same number

1) At temperatures below 0 °C, use the stuffing box heater; at temperatures above 130 °C or 180 °C, use the appropriate adaptor (accessory). For use in accordance with DIN 32730, the permissible temperature of the medium is > 0 °C.
2) DIN 32730 has been substituted by DIN EN 14597.

Warranty The technical data and pressure differences indicated here are only applicable in combination with Sauter actuators. Any warranty shall lapse if actuators from other manufacturers are used.

For combinations with electric drives, see next page >>>

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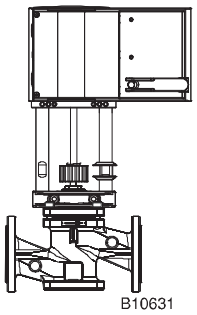
→ PDS 56.122

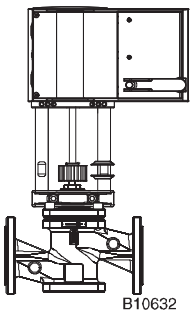
Combination: VUP with electric drive, 2500 N pushing force

Drive	**AVM 234S F132**				**> 130°C accessories required**
Input:	**2-/3-pt.; 0...10 V/4...20 mA; 24 V; with accessories 3-pt. 230 V**				
Running time DN 40:	**28 / 56 / 84 s**				
Running time DN 50…80	**40 / 80 / 120 s**				
Running time DN 100…150:	**80 / 160 / 240 s**				
Valve	**Δp_{max}**	**Δp_s**	**Close/off pressure**		
VUP 040	25	–	25		
VUP 050	25	–	25		
VUP 065	25	–	25		
VUP 080	25	–	25		
VUP 100	25	–	25		
VUP 125	19	–	25		
VUP 150	15	–	25		


B10631

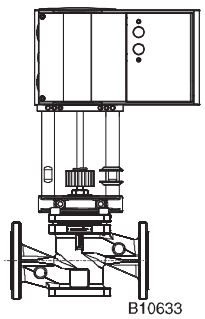
Combination: VUP with electric drive with spring return, 2000 N pushing force

Drive	**AVF 234S F232, F132**				**> 130°C accessories required**
Input:	**2-/3-pt.; 0...10 V/4...20 mA; 24 V; with accessories 3-pt. 230 V**				
Running time DN 40:	**28 / 56 / 84 s**				
Running time DN 50…80	**40 / 80 / 120 s**				
Running time DN 100…150:	**80 / 160 / 240 s**				
Spring return:	**15 - 30 s, with F232 (NC), with F132 (NO)**				
Valve	**Δp_{max}**	**Δp_s**	**Close/off pressure**		
VUP 040	25	25	25		
VUP 050	25	25	25		
VUP 065	25	25	25		
VUP 080	25	25	25		
VUP 100	20	22	22		
VUP 125	14	20	20		
VUP 150	10	15	15		


B10632

Combination: VUP with electric drive with safety function (DIN), 1100 N pushing force

Drive	**AVN 224S F232, F132**				**> 130°C accessories required**
Input:	**2-/3-pt.; 0...10 V/4...20 mA; 24 V; with accessories 3-pt. 230 V**				
Running time DN 40:	**28 / 56 / 84 s**				
Running time DN 50…80	**40 / 80 / 120 s**				
Running time DN 100…150:	**80 / 160 / 240 s**				
Safety function:	**15 - 30 s, with F232 (NC), with F132 (NO)**[1]				
Valve	**Δp_{max} in bar**	**Δp_S in bar**	**Close/off in bar**		
VUP 040	25	25	25		
VUP 050	20	25	25		
VUP 065	16	17	17		
VUP 080	12	15	15		
VUP 100	9	12	12		
VUP 125	6	6	6		
VUP 150	4	4	4		


B10633

Valve: Variant F, for technical data and accessories see Valve Type Table
Drive: Variant F, for technical data, accessories and installation position see section 51
Example: VUP 040 F304 / AVF 234 S F232

Δpmax [bar]=	Maximum permitted pressure difference across the valve at which the drive can still reliably open and close the valve, taking account of Δpv.
Δps [bar]=	Maximum permitted pressure difference across the valve in case of a fault (pipe break downstream of the valve) at which the drive can close the valve reliably with 'fast' performance of the stroke.
Close/off pressure [bar]=	Maximum possible pressure difference across the valve in control mode, at which the drive can still open and close the valve. A reduced lifetime must be expected with this mode. Cavitation, erosion and pressure surges can damage the valve. The values are only valid for the assembled combination valve fitted on the drive.

1) Spring return or safety function (NO) with AVF234F132 or AVN224SF132

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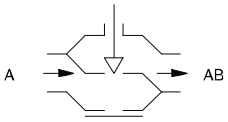
→ PDS 56.125

VUS: Through flanged valve, PN 40



How energy efficiency is improved
Precision control with high level of reliability means efficiency.

Areas of application
Continuous control of cold, warm and hot water, steam and air in HVAC systems, in closed networks. Water quality as per VDI 2035. Together with actuators AVM 234S, AVF 234S and AVN 224S as regulating unit.

Features
- Nominal pressure 40 bar
- Control valve, contains no silicone grease; matt black
- Nominal diameters DN15 to DN150
- Equal percentage characteristic, adjustable with SUT actuators to linear or quadratic
- With the spindle retracted, the valve is closed
- Closing procedure only against pressure
- Temperature range up to 220°C
- Version with bellows down to -60°C, version with graphite seal up to 260°C

Technical description
- Valve with flange connection as per EN 1092-2, Form B, raised face
- Cast steel valve body
- Stainless steel valve seat
- Stainless steel spindle
- Stainless steel cone
- Maintenance-free stainless steel stuffing box with spring-loaded Teflon washer

Type	Nominal diameter DN	Connection PN	k_{VS} value m^3/h	Weight kg
VUS 015 F375	15	40	0.16	5.1
VUS 015 F365	15	40	0.25	5.1
VUS 015 F355	15	40	0.40	5.1
VUS 015 F345	15	40	0.63	5.1
VUS 015 F335	15	40	1.0	5.1
VUS 015 F325	15	40	1.6	5.1
VUS 015 F315	15	40	2.5	5.1
VUS 015 F305	15	40	4.0	5.1
VUS 020 F305	20	40	6.3	5.9
VUS 025 F305	25	40	10.0	6.8
VUS 032 F305	32	40	16.0	8.4
VUS 040 F305	40	40	25.0	10.6
VUS 050 F305	50	40	40.0	13.2
VUS 065 F305	65	40	63.0	18.6
VUS 080 F305	80	40	100.0	25.1
VUS 100 F305	100	40	160.0	36.4
VUS 125 F305	125	40	220.0	56.4
VUS 150 F305	150	40	320.0	77.9

Operating temperature [1]	–10...220 °C
Operating pressure [2]	
at –10...50 °C	40,0 bar
at 120 °C	36.3 bar
at 220 °C	29.4 bar
Valve characteristic	equal-percentage
Valve rangeability	> 50:1
Packing box	stainless steel/Teflon
Leakage rate at max. Δp_S:	≤ 0.05% of k_{VS} value

Valve stroke	
DN 15...50	20 mm
DN 65...100	30 mm
DN 125...150	40 mm
Dimension drawing	M10461
Fitting instructions	MV 506071
AVM 234 assembly	MV 505919
AVF 234 assembly	MV 505920
AVN 224 assembly	MV 505927
Declaration on materials	MD 56.125

1) Down to -10 °C, no stuffing box heater is required. At temperatures between -10 °C and -60 °C, use special version with bellows-type mechanical seal (available on request, only to DN 100). Application: water with anti-freeze (glycol to 55% and brine solution), max. operating pressure 30 bar.
Above 130 °C or 180 °C, use the relevant adaptor (accessory). Above 220 °C and up to 260 °C, use stuffing box with graphite seal (accessory).

2) For operating pressure, see table of pressure and temperature values

For accessories and combinations with electric drives, see next page >>>

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→ PDS 56.125

Accessories

0372336 180* Adaptor (required for media 130…180 °C; MV 505902)
0372336 240* Adaptor (required for media 180…240 °C; MV 505902)
0378373 001 Stuffing box with graphite seal for temp. 220…260 °C; DN 15…50; MV 506080
0378373 002 Stuffing box with graphite seal for temp. 220…260 °C; DN 65…100; MV 506080
0378373 003 Stuffing box with graphite seal for temp. 220…260 °C; DN 125…150; MV 506080

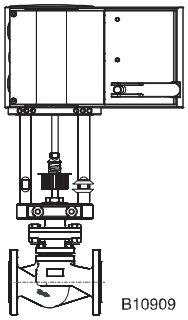
*) Dimension drawing or wiring diagram are available under the same number

Warranty The technical data and pressure differences stated above apply only when used in combination with Sauter actuators. If used together with actuators of a different manufacturer, the warranty becomes invalid.

N.B.: These valves should be used only for closing against the pressure. Valves for closing with the pressure can be ordered on request as a special version.

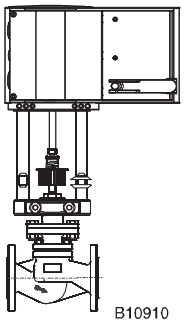
Combination: VUS with electric drive, 2500 N pushing force

Drive	**AVM 234S F132**			
Input:	**2-/3-Pt. ; 0..10 V / 4..20 mA ; 24 V ; with accessories 3-Pt. 230 V**			**> 130°C**
Running time DN 15…50:	**40 / 80 / 120 s**			**Accessories**
Running time DN 65…100	**60 / 120 / 180s**			**required**
Running time DN 125…150:	**80 / 160 / 240 s**			
Valve	Against the pressure			
	Δp_{max}	**Δp_s**	**close/off pressure**	
VUS 015	40.0	–	40.0	
VUS 020	40.0	–	40.0	
VUS 025	37.8	–	37.8	
VUS 032	28.7	–	28.7	
VUS 040	16.4	–	16.4	
VUS 050	10.5	–	10.5	
VUS 065	6.1	–	6.1	
VUS 080	3.9	–	4.0	
VUS 100	1.5	–	1.5	
VUS 125	1.0	–	1.0	
VUS 150	0.7	–	1.0	


B10909

Combination: VUS with electric drive with spring return, 2000 N pushing force

Drive	**AVF 234S F232, F132**			
Input:	**2-/3-Pt. ; 0..10 V / 4..20 mA ; 24 V ; with accessories 3-Pt. 230 V**			**> 130°C**
Running time DN 15…50:	**40 / 80 / 120 s**			**Accessories**
Running time DN 65…100	**60 / 120 / 180s**			**required**
Running time DN 125…150:	**80 / 160 / 240 s**			
Spring return:	**15 - 30 s, with F232 (NC), with F132 (NO)**			
Valve	Against the pressure			
	Δp_{max}	**Δp_s**	**close/off pressure**	
VUS 015	40.0	25.0	40.0	
VUS 020	40.0	25.0	40.0	
VUS 025	29.6	25.0	29.6	
VUS 032	22.5	21.0	22.5	
VUS 040	12.8	13.5	12.8	
VUS 050	8.2	8.5	8.2	
VUS 065	4.7	5.6	4.7	
VUS 080	3.0	3.4	3.0	
VUS 100	1.5	2.2	1.5	
VUS 125	1.0	1.6	1.0	
VUS 150	0.7	1.2	0.7	


B10910

For more combinations with electric drives, see next page >>>

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→ PDS 56.125

Combination: VUP with electric drive with safety function (DIN), 1100 N pushing force

Drive	**AVN 224S F232, F132**			
Input:	**2-/3-Pt. ; 0..10 V / 4..20 mA ; 24 V ; with accessories 3-Pt. 230 V**			**> 130°C**
Running time DN 15…50:	**40 / 80 / 120 s**			**Accessories**
Running time DN 65…100	**60 / 120 / 180s**			**required**
Running time DN 125…150:	**80 / 160 / 240 s**			
Safety function:	**15 - 30 s, with F232 (NC), with F132 (NO)**			
Valve	Against the pressure			
	Δp_{max}	**Δp_s**	**close/off pressure**	
VUS 015	24,5	25,0	25.0	
VUS 020	24,5	25,0	25.0	
VUS 025	14,7	17,0	17.0	
VUS 032	11,1	10,5	10.5	
VUS 040	6,2	6,5	6.5	
VUS 050	3,9	4,0	4.0	
VUS 065	2,1	3,0	3.0	
VUS 080	1,3	2,0	2.0	
VUS 100	0,8	1,1	1.1	
VUS 125	0,4	0,8	0.8	
VUS 150	0,2	0,6	0.6	

Valve: For F-variant, technical data and accessories see table of valve types.
Actuator: For F-variant, technical data, accessories and fitting position, see table of valve types.
Example: VUS 040 F305 / AVM 234S F132

Δpmax [bar]=	Max. permissible pressure difference across the valve at which the drive can still firmly open and close the valve while taking Δpv into account.
Δps [bar]=	Max. permissible pressure difference across the valve at which, in the event of a malfunction (pipe break after the valve), the drive can close the valve firmly and quickly.
close/off pressure [bar]=	Max. possible pressure difference across the valve in control mode, at which the drive can still firmly open and close the valve. The serviceable life may be reduced. Cavitation, erosion and surges may damage the valve. The values apply only when the valve is fitted to the drive as a unit.
1)	Spring return or safety function (NO) with AVF234F132 or AVN224SF132

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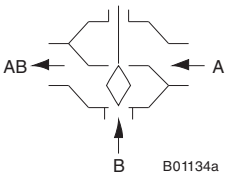
→ PDS 56.126

BUS: Three-way flanged valve, PN 40



How energy efficiency is improved

Precision control with high level of reliability means efficiency.

Areas of application

Continuous control of cold, warm and hot water, steam and air in HVAC systems, in closed networks. Water quality as per VDI 2035. Together with actuators AVM 234S, AVF 234S and AVN 224S as regulating unit.

Features

- Nominal pressure 40 bar
- Control valve, contains no silicone grease; matt black
- Nominal diameters DN15 to DN150
- Linear control passage characteristic up to DN100, adjustable with SUT actuators to equal percentage or quadratic
- Equal percentage control passage characteristic DN125 to DN150, adjustable with SUT actuators to linear or quadratic
- Linear mixing passage characteristic
- With the spindle retracted, the valve is closed
- Can be used only as a mixing valve
- Temperature range up to 220°C
- Version with bellows down to -60°C, version with graphite seal up to 260°C

Technical description

- Valve with flange connection as per EN 1092-2, Form B, raised face
- Cast steel valve body
- Stainless steel valve seat
- Stainless steel spindle
- Stainless steel cone
- Maintenance-free stainless steel stuffing box with spring-loaded Teflon washer

Type	Nominal diameter DN	Connection PN	k_{VS} value m^3/h	Weight kg
BUS 015 F225	15	40	1.6	7.2
BUS 015 F215	15	40	2.5	7.2
BUS 015 F205	15	40	4.0	7.2
BUS 020 F205	20	40	6.3	8.4
BUS 025 F205	25	40	10.0	9.4
BUS 032 F205	32	40	16.0	12.4
BUS 040 F205	40	40	25.0	15.5
BUS 050 F205	50	40	40.0	19.2
BUS 065 F205	65	40	63.0	27.6
BUS 080 F205	80	40	100.0	36.5
BUS 100 F205	100	40	160.0	61.2
BUS 125 F305	125	40	220.0	82.5
BUS 150 F305	150	40	320.0	113.5

Operating temperature [1]	–10...220°C	Leakage rate at max. Δps:	
Operating pressure		control passage	≤ 0.05% of k_{VS} value
at –10...50 °C	40.0 bar	mixing passage	≤ 1.0% of k_{VS} value
at 120 °C	36.3 bar	Valve stroke	
at 220 °C	29.4 bar	DN 15...50	20 mm
		DN 65...100	30 mm
Valve characteristic for		DN 125...150	40 mm
ctrl passage DN15…100	linear	Dimension drawing	M10462
ctrl passage DN125…150	equal percentage	Fitting instructions	MV 506071
mixing passage	linear	AVM 234 assembly	MV 505919
		AVF 234 assembly	MV 505920
Valve rangeability	> 30:1	AVN 224 assembly	MV 505927
Stuffing box	stainless steel/Teflon	Declaration on materials	MD 56.126

1) Down to -10°C°C, no stuffing box heater is required. At temperatures between -10°C°C and -60°C°C, use special version with bellows-type mechanical seal (available on request, only to DN 100). Application: water with anti-freeze (glycol to 55% and brine solution), max. operating pressure 30 bar.
Above 130°C°C or 180°C°C, use the relevant adaptor (accessory). Above 220°C°C and up to 260°C, use stuffing box with graphite seal (accessory).

For accessories and combinations with electric drives, see next page >>>

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→ PDS 56.126

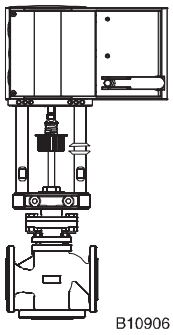
Accessories

0372336 180* Adaptor (required for medium 130…180 °C; MV 505902)
0372336 240* Adaptor (required for medium 180…240 °C; MV 505902)
0378373 001 Stuffing box with graphite seal for temp. 220…260 °C; DN 15…50; MV 506080
0378373 002 Stuffing box with graphite seal for temp. 220…260 °C; DN 65…100; MV 506080
0378373 003 Stuffing box with graphite seal for temp. 220…260 °C; DN 125…150; MV 506080

*) Dimension drawing or wiring diagram available under the same number

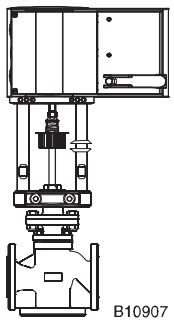
Warranty The technical data and pressure differences indicated here are only applicable in combination with Sauter valve drives. Any warranty shall lapse if valve drives from other manufacturers are used.
N.B.: These valves should be used only as control valves.

Combination: BUS with electric drive, 2500 N pushing force


B10906

Drive	**AVM 234S F132**			
Input:	**2-/3-pt. ; 0..10 V / 4..20 mA ; 24 V ; with accessories 3-pt. 230 V**			**> 130°C Accessories required**
Running time DN 15…50:	**40 / 80 / 120 s**			
Running time DN 65…100	**60 / 120 / 180s**			
Running time DN 125…150:	**80 / 160 / 240 s**			
Valve	Used as a control valve			
	Δp_{max}	**Δp_s**	**close/off pressure**	
BUS 015	40.0	–	40.0	
BUS 020	40.0	–	40.0	
BUS 025	37.8	–	37.8	
BUS 032	27.0	–	27.0	
BUS 040	16.4	–	16.4	
BUS 050	10.5	–	10.5	
BUS 065	6.1	–	6.1	
BUS 080	3.9	–	3.9	
BUS 100	2.5	–	2.5	
BUS 125	1.7	–	1.7	
BUS 150	1.2	–	1.2	

Combination: BUS with electric drive with spring return, 2000 N pushing force


B10907

Drive	**AVF 234S F132, F232**			
Input:	**2-/3-pt. ; 0..10 V / 4..20 mA ; 24 V ; with accessories 3-pt. 230 V**			**> 130°C Accessories required**
Running time DN 15…50:	**40 / 80 / 120 s**			
Running time DN 65…100	**60 / 120 / 180s**			
Running time DN 125…150:	**80 / 160 / 240 s**			
Spring return:	**15 - 30 s, with F132 (NC), with F232 (NO)**			
Valve	Used as a control valve			
	Δp_{max}	**Δp_s**	**close/off pressure**	
BUS 015	40.0	40.0	40.0	
BUS 020	34.7	40.0	34.7	
BUS 025	29.6	37.0	29.6	
BUS 032	21.1	27.0	21.1	
BUS 040	12.8	16.0	12.8	
BUS 050	8.2	10.0	8.2	
BUS 065	4.7	6.1	4.7	
BUS 080	3.0	3.9	3.0	
BUS 100	1.9	2.5	1.9	
BUS 125	1.3	1.7	1.3	
BUS 150	0.9	1.2	0.9	

For more combinations with electric drives, see next page >>>

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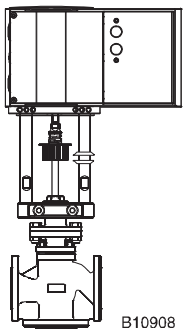
→ PDS 56.126

Combination: BUS with electric drive with safety function (DIN), 1100 N pushing force

Drive	**AVN 224S F132, F232**			
Input:	**2-/3-pt. ; 0..10 V / 4..20 mA ; 24 V ; with accessories 3-pt. 230 V**			**> 130°C Accessories required**
Running time DN 15…50:	**40 / 80 / 120 s**			
Running time DN 65…100	**60 / 120 / 180s**			
Running time DN 125…150:	**80 / 160 / 240 s**			
Safety function:	**15 - 30 s, with F132 (NC), with F232 (NO)**			
Valve	Used as a control valve			
	Δp_{max}	**Δp_s**	**Close/off pressure**	
BUS 015	24.5	24.5	24.5	
BUS 020	17.5	17.5	17.5	
BUS 025	14.7	14.7	14.7	
BUS 032	10.4	10.4	10.4	
BUS 040	6.2	6.2	6.2	
BUS 050	3.9	3.9	3.9	
BUS 065	2.1	2.1	2.1	
BUS 080	1.3	1.3	1.3	
BUS 100	0.8	0.8	0.8	
BUS 125	0.5	0.5	0.5	
BUS 150	0.3	0.3	0.3	



Valve: Variant F, for technical data and accessories see Valve Type Table
Drive: Variant F, for technical data, accessories and installation position see section 51
Example: BUS 040 F205/AVM 234S F132

Δppmax [bar]=	Max. permissible pressure difference across the valve at which the drive can still firmly open and close the valve while taking Δp v into account.
Δp s [bar]=	Max. permissible pressure difference across the valve at which, in the event of a malfunction (pipe break after the valve), the drive can close the valve firmly and quickly.
close/off pressure [bar]=	Max. possible pressure difference across the valve (in control mode) at which the drive can still firmly open and close the valve In this mode, the serviceable life may be reduced. Cavitation, erosion and surges may damage the valve. The values apply only when the valve is fitted to the drive as a unit.

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→ PDS 56.91

KTM 512: Pressure-balanced control valves with flow-rate limitation, PN 25

Y07544

How energy efficiency is improved
Precision regulation and working without additional differential pressure or volume flow controllers.

Areas of application
Thanks to a combination of control valve and volume flow controller, KTM valves enable the correct supply to a downstream consumer in the domestic sector or in district and local heating networks.

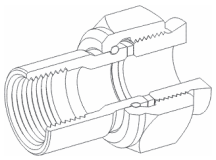
Properties
- Nominal pressure 25 bar
- Nominal diameter DN15 to DN50, more nominal diameters on request
- Equal-percentage valve characteristic
- Continuous setting of volume flow without hydraulic adjustment
- Sealable volume flow setting
- Volume flow setting without stroke reduction
- Can be incorporated into forward or return flow
- Tightly closing

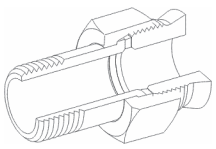
Technical description
- Housing made of ductile cast iron (EN-GJS-400-18LT)
- Housing with electrophoretic coating
- EPDM membranes
- Stainless-steel valve seat

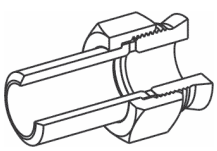
Type	Imperial connection	Adjustable volume flow m³/h	K_{VS} value m³/h	Differential pressure Fc in kPa	Min. differential pressure requirement at max. volume flow in kPa
KTM 512-15 FC12	1"	0.05 - 0.9	4.1	12	17
KTM 512-20 FC20	1"	0.05 - 1.1	4.1	20	27
KTM 512-25 FC12	1¼"	0.1 - 3.4	16	12	17
KTM 512-32 FC20	1¼"	0.1 - 4.2	16	20	26
KTM 512-40 FC12	2"	0.1 - 7	35	12	16
KTM 512-50 FC20	2"	0.1 - 10	35	20	26
KTM 512-50 FC40	2"	1.5 - 13	35	40	51

Operating temperature	0 - 100 °C with AVM115 [1]	Leakage rate	Tightly closing
Operating pressure	25 bar	Nominal stroke	10 mm up to DN50
Max. permissible pump pressure	12 bar with AVM115	Flow rate deviation from set-point	< ± 3 % at differential pressure Fc 12, otherwise < ± 5 %
		Dimension drawing	M KTM512/

	Valve connecting thread 1"	1¼"	2"
Screw fitting [2]	**For KTM512-15 - ; - 20 -** Article No.	**For KTM512-25 - ; - 32 -** Article No.	**For KTM512-40… ; - 50 -** Article No.
Female thread			
R ½"	**52759015KTM**	**52759115KTM**	
R ¾"	**52759020KTM**	**52759120KTM**	
R 1"	**52759125KTM**	**52759025KTM**	
R 1¼"		**52759032KTM**	
R 1½"		**52759140KTM**	**52759040KTM**
R 2"			**52759050KTM**
Male thread			
R ¾"	**52759620KTM**		
R 1"	**52759725KTM**	**52759625KTM**	
R 1¼"		**52759632KTM**	
R 1½"			**52759640KTM**
R 2"			**52759650KTM**
Welding point			
15/21	**52759315KTM**		
18/26	**52759320KTM**		
25/33		**52759325KTM**	
30/41		**52759332KTM**	
37/48			**52759340KTM**
48/61			**52759350KTM**







1) Up to 130°C with adaptor 0372249 001 (see AVM115 - ; Section 51)
2) Two screw fittings required per valve

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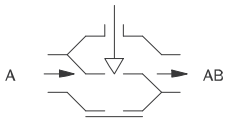
→ PDS 56.92

V66N: Through flanged valve, stainless steel, PN 40

Y07544



B10902

How energy efficiency is improved
Accurate control with high degree of reliability.

Areas of application
Continuous control of cold/warm/hot water, steam or air in HVAC installations in closed circuits. Condition of the water in accordance with VDI 2035. Used together with the AVM 234S or AVF 234S actuator as a regulating unit.

Features
- Nominal pressure 40 bar
- Regulating valve, contains no silicone grease
- Nominal diameters DN 15 to DN 100
- Characteristic: equal-percentage; can be changed to linear or quadratic with SUT actuators.
- When the spindle is retracted, the valve is closed.
- Closes only against the pressure.
- Temperature range up to 220 °C
- Version with bellows up to -60 °C; version with graphite seal up to 260 °C

Technical description
- Valve with flange as per EN 1092-2, Form B seal
- Valve body made of stainless steel 1.4408
- Valve seat made of stainless steel
- Spindle made of stainless steel 1.4571
- Plug made of stainless steel 1.4571
- Maintenance-free stuffing box of stainless steel with spring-loaded Teflon disc

Type	Nominal diameter DN	Connection	k_{VS} value m^3/h	Weight kg
V66N 015 F771D	15	PN 40	0.16	4.8
V66N 015 F761D	15	PN 40	0.25	4.8
V66N 015 F751D	15	PN 40	0.40	4.8
V66N 015 F741D	15	PN 40	0.63	4.8
V66N 015 F731D	15	PN 40	1.0	4.8
V66N 015 F721D	15	PN 40	1.6	4.8
V66N 015 F711D	15	PN 40	2.5	4.8
V66N 015 F701D	15	PN 40	4.0	4.8
V66N 020 F701D	20	PN 40	6.3	5.6
V66N 025 F701D	25	PN 40	10.0	6.9
V66N 032 F701D	32	PN 40	16.0	8.7
V66N 040 F701D	40	PN 40	25.0	11.2
V66N 050 F701D	50	PN 40	40.0	13.9
V66N 065 F701D	65	PN 40	63.0	21.1
V66N 080 F701D	80	PN 40	100.0	27.3
V66N 100 F701D	100	PN 40	160.0	40.1

Operating temperature[1)]	–10...220 °C	Valve stroke	
Operating pressure[2)]		DN 15...50	20 mm
at –10...50 °C	40.0 bar	DN 65...100	30 mm
at 120 °C	35.9 bar		
at 220 °C	30.4 bar	Dimension drawing	M10461
Valve characteristic	equal-percentage	Fitting instructions	MV P100004159
Control ratio	> 50:1	AVM 234 assembly	MV 505919
Stuffing box	stainless steel/Teflon	AVF 234 assembly	MV 505920
Leakage rate at max. Δp_S:	≤ 0.05% of k_{VS} value		

1) Down to -10°C, no stuffing box heater is required. At temperatures between 0°C and -60°C, use special version with bellows-type mechanical seal (available on request, up to DN 100 only). Usage: water with anti-freeze (glycol up to 55% and brine solutions); max. operating pressure 40 bar..
Above 130°C or 180°C, use the relevant adaptor (accessory).
Above 220°C and up to 260°C, use stuffing box with graphite seal (accessory).
2) For operating pressure, see table of pressure & temperatures

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→ PDS 56.92

Accessories

0372336 180*	Adaptor (required for media > 130...180 °C; MV 505902)
0372336 240*	Adaptor (required for media > 180...240 °C; MV 505902)
0378373 001	Stuffing box with graphite seal for temperatures 220...260 °C; DN 15…50; MV 506080
0378373 002	Stuffing box with graphite seal for temperatures 220...260 °C; DN 65…100; MV 506080

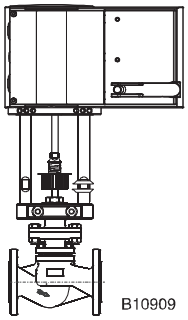
*) Dimension drawing or wiring diagram are available under the same number

Warranty: The technical data and pressure differences stated above apply only when used in combination with Sauter actuators. If used together with actuators of a different manufacturer, the warranty becomes invalid.

Note: These valves should be used only for closing against the pressure. Valves for closing with the pressure can be ordered on request as a special version.

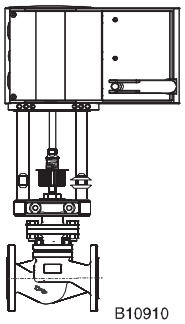
Combination V66N with electric actuator, pushing force 2500 N

Actuator Input: Running time DN 15…50: Running time DN 65…100:	**AVM 234S F132** **2-/3-pt. ; 0..10 V / 4...20 mA; 24 V; with accessory 3-pt. 230 V** **40 / 80 / 120 s** **60 / 120 / 180 s**			**> 130°C: accessory required**
Valve	against the pressure			
	Δp_{max}	**Δp_s**	**close/off pressure**	
V66N 015	40.0	–	40.0	
V66N 020	40.0	–	40.0	
V66N 025	37.8	–	37.8	
V66N 032	28.7	–	28.7	
V66N 040	16.4	–	16.4	
V66N 050	10.5	–	10.5	
V66N 065	6.1	–	6.1	
V66N 080	3.9	–	4.0	
V66N 100	1.5	–	1.5	



Combination V66N with electric actuator with spring return, pushing force 2000 N

Actuator Input: Running time DN 15…50: Running time DN 65…100: Spring return:	**AVF 234S F232, F132** **2-/3-pt. ; 0..10 V / 4...20 mA; 24 V; with accessory 3-pt. 230 V** **40 / 80 / 120 s** **60 / 120 / 180 s** **15 - 30 s, with F232 NC, with F132 NO**			**> 130°C: accessory required**
Valve	against the pressure			
	Δp_{max}	**Δp_s**	**close/off pressure**	
V66N 015	40.0	25.0	40.0	
V66N 020	40.0	25.0	40.0	
V66N 025	29.6	25.0	29.6	
V66N 032	22.5	21.0	22.5	
V66N 040	12.8	13.5	12.8	
V66N 050	8.2	8.5	8.2	
V66N 065	4.7	5.6	4.7	
V66N 080	3.0	3.4	3.0	
V66N 100	1.5	2.2	1.5	



Valve: F-variant; for technical data and accessories, see table of valve types.
Actuator: For F-variant, technical data, accessories and fitting position, see Section 51.
Example: V66N 040 F701D / AVM 234S F132

Δp_{max} [bar]= Max. permissible pressure difference across the valve at which the drive can still firmly open and close the valve while taking Δp_v into account.

Δp_s [bar]= Max. permissible pressure difference across the valve at which, in the event of a malfunction (pipe break after the valve), the drive can close the valve firmly and quickly.

close/off pressure [bar]= Max. possible pressure difference across the valve (in control mode) at which the drive can still open and close the valve In this mode, the serviceable life may be reduced. Cavitation, erosion and surges may damage the valve. The values apply only when the valve is fitted to the drive as a unit.

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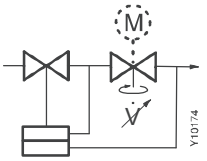
→ PDS 57.001

Valveco010…020: 2-way control valve for dynamic hydraulic balance



How energy efficiency is improved

Automatic dynamic hydraulic balance with the SAUTER Valveco control valve ensures correct supply to the consumers and a reduction of temperature fluctuations in the room, so energy use is more accurate and more efficient.

Areas of application

The multi-function valve is used for accurate flow control for air-conditioning, cooling and heating equipment such as fan-coil units, chilled beams, central underfloor heating systems, recirculated-air units and installation sections in conjunction with the AXT 211 thermal actuator for unit valves, the AXS 215S continuous actuator for unit valves or the AXM 117(S) motorised actuator for unit valves.

Features

- Control valve with three functions: control, preset maximum volume, automatic flow regulation
- Nominal diameters DN 10, DN 15 and DN 20
- Wide range: 30…1300 l/h
- Simple presetting of maximum volume flow without having to dismantle the actuator
- Control range 20…400 kPa = max. Δp across the valve
- Linear characteristic
- Simple to fit the pressure measurement nipples
- When the stem is pressed in, the valve is closed
- Closes against the pressure
- Stuffing box can be replaced under system pressure
- Slight adaptation of the tried-and-tested SAUTER actuator technology

Technical description

- Control valve with external thread to DIN EN ISO 228-1
- Flat-sealing control valve or, for DN 15 and DN 20, without socket fitting, with conical sealing surface
- Differential pressure over the regulating unit is kept constant; valve authority 1
- Valve body in dezincification-resistant (DZR) brass
- Cone of Teflon (PTFE)
- Stem of stainless steel
- Medium temperature range -10…120 °C

Type	Nominal diameter DN	Range l/h	Control range min Δp … max Δp kPa	Connection	Weight kg
VCL 010 F210	10	30…210	20…400	G ½ B	0.70
VCL 010 F200	10	90…450	20…400	G ½ B	0.70
VCL 015 F220	15	30…210	20…400	G ¾ B	0.70
VCL 015 F210	15	90…450	20…400	G ¾ B	0.70
VCL 015 F200	15	150…1050	20…400	G ¾ B	0.70
VCL 020 F210	20	150…1050	20…400	G 1 B	0.75
VCL 020 F200	20	180…1300	20…400	G 1 B	0.75

Nominal pressure	PN 16	Fitting instructions	MV P100004901
Max. operating pressure	16 bar	Assembly AXT211	MV P100002547
		Assembly AXS215S	MV P100002547
Characteristic	linear	Assembly AXM117/117S	MV 505456033
Valve stroke		Assembly AXM117F200	MV 505816033
VCL010…020	2.8 mm		
VCL020F200	3.5 mm		
Leakage rate	0,01% von kvs	Declaration of materials	MD 57.001
Operating temperature	-10…120 °C	Dimension drawing	M11423

For accessories and combinations with electric drives, see next pages >>>

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→ PDS 57.001

Accessories

0378133 010* 1 threaded sleeve, R 3/8, flat-sealing, DN 10, with cap nut and flat seal
0378133 015* 1 threaded sleeve, R 1/2, flat-sealing, DN 15, with cap nut and flat seal
0378133 020* 1 threaded sleeve, R 3/4, flat-sealing, DN 20, with cap nut and flat seal
0378134 010* 1 solder nipple, Ø 12, flat-sealing, DN 10, with cap nut and flat seal
0378134 015* 1 solder nipple, Ø 15, flat-sealing, DN 15, with cap nut and flat seal
0378134 020* 1 solder nipple, Ø 22, flat-sealing, DN 20, with cap nut and flat seal
0570260 001 Stuffing box, can be replaced under pressure
0570360 001 Pressure measurement nipple, set of 2
0560332 015* Strainer in gun metal, -10…+150 °C, mesh aperture 0.5 mm, DN 15
0560332 020* Strainer in gun metal, -10…+150 °C, mesh aperture 0.8 mm, DN 20
0560332 025* Strainer in gun metal, -10…+150 °C, mesh aperture 0.8 mm, DN 25
0560332 032* Strainer in gun metal, -10…+150 °C, mesh aperture 0.8 mm, DN 32
0560332 040* Strainer in gun metal, -10…+150 °C, mesh aperture 0.8 mm, DN 40
0560332 050* Strainer in gun metal, -10…+150 °C, mesh aperture 0.8 mm, DN 50

*) Dimension drawing or wiring diagram available under same number

Combination VCL with electrical actuator, 24 V

Actuator	Closes against the pressure			AXM117F202	AXM117S.0.
Valve	Δp_{max}	Δp_s	close/off pressure		
VCL 010F…	4.0	-	4.0		
VCL015 F…	4.0	-	4.0		
VCL 020 F…	4.0	-	4.0		

Combination VCL with electrical actuator, 230 V

Actuator	Closes against the pressure			AXM117F200	
Valve	Δp_{max}	Δp_s	close/off pressure		
VCL 010 F…	4.0	-	4.0		
VCL 015 F…	4.0	-	4.0		
VCL 020 F…	4.0	-	4.0		

Combination VCL with thermal and continuous actuator

Actuator	Closes against the pressure			AXT211F…	AXS215SF…
Valve	Δp_{max}	Δp_s	close/off pressure		
VCL 010 F…	4.0	4.0	4.0		
VCL 015 F…	4.0	4.0	4.0		
VCL 020 F…	4.0	4.0	4.0		

Complete type designation for valve and actuator, each with F-variant

Valve	F-variante, for technical data and accessories see table of valve type
Actuator	F-variante, for technical data, accessories and fitting position (see section 55)
Example	VCL 015 F200 / AXM 117 SF202

Δp_{max}[bar]=	Maximum permitted pressure difference across the valve at which the actuator can still reliably open and close the valve. Figures for static pressure of 6 bar; at a static pressure of 16 bar, these values are reduced by 15%
Δp_S[bar]=	Maximum permitted pressure difference across the valve in the event of a malfunction, at which the actuator can close the valve
close/off pressure [bar]=	Pressure difference across the valve in control mode which can overcome the force of the actuator. A reduced lifetime must be expected in this range. Cavitation, erosion and pressure surges may damage the valve. The values are applicable only in the assembled state, in the unit with the valve mounted on the actuator.

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6 Pneumatics

60	**Installation of pneumatic systems**	Generation of compressed air Preparation of compressed air Distribution of compressed air
65	**Relays and magnetic valves**	Various relays Magnetic valves
67	**Individual-room control systems, VAV**	Room-temperature controllers Duct-temperature controllers VAV controller and transducers Room-pressure controllers
68	***centair*® controller system**	Universal controllers Transducers Pressure gauges
69	**Accessories**	e/p and p/e converters, restrictors Manual switches, control-pressure transmitters Pressure-reducing sets, time-lag relays Test equipment, connection pieces

→ PDS 60.001

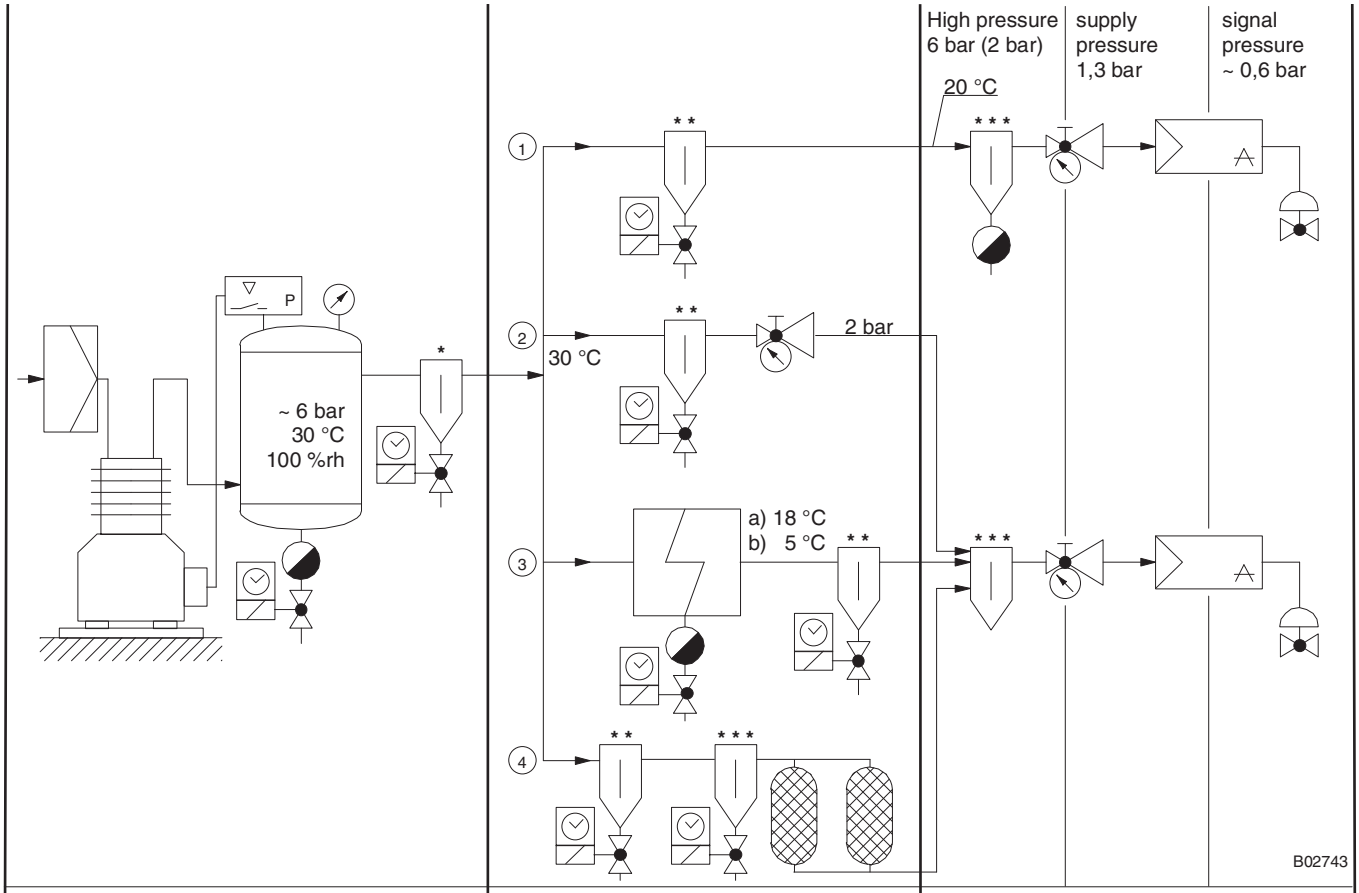
Installation instructions for pneumatic plants

1. Compressed-air supply
1.1 Required quantity of compressed air
1.2 Required compressor output
1.3 Volume of the compressed-air reservoir
1.4 Quality of air with regard to oil and dust contents

2. Compressed-air treatment
(with regard to condensation)
2.1 Without treatment
2.2 With pressure reduction in steps
2.3 With cooling dryer
2.4 With adsorption dryer

3. Compressed-air distribution
3.1 High-pressure lines
3.2 Supply and signal-pressure lines
3.3 Equipment connection

4. Supply-air distributor installation



* Pre-filter for extremely contaminated compressed air
** Fine filter for oily compressed air
*** Sub-micron filter

Examples for compressed-air treatment		Lower limit temp. (saturation limit)		
		High pressure network	Supply network	Signal network
Example ①	Without treatment cooling from 30 °C to 20 °C in the network piping, condensate: 2,2 g/m^3_n		3 °C	–2 °C
Example ②	Pressure reduction in steps high pressure only 2 bar, no condensate	15 °C	12 °C	6 °C
Example ③	Cooling dryer a) Water cooler, 18 °C, condensate 2,5 g/m^3_n b) Refrigerating unit, 5 °C, condensate 3,8 g/m^3_n	18 °C 5 °C	1 °C –10 °C	–4 °C < –10 °C
Example ④	Adsorption dryer, e.g. drying to 0,3 g/m^3_n	–10 °C	–20 °C	< –20 °C

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1. Compressed-air supply

1.1 Required quantity of compressed air

In order to determine the quantity of compressed air required, the average air consumption of all equipment connected is added up:

- For open/closed-loop control devices, the average air consumption is stated in the catalogue sheets in l_n/h
- For pneumatic drives, the air consumption per stroke is stated. This value is then multiplied by the estimated number of strokes per hour.

Example:

12 measuring transd.	33	l_n/h each	396	l_n/h
12 RCP 20	40	l_n/h each	480	l_n/h
2 XSP 31	30	l_n/h each	60	l_n/h
2 AV 44 P 20	4,3	l_n each (per stroke)	86 (10 strokes/h)	l_n/h
5 AV 42 P 10	0,5	l_n each (per stroke)	25 (10 strokes/h)	l_n/h
		Total:	1047	l_n/h

Required quantity of air = total average air consumption = 1.047 m^3_n/h.

1.2 Required compressor output

When calculating the capacity of the compressor, it must be taken into account that the compressor should work at a duty cycle of 50 %. The required compressor output is therefore twice the quantity of compressed air as calculated in 1.1.
Since the capacity of commercially available compressors generally does not correspond exactly to the calculated output, the model with the next higher capacity should be chosen. This provides an additional safety factor which results in prolonged service life and is further useful with regard to design tolerances, possible leaks and later additions to the installation.

Example:

Required quantity of air	1,05 m^3_n/h
Required compressor output	2,10 m^3_n/h

Please note that the compressor output is often stated for load-free operation, i.e. without back pressure. The required compressor output is, however, stated with reference to the recommended system pressure of approx. 6 bar.

1.3 Volume of the compressed-air reservoir

The air reservoir with the volume V is used as a pressure tank and together with the actual air consumption $\dot{V}$ and the switching differential Δp of the pressure controller determines the switched-off time Δt of the compressor.

$$\Delta t = \Delta p \cdot \frac{V}{\dot{V}} \cdot 60 \text{ (min)}$$

In order to avoid frequent on/off-switching, the reservoir volume should at least be 2 % of the average air consumption per hour. $V/\dot{V}$ = approx. 0.02.
A switching difference of 2 bar of the pressure controller thus results in a switched-off time of approx. 2½ min.

Example:

Total average air consumption	1047 l_n/h
Reservoir volume (2 %)	21 l
Switched-off time, approx.	2.5 min
Commercially available reservoir tank	40 l
Switched-off time, approx.	5 min

1.4 Quality of air with regard to oil and dust contents

Generally, oil- and dust-free instrument air is required for all equipment in open-loop/closed-loop control engineering. Damage caused by impure air usually only becomes evident over longer periods of time. Particularly dangerous is a mixture of oil and dust.

- Oil-free (dry-running) compressors are best suited for producing oil-free compressed air.
- Dust damages the compressor and the connected equipment. Therefore, a 20...50 µm suction filter should be fitted before and a 5 µm pre-filter should be fitted behind the compressor.
- A fine filter and a sub-micron filter should be fitted to remove oil aerosols (oil in droplets) when connecting the equipment to existing plant air networks which are usually fed by oil-lubricated compressors.
- A cooling dryer or an adsorption dryer are recommended in order to separate gaseous oil contaminations from the air.
- When an adsorption dryer is used, one fine filter and one sub-micron filter must be fitted before and one sub-micron filter should be fitted behind the compressor.
- When a cooling dryer is used, only a single sub-micron filter is required behind the compressor.
- Gaseous oil contamination must be removed by means of an activated carbon filter if, as an exception, neither cooling dryers nor adsorption dryers can be installed. This filter must be located between the fine filter and the sub-micron filter.
- Filters installed at the compressor and in the reduction units must particularly be monitored in systems installed in a dusty environment (for example in new buildings with cement dust).
- Additional small filters are located in the connections of Sauter pneumatic equipment which eliminate residue originating from the network piping. Despite these precautions, the lines should be blown through before connecting the equipment.
- Our pressure reduction unit XFRP 5 and the corresponding accessories meet the above requirements.

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2. Compressed-air treatment with regard to condensation

The pipe layout must take into account that no uncontrolled water deposits form due to condensation and that the piping cannot freeze. The corresponding air treatment depends on the minimum temperature in the individual sections of the piping (refer to the example on page 1)

- In example ①, condensate will always collect in the high-pressure section. Consequently, the pipes must be laid with a slight slope. Condensated water must be drained periodically from the lowest point. The minimum temperatures for the supply and signal networks are limited.

- In example ② to ④, the compressed-air treatment removes the water to such a degree that no condensate collects at any point of the network piping.

The minimum temperature for the individual pressure stages are limited. Only example ④ is permissible when high-pressure lines reach temperatures below 0 °C because otherwise the lines would freeze.

A diagram showing the maximum water content „a" of a standard cubic meter of air as a function of the temperature is used for establishing the permissible minimum temperature.

The following formula can be applied:

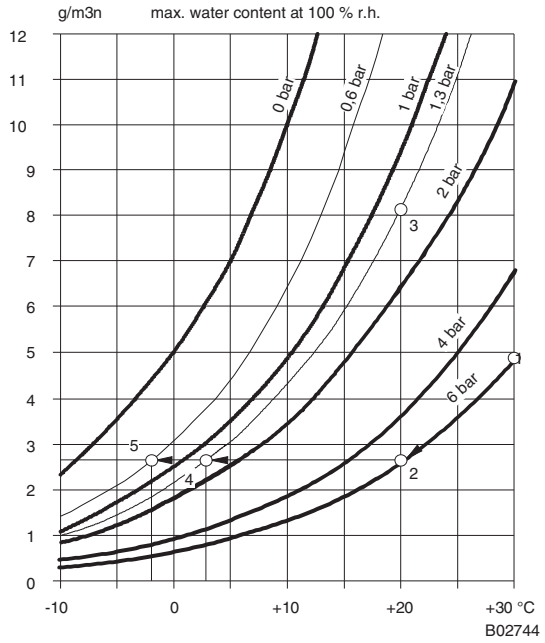
$$a \cong 0.8 \frac{p(T)}{p_{abs}} g/m^3_n$$

p(T) = steam pressure in mbar at the given temperature T
P_{abs} = absolute pressure in bar

In the following sections, the limit values mentioned on page 1 are defined numerically. The examples assume typical conditions and can be applied analogously to other conditions.

With the exception of example ②, water is always separated in the first step. The quantity depends on the degree of cooling possible in the high-pressure section. The water content remains constant after this point. Relative humidity in each case is given by the ratio of actual water content to maximum water content. The lower limit temperature is reached for any given pressure stage when the actual and the maximum water content are the same (100 %rh.).

2.1 Without compressed-air treatment, example ①



The high-pressure network is intentionally used for water separation

Point 1 Condition in the pressure tank:
bar, 30 °C, 100 %rh.,
water content **4.8 g/m³n**

Point 2 Condition in the high-pressure network
cooling to 20 °C, 6 bar, 100 %rh.,
water content **2.6 g/m³n**

Amount of condensate: 4,8 – 2.6 = **2.2 g/m³n**

Point 3 After the pressure drop to 1,3 bar, a water content of 8,1 g/m³n would be possible. The actual water content is, however, only 2,6 g/m³n, i.e.
rh. = 2.6/8.1 = 0.32 = **32 %**

Point 4 Lower limit temperature in the supply network
(1,3 bar) = 3 °C
(max. water content = actual water content)

Point 5 Lower limit temperature in the signal network
(approx. 0,6 bar) = –2 °C

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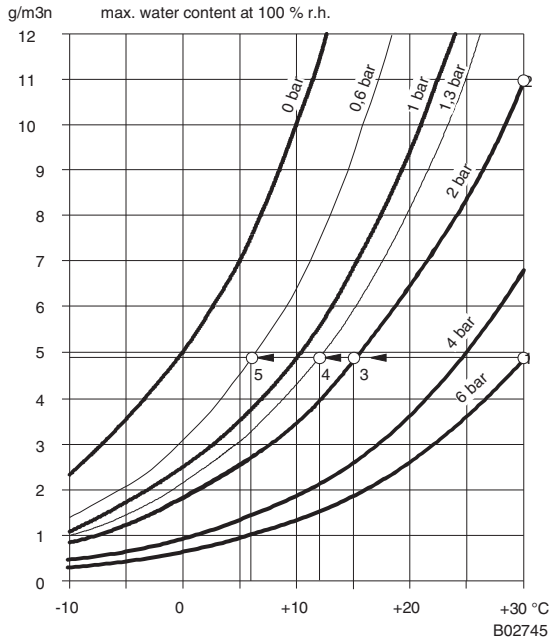
2.2 With pressure reduction in steps, example ②



The initial pressure reduction in the compressor chamber reduces the rel. humidity in the high-pressure network. Due to the reduced „high pressure", the line pressure drop is increased and the performance of the second reduction unit is decreased.

Point 1 Condition in the pressure tank:
6 bar, 30 °C, 100 %rh.
water content **4.8 g/m³n**

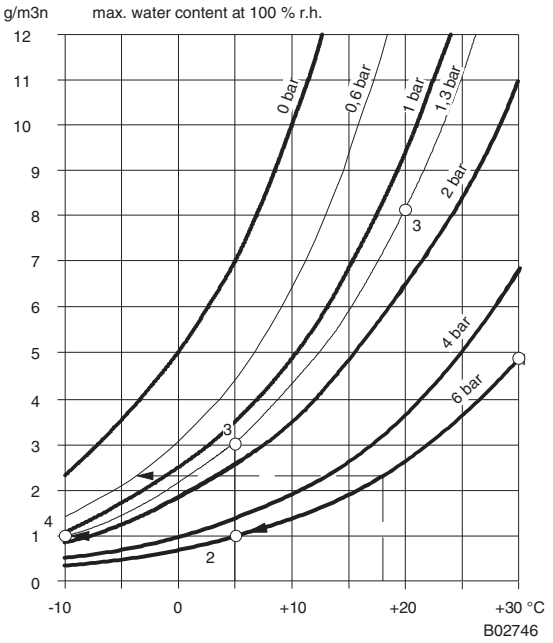
Point 2 After pressure reduction to 2 bar, a water content of 11 g/m³n would be possible.
The actual water content,
however, is only **4.8 g/m³n**
rh. = 4.8/11 = 0.44 = **44 %**

Point 3 Lower limit temperature in the high-pressure network (2 bar) = **15 °C**
(max. water content = actual water content)

Point 4 Lower limit temperature in the supply network (1.3 bar) = **12 °C**

Point 5 Lower limit temperature in the signal network (approx. 0.6 bar) = **6 °C**

2.3 With cooling dryer, example ③



The compressed air (6 bar) is cooled and a corresponding am-ount of water separates. With water coolers, approx. 18 °C and, with refrigerating machines, approx. 5 °C can be attained (limited by the freezing point).

Point 1 Condition in the pressure tank:
6 bar, 30 °C, 100 %rh.
water content **4.8 g/m³n**

Point 2 Condition in the cooling dryer:
cooling to 5 °C, 6 bar, 100 %rh.
water content = 1 g/m³n
amount of condensate: 4.8 – 1 = 3.8 g/m³n
lower temperature limit in the high-pressure network (6 bar) **= 5 °C**

Point 3 Condition in the supply network:
pressure reduced to 1.3 bar at 5 °C
water content remains at 1 g/m³n
max. water content = 3.1 g/m³n
rh. = 1/3.1 = 0.32 = **32 %rh**.

Point 4 Lower temperature limit in the supply network (1.3 bar) = **–10 °C**

With a water cooler (18 °C), the water content is reduced to **2.3 g/m³n** (broken line)

Limit temperature: 18 °C at 6 bar
+1 °C at 1.3 bar
–4 °C at 0.6 bar

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2.4 With adsorption dryer, example ④

In the adsorption dryer, the air is led through a container with hygroscopic material. Dependent on size and flow rate, the water content can easily be reduced to less than 0,3 g/m^3_n (observe manufacturer's information). This results in a lower temperature limit of –10 °C for the high-pressure network (approx. –20 °C for the supply network).
The adsorption dryer must be periodically regenerated; for this reason, switchable double systems are often used. The service life of a filling is considerably extended if a cooling dryer is connected in front of the adsorption dryer.

- Only oil-free compressors must be used in connection with adsorption dryers.

3. Compressed-air distribution

3.1 High-pressure line, approx. 6 bar

The high-pressure lines leading to the reduction unit is usually laid with copper or plastic pipes. In example ① (without compressed-air treatment), the pipes must be laid at a slope and drained periodically at the lowest points.
With treated air, the operating temperature must not fall below the lower limit temperature as specified in Section 2; otherwise water may condensate.

3.2 Supply and signal-pressure lines

- Polyethylene, polyamide or soft copper pipes will mostly be used for piping installed with screwed connections. In most cases, the softer and less expensive polyethylene tube is used if no special requirements are to be observed (fire hazard, damage caused by rodents etc.).
  Copper pipes are to be laid in such a manner that no high forces are acting on the connected equipment (particularly in case of plastic housings). For this purpose, the last 30 cm before the equipment connection are often laid with plastic tubes.

- A flexible tube made of special polyurethane has been developed for lines which are only pushed onto a nipple (see chapter 69).

In order to prevent condensation, the lower limit temperatures according to Section 2 must be observed. The normal pipe section dimensions are 6 × 1 (external diameter 6 mm, wall thickness 1 mm). For long lines and high air throughput, the additional pressure drop in the supply line must be taken into consideration (see Section 4).

3.3 Equipment connection

- Sauter equipment usually is provided with an internal thread Rp ⅛ (ISO 7/1). They therefore fit together with the commonly used conical screw-in nipples R ⅛ (ISO 7/1) (see chapter 69). Teflon tape or a special sealing stick (accessory no. 297169) are recommended as sealing materials (do not use Loctite on plastics). Limited torque must be applied when metal nipples are screwed into plastic housings (use plastic nipples if possible).

- For fitting purposes (recessed mounting) and because of the type of construction, some devices are equipped with fixed or screw-in plug nipples (see chapter 69). Use only polyurethane tubing for plug nipples. An additional clamp (accessory no. 277790) can be used as a tube grip or for temperatures over 40 °C.

- Push tube off from the nipple instead of pulling. Use the tube remover (service set 297508).

- Cut off excessively widened tube ends.

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4. Guidelines for supply-air distributor installations

Generally, a supply pressure of 1,3 bar ± 0,1 bar is specified for our pneumatic equipment. This pressure must be maintained at the distributor manifold, even when the connected devices demand max. air supply. Otherwise malfunctions may occur in all of the devices connected to this particular manifold. This section explains the system interactions and provides guidelines for planning and implementing supply networks.

The behaviour of a supply network is determined by the following characteristics:

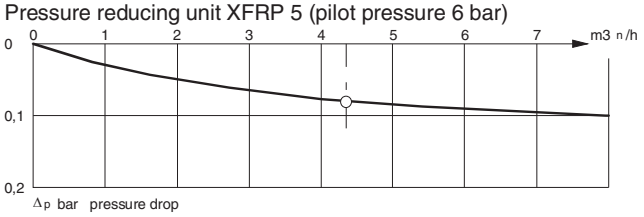
1) Internal resistance of the pressure source
2) Typical max. air throughput $\dot{V}_{max}$
3) Influence of supply pressure on equipment

4.1 Internal resistance of the pressure source

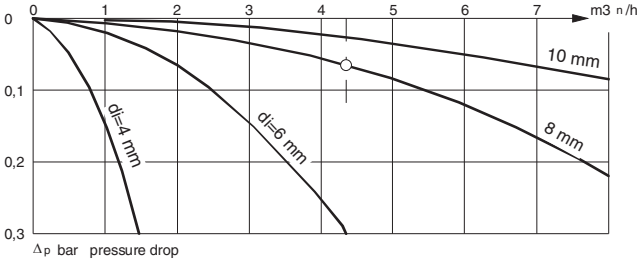
The pressure in a compressed air network will always be reduced slightly when a certain amount of air is discharged from the system. The pressure drop at the point of discharge is the sum of several flow-dependent pressure drops caused by:

- Pressure reducing units
- Line resistance
- Control valves
- or any other flow resistance

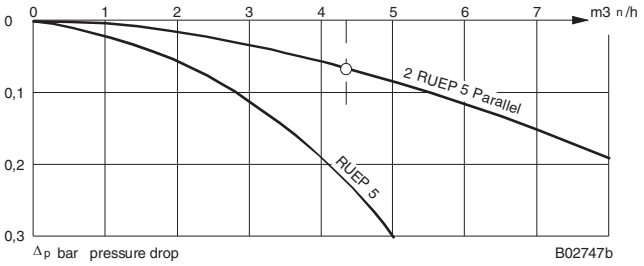
Pressure reducing unit XFRP 5 (pilot pressure 6 bar)



Line resistance per 10 m



Control valves



In order to estimate the total pressure drop, the air throughput rate $\dot{V}_{max.}$ is determined according to 4.2) and the relevant Δp-values of the corresponding load curves are added up:
The Δpvalues of the piping are specified for a length of 10 m and must be converted in proportion to the actual length of the lines. The points marked in the drawing refer to the example on page 7 with $\dot{V}_{max}$ = 4,3 m³/h

4.2 Typical max. air throughput „ $\dot{V}_{max}$“

The typical maximum air throughput rate takes into account not only the average air consumption (for establishing the proper compressor capacity) but also an amount of operating air required for transient compensation of disturbances or setpoint re-adjustments. This air throughput is not related to the „required" amount of air as used for establishing the compressor.
For temperature and humidity control loops, the following empirical formulae apply:

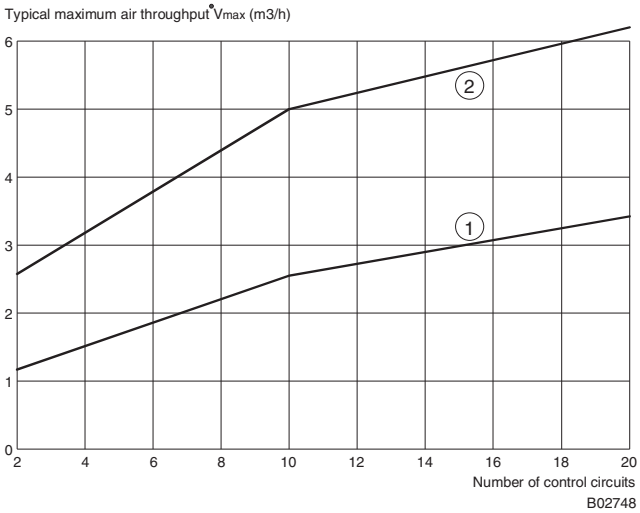
With 2...10 control loops with amplifier or positioner, the following is added up: $\dot{V}_{max}$ =
average air consumption for all connected devices
+ an additional demand of 0.1 m³/h per valve or drive (AV 44/45 P, 0,2 m³/h each)
+ max. air supply for 2 devices at maximum output

For more than 10 control loops: for each additional regulating unit only 10 % of the additional value is taken into account (simultaneity factor)

Examples for similar control loops:

① Controller with small drive, without positioner, e.g. RCP 20 with AV 42 P

② Controller with large drive, with positioner, e.g. RCP 20 with AV 44 P, XSP 31



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When a complete installation is switched on or when a common setpoint adjustment is carried out, larger quantities of air are required for short periods, i.e. the permissible supply pressure variation is exceeded. The resulting influence on the devices as detailed in 4.3) is usually permissible for these cases.

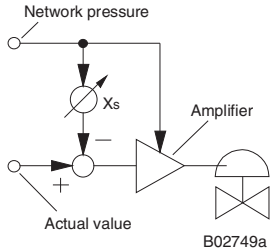
4.3 Influence of supply pressure on equipment

The transient drop of supply pressure can be estimated for a given distributor manifold by means of the air throughput $\dot{V}_{max}$ according to 2) and the load curves according to 1).

Two groups of malfunctions may occur when the supply pressure is reduced too much:

a) With many pneumatic devices, only the supply of air is reduced slightly. Regulating devices held closed by pressure which are operated near their design limit may, however, open momentarily because the supply pressure is simultaneously the highest possible pressure output.

b) A second type of malfunction may occur with devices operating with a stabilised reference pressure (such as setpoint X_S in Centair controllers or zero-reference p_O in the position controller XSP 31). With control action A, the reference pressure is slightly reduced in correlation with the supply pressure reduction, resulting in an increased pressure output. This additional network load amplifies the entire process (positive feedback) until the device is excited for max. air delivery and will only be stabilised again in the bleed-off phase.



This effect becomes particularly serious if several devices of this type are connected to the same supply-air line or a poorly supplied manifold. In these cases, the positive feedback is transferred to all devices, pressure breaks down in the entire installation and the system may finally end up in a state of continuous oscillation.

Based on this knowledge and practical experience, the following guidelines can be given:

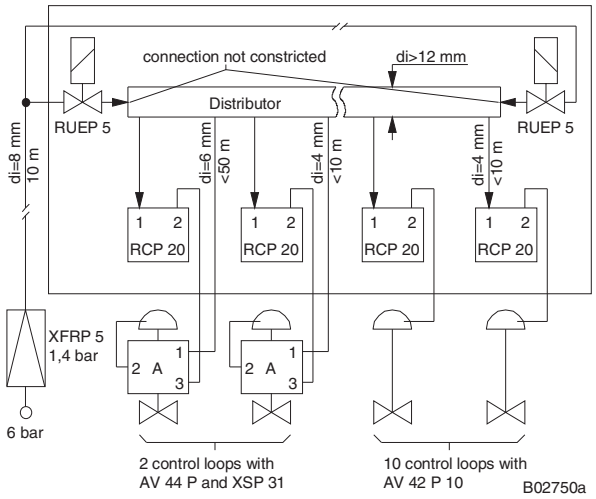
– The air supply to the distributor must be designed such that the pressure drop at air throughput $\dot{V}_{max}$ is not higher than 0.2 bar and that the distributor pressure does not drop below 1.2 bar; this prevents reciprocal influences and transient opening of regulating devices. As a rule, the unloaded reducing unit should therefore be set to 1.4 bar.

– The line from the distributor to the individual consumer must not be looped. For devices with control action A, the piping must not exceed a certain length; otherwise there is a risk that the device will permanently be self-excited.

  Max. length of the supply-air line:
  di = 4 mm; L_{max} = 10 m
  di = 6 mm; L_{max} = 50 m

– The specified line diameters must be stated on the installation diagram. The distributor manifold should have an internal diameter of 12 mm. The connection threads for the compressed-air supply port must match the chosen pipe diameter.

Example: Switch panel for 12 control loops



Typical air throughput $\dot{V}_{max}$ at the distributor
(see section 4.2)

12 RCP 20	40 l_n/h	each	→	0.48	air consumption
12 meas. transducers	33 l_n/h	each	→	0.40	
2 XSP 31	30 l_n/h	each	→	0.06	
2 AV 44 P 20	200l_n/h	each	→	0.40	additional demand
10 AV 42 P 10	100l_n/h	each	→	1.00	
2 max. air deliv XSP 31	1000 l_n/h	each	→	2.00	
				$\dot{V}_{max}$ = 4.34 m³/h	

Characteristic curves of the distributor at $\dot{V}_{max.}$ = 4,34 m³/h
(see Section 4.1)

Reducing unit	0.09	bar
Piping ∅=8mm; L=10 m	0.07	bar
2 control valves RUEP 5	0.04	bar
Δp_{tot} =	0.20	bar

The pressure in the distributor drops from 1.4 bar to 1.2 bar (permissible limit).

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→ PDS 65.006

RAP 80 F002, F003: Selector relay

T03083

Y03181

Areas of application

Selection of minimum or maximum of up to four pneumatic input signals for setting up pneumatic control systems.

Features

- Minimum selection relay
- Maximum selection relay
- Forwarding of lowest or highest of up to four standard signals as a control pressure output signal
- Controller front panel is printed with circuit diagram for rapid identification of function
- Thermoplastic housing suitable for wall or top-hat rail mounting
- Compressed air connections with Rp 1/8" female thread
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

Technical description

- Supply air pressure 1.3 bar ± 0.1
- Switching difference 0.04 bar

Type	Description	Air output	Air consumption	Weight kg
RAP 80 F002	minimum selection	400 l_n/h	6 l_n/h	0.15
RAP 80 F003	maximum selection	400 l_n/h	2 l_n/h	0.15

Supply pressure [1]	1.3 bar ± 0,1	Connection diagram	F002	A02896
Input pressure	0...1.4 bar		F003	A02897
Output pressure	0...1.4 bar	Dimension drawing		M297240
Permissible ambient temp.	0...55 °C	Fitting instructions		MV 505098

Accessories

0296936 000* Fixing bracket for rail EN 60715 35 × 7,5 and 35 × 15

*) Dimension drawing or wiring diagram are available under the same number

1) See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperatures

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→ PDS 65.007

RAP 80 F901: Snap-action relay

2pt
Y03182

Areas of application

As a pressure switching relay with variable change-over point for setting up pneumatic control systems.

Features

- On reaching the setpoint, the connected system is put under pressure or vented
- Control action can be selected
- Controller front panel is printed with circuit diagram for rapid identification of function
- Thermoplastic housing suitable for wall or top-hat rail mounting
- Compressed air connections with Rp 1/8" female thread
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

Technical description

- Supply pressure 1.3 bar ± 0.1
- Switching difference 0.04 bar
- 1 input
- 1 output
- 1 setpoint adjuster

Type	Description	Air output	Air consumption	Weight kg
RAP 80 F901	snap-action relay	400 l_n/h	6 l_n/h	0.15

Supply pressure [1]	1.3 bar ± 0,1	Permissible ambient temp.	0...55 °C
Input pressures	0...1.4 bar		
Output pressure	0...1.4 bar	Connection diagram	A02894
Setpoint X_S	0...100%	Dimension drawing	M297107
Switching difference	0.04 bar (fixed)	Fitting instructions	MV 3281

Accessories

0296936 000* Fixing bracket for rail EN 60715 35 × 7,5 and 35 × 15

*) Dimension drawing or wiring diagram are available under the same number

1) See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperatures

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→ PDS 65.010

RDP: Averaging relay

T03051

Ø

Y03179

Areas of application

Formation of the average of two pneumatic input signals in pneumatic control systems.

Features

- 2 input signals are added together and averaged in the relay
- Controller front panel is printed with circuit diagram for rapid identification of function
- Thermoplastic housing suitable for wall or top-hat rail mounting
- Compressed air connections with Rp 1/8" female thread
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

Technical description

- Supply pressure 1.3 bar ± 0.1
- 2 input signals
- 1 output signal

Type	Description	Air output	Air consumption 2)	Weight kg
RDP 80 F001	averaging relay	400 l_n/h	4 l_n/h	0.15

Supply pressure 1)	1.3 bar ± 0,1	Permissible ambient temp.	0...55 °C
Input pressure	0...1.4 bar		
Output pressure	0...1.4 bar	Connection diagram	A02893
		Dimension drawing	M297107
		Fitting instructions	MV 3252

Accessories

0296936 000* Fixing bracket for rail EN 60715, 35 × 7,5 and 35 × 15
0297113 000* Manometer bracket for fitting two XMP includes kit; MV 3255
0297091 000* Cover for spare apertures (for manometers), when 0297113 is used

*) Dimension drawing or wiring diagram are available under the same number

1) See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperatures
2) Without transducer. Air consumption for transducer: an additional 33 l_n/h each for connections 3 and 6

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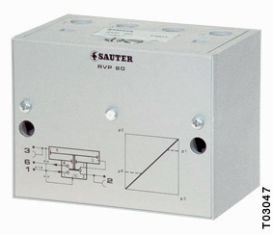
→ PDS 65.015

RVP 80: Amplifying relay



Y03112

Areas of application

Amplification of air volume for low-capacity pneumatic devices.

Features

- Amplification of low air capacities
- Controller front panel is printed with circuit diagram for rapid identification of function
- Thermoplastic housing suitable for wall or top-hat rail mounting
- Compressed air connections with Rp 1/8" female thread
- Minimum and/or maximum limiting of pneumatic pressure signals
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

Technical description

- Supply pressure 1.3 bar ± 0.1
- Two input signals for:
  - air capacity
  - maximum and minimum limiting
- One output signal

Type	Description	Air output	Air consumption 1)	Weight kg
RVP 80 F001	air-volume amplification	400 l_n/h	17 l_n/h	0.15

Supply pressure 2)	1.3 bar ± 0,1	Permissible ambient temp.	0...55 °C
Input pressure	0...1.4 bar		
Output pressure	0...1.4 bar	Connection diagram	A02892
		Dimension drawing	M297107
		Fitting instructions	MV 3250

Accessories

0296936 000* Fixing bracket for rail EN 60715, 35 × 7,5 and 35 × 15
0297113 000* Manometer bracket for fitting two XMP includes kit; MV 3255
0297091 000* Cover for spare apertures (for manometers), when 0297113 is used

*) Dimension drawing or wiring diagram are available under the same number

1) Without transducer. Air consumption for transducer: an additional 33 l_n/h for connection 3
2) See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperatures

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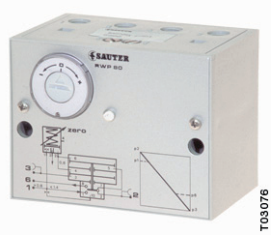
→ PDS 65.020

RWP: Reversing relay



Y07576

Areas of application
Reversing the direction of operation of a pneumatic signal in pneumatic control systems.

Features
- Reversing signal direction
- Minimum and/or maximum limiting of pneumatic pressure signals
- Controller front panel is printed with circuit diagram for rapid identification of function
- Reversible control action
- Thermoplastic housing suitable for wall or top-hat rail mounting
- Compressed air connections with Rp 1/8" female thread
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

Technical description
- Supply pressure 1.3 bar ± 0.1
- Two input signals for:
  - minimum limiting
  - maximum limiting
- One output signal

Type	Description	Air output	Air consumption	Weight kg
RWP 80 F001	reversal of control action	400 l_n/h	33 l_n/h	0.15

Supply pressure [1]	1.3 bar ± 0,1	Permissible amb. temp.	0...55 °C
Input pressure	0...1.4 bar		
Output pressure	0...1.4 bar	Connection diagram	A02891
		Dimension drawing	M297107
		Fitting instructions	MV 3251

Accessories
0296936 000* Fixing bracket for rail EN 60715, 35 × 7,5 and 35 × 15
0297113 000* Manometer bracket for fitting two XMP manometers; includes kit; MV 3255
0297091 000* Cover for spare apertures (for manometers), when 0297113 is used

*) Dimension drawing or wiring diagram are available under the same number

1) See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperatures

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→ PDS 65.150

RVP 11: Volume-amplifying relay

Y03112

Areas of application

Amplification of air volume in pneumatic control equipment.

Features

- Shortening of the running time in large-volume drives
- M4 measuring connections for input and output pressure
- Robust light-alloy housing
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

Technical description

- Supply pressure 1.3 bar ± 0.1
- One input signal
- One output signal

Type	Description	Air output	Air consumption	Weight kg
RVP 11 F001	air-volume amplification	7000 l_n/h	100 l_n/h	0.6

Supply pressure [1]	1.3 ± 0,1 bar	Permissible ambient temp.	0...55 °C
Input pressure	0...1.4 bar		
Output pressure	0...1.4 bar	Connection diagram	A03180
Air recovery	4000 l_n/h	Dimension drawing	M277899
		Fitting instructions	MV 3238

Accessories

0277299 000* Fixing bracket for wall mounting, includes screws and blanking piece R ⅛

*) Dimension drawing or wiring diagram are available under the same number

1) See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperatures

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→ PDS 65.025

RPJP: PI relay

Y03177

Areas of application

Pneumatic control in combination with appropriate transducers of temperature, pressure, differential pressure, humidity and flow rate.

Features

- Conversion of a proportional (P) controller into a proportional integral (PI) controller.
- Controller front panel is printed with circuit diagram for rapid identification of function
- Reversible control action
- Thermoplastic housing suitable for wall or top-hat rail mounting
- Compressed air connections with Rp 1/8" female thread
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

Technical description

- Supply pressure 1.3 bar ± 0.1
- Two input signals
- One output signal

Type	Description	Air output	Air consumption [1]	Weight kg
RPJP 80 F001	PI function	400 l_n/h	27 l_n/h	0.2

Supply pressure [2]	1.3 bar ± 0,1	Permissible ambient temp.	0...55 °C
Input pressure	0.2...1,0 bar		
Output pressure	0.2...1,0 bar	Connection diagram	A02885
Setpoint X_S	0...100%	Dimension drawing	M297107
Setpoint remote adjustment	0...100%	Fitting instructions	MV 3254
Reset time	0.2...3 min		
with accessory 297277	3...6 min		

Accessories

0296936 000* Fixing bracket for rail EN 60715, 35 × 7,5 and 35 × 15
0297103 000 Bag of ten scales, for use according to transducer
0297113 000* Manometer bracket for fitting two XMP includes kit; MV 3255
0297091 000* Cover for spare apertures (for manometers), when 0297113 is used
0297277 000 Resistor and scale for increasing the reset time

*) Dimension drawing or wiring diagram are available under the same number

1) Without transducer. Air consumption for transducer: an additional 33 l_n/h for connection 3
2) See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperatures

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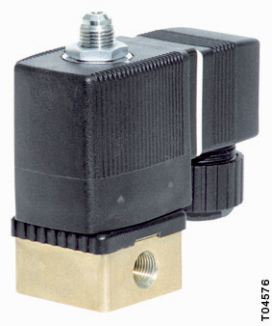
→ PDS 65.052

RUEP: Electro-pneumatic relay



How energy efficiency is improved

The compressed air consumption in installations can be reduced by selectively switching off pneumatic control equipment when not in use.

Areas of application

Relay for use in pneumatic control systems.

Features

- Electromagnetic switching valve
- Valve body made of brass, valve disc with soft seal made of Viton
- Cable clamping sleeve for cables ø 6 -7 mm and wires up to 1.5 mm²
- Compressed air connection on upper part of valve G 1/8" A, male thread
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

Technical description

- Power supply 24 or 230 V~
- Leakage rate (Δp = 1 bar) 0.6 l/h
- Permissible operating time 100%

Type	Flow rate [1] m^3_n/h	Connector thread	Voltage	Weight kg
RUEP 5 F001	6.3	Rp 1/8	230 V~	0.34
RUEP 5 F002	6.3	Rp 1/8	24 V~ [2]	0.34

Control voltage	230 V~	± 15%, 50...60 Hz	Permissible ambient temp.	0...55 °C
	24 V~	± 20%, 50...60 Hz	Permissible amb. humidity	< 90 %rh
Power consumption		5 W (5,5 VA)	Degree of protection	IP 65 (EN 60529)
Permissible pressure or differential pressure		1.7 bar	Connection diagram	A04522
Leakage rate (Δp = 1 bar)		0.6 l/h	Dimension drawing	M04531
Permissible duty cycle		100%	Fitting instructions	MV 505371

Accessories

0274469 000* Screw-type bracket of polyamide with R 1/8 male thread
0277717 000* Screw fitting of polyamide with R 1/8 male thread
0296931 000* Adaptor with female thread Rp 1/8
0296936 000* Fixing bracket for rail EN 60715–35 × 7,5 and 35 × 15
0296937 000* Fixing clip for rail C EN 60715–C 20
0296938 000* Bracket for wall mounting
0381140 001* Screw fitting of polyamide with Rp 1/8 female thread

*) Dimension drawing or wiring diagram are available under the same number

1) Flow of air at 1 bar with respect to atmosphere
2) Also suitable for 24 V–, ± 20%

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→ PDS 67.002

TSP, TSFP, TSSP: Pneumatic room-temperature controllers

How energy efficiency is improved

Enables energy-efficient control of the room temperature in pneumatic installations. The room temperature can be set precisely with the setpoint adjuster.

Areas of application

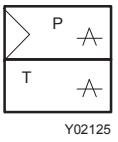
Continuous temperature measurement and control, e.g. in air-conditioning systems. Activation of volume flow controllers or unit valves.

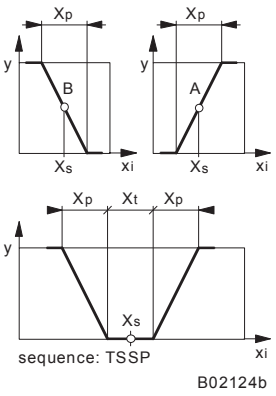
Features

- Robust bimetal sensor
- P control characteristic
- Housing 72 x 72 mm in pure-white thermoplastic
- Setpoint adjuster with +/- scale and adjustable stops for setpoint limiting
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

Technical description

- Supply pressure 1.3 bar ± 0.1
- Time constant at 0.2 m/s air velocity approx. 7 min.
- Output pressure 0.2 - 1.0 bar
- P range X_P approx. 2 K
- Linearity 2%





Type	Control function 1)	Control action	Air capacity l_n/h	Setpoint range °C	Weight kg
TSP 80A F117	fixed-value	A	33	17...27	0.1
TSP 80B F117	fixed-value	B	33	17...27	0.1
TSP 81A F117	fixed-value	A	200	17...27	0.1
TSP 81B F117	fixed-value	B	200	17...27	0.1
TSFP 80A F117	fixed/schedule	A	33	17...27	0.1
TSFP 80B F117	fixed/schedule	B	33	17...27	0.1
TSFP 81A F117	fixed/schedule	A	200	17...27	0.1
TSFP 81B F117	fixed/schedule	B	200	17...27	0.1
Heating-cooling sequence					
TSSP 80 F117	fixed-value	A and B	2 × 33	17...27	0,1

	TSP 80, TSFP 80	TSP 81, TSFP 81	TSSP
Air consumption l_n/h	33	20	66
Air exhaust capacity l_n/h 2)	50	34	50
External restrictor required	1 pc	–	2 pc
Dead zone X_t (sequence)	–	–	2 K
Connection diagram	A02044	A02045	A02047
Fitting instructions	MV 23176/23219	MV 23184/23185	MV 23200

Supply pressure 3)	1.3 bar ± 0.1	Time constants (0.2 m/s)	approx. 7 min
Output pressure	0.2...1,0 bar	Permissible ambient temperature	0...55 °C
P-band X_p	approx. 2 K		
Linearity	2%	Dimension drawing	M297350
		Connection diagram and MV	see table

1) 'Fixed/schedule' requires an external command signal of 0...1,2 bar (e.g RXP 81).
Setpoint shift ± 6 K. Setpoint increase: 0,6...1,2 bar = 0...+6 K. Setpoint decrease: 0,6...0 bar = 0...–6 K

2) Due to the blow-off noise produced, this value should not be exceeded.

3) See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperatures.

Accessories see next page >>>

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→ PDS 67.002

Accessories

0228234 001*	Setpoint adjustment knob in pure white, with raised bridge
0296218 000*	Buckle-proof attachment for plug-in installation
0296990 000*	Buckle-proof attachment for screw-in installation, MV 7322
0297441 000*	Intermediate cover plate in pure white for various recessed junction boxes
0297354 000*	Short screw-in nipple R ⅛, for soft plastic tubing of 4 mm internal diameter
0303124 000*	Recessed junction box (in conjunction with 0297441, if necessary)
0297416 001	Housing cover in pure white, screw-type, without setpoint adjuster 1)
0297418 032	Housing cover in pure white, screw-type, with setpoint adjuster, scale 17...27 °C 1)
0297419 001	Housing cover in pure white, of light metal, w/o setpoint adjuster, w/o airing louvres 1)
0297546 001	Housing cover in pure white, of light metal, w/o setpoint adjuster, w/o airing louvres 1)
0297555 001*	Intermediate cover plate in pure white, for large recessed junction boxes (e.g USA)
0297560 001*	Intermediate cover plate in pure white for panels, for covering large holes
0297557 000*	Wall insulation; prevents imprecision due to draughts from the wall
0297760 001	Temperature other than 22 °C for middle of scale (span ± 5 K)
0297760 002	Setpoint shift other than ± 6 K or 1 K per 0,1 bar (for 'fixed/schedule' types only)
0369573 001*	Surface junction box, pure white
0369573 002*	Surface junction box, black

*) Dimension drawing or wiring diagram are available under the same number

1) For orders with controller, the housing will be replaced in the factory.

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→ PDS 67.004

TKP, TKFP, TKSP: Pneumatic duct-temperature controllers

How energy efficiency is improved

Enables energy-efficient control of the duct temperature in pneumatic installations. The duct temperature can be set precisely with the setpoint adjuster.

Areas of application

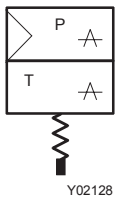
Continuous temperature measurement and control, e.g. in ducting in air-conditioning systems. Activation of volume flow controllers or unit valves.

Features

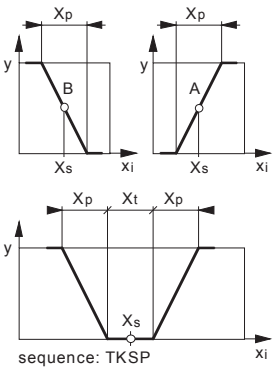
- Oil-filled external transducer for detecting the duct temperature
- Transducer can be distanced up to 1.5 m away
- P control characteristic
- Housing 72 x 72 mm in pure-white thermoplastic
- Setpoint adjuster with +/- scale and adjustable stops for setpoint limiting
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

Technical description

- Supply pressure 1.3 bar ± 0.1
- Time constant at 0.5 m/s air velocity approx. 2.5 min.
- Output pressure 0.2 - 1.0 bar
- P range X_p approx. 2 K
- Linearity 2%



Type	Control function [1]	Control action	Air capacity l_n/h	Setpoint range °C	Weight kg
TKP 80A F117	fixed-value	A	33	17...27	0.17
TKP 80B F117	fixed-value	B	33	17...27	0.17
TKP 81A F117	fixed-value	A	200	17...27	0.17
TKP 81B F117	fixed-value	B	200	17...27	0.17
TKFP 81A F117	fixed/schedule	A	200	17...27	0.17
TKFP 81B F117	fixed/schedule	B	200	17...27	0.17
TKSP 80 F117	sequence	A and B	2 × 33	17...27	0.17



	TKP 80	TKP 81, TKFP 81	TKSP
Air consumption l_n/h	33	20	66
Air exhaust capacity l_n/h [2]	50	34	50
External restrictor required	1 pc	–	2 pcs
Dead zone X_t (sequence)	–	–	2 K
Connection diagram	A02048	A02049	A02051
Fitting instructions	MV 23177	MV 23187/23188	MV 23201

Supply pressure [4]	1.3 bar ± 0.1	Permissible amb. temp	0...55 °C
Output pressure	0.2...1.0 bar		
P-band X_p	approx. 2 K	Dimension drawing	M297351
Linearity	2%	Connection diagram and MV	see table
Time constants (0.5 m/s)	approx. 2.5 min		

Accessories

0296724 000* Sensor holder for wall mounting
0303212 000* Sensor holder for duct mounting
0297302 000* Fixing bracket for the controller
0228234 001* Setpoint adjustment knob in pure white, with raised bridge
0297354 000* Short screw-in nipple R 1/8 for soft plastic tubing of 4 mm internal diameter
0297416 001 Housing cover in pure white, screw-type, without setpoint adjuster [3]
0297418 032 Housing cover in pure white, screw-type, with setpoint adjuster, scale 17...27 °C [3]
0297419 001 Housing cover in pure white, of light metal, screw-type, without setpoint adjuster, without airing louvres [3]
0297760 001 Temperature other than 22 °C for middle of scale (span ± 5 K)
0297760 002 Setpoint shift other than ± 6 K or 1 K per 0.1 bar (for TKFP 81)

*) Dimension drawing or wiring diagram are available under the same number

1) 'Fixed/schedule' requires an external command signal of 0...1.2 bar (e.g RXP 81). Setpoint shift ± 6 K. Setpoint increase: 0,6...1.2 bar = 0...+6 K. Setpoint decrease: 0,6...0 bar = 0...–6 K
2) Due to the blow-off noise produced, this value should not be exceeded
3) For orders with controller, the housing will be replaced in the factory
4) See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperatures

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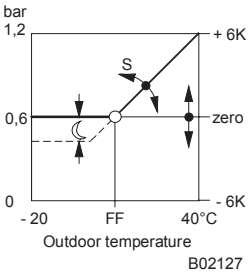
→ PDS 67.100

RXP 81: Pneumatic master controller



How energy efficiency is improved

The energy-efficient control of buildings is achieved by adapting the heating and ventilation systems to the outside temperature.

Areas of application

Outside-temperature-dependent setpoint shift of several temperature controllers with fixed/schedule function, e.g. in combination with TWUP210 transducer.

Features

- Central setpoint correction for easy on-site master control
- Option of reducing setpoint at central location, e.g. for night set-back
- Inscribed front panel with 4 adjusters for easy commissioning
- Practical control cabinet housing in thermoplastic, 144 x 144 mm
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

Technical description

- Supply pressure 1.3 bar ± 0.1
- Correction of zero point in range of up to +/- 2 K
- Max. adjustment of +/- 6 K possible

Type	Correction zero	Maximum shift	Air capacity l_n/h	Weight kg
RXP 81 F001	± 0...2 K	± 6 K	400	0.75

Supply pressure [1]	1.3 bar ± 0.1		Slope S	0.14...2 K/K
			Shift starting point FF	–20...40 °C
Input pressure w1	0.2...1.0 bar, (–20...40 °C)		Permissible amb.t temp.	0...55 °C
Output pressure affecting the controller setpoint:				
fixed-value control	0.6 bar	0 K	Connection diagram	A02107
schedule control	0.6...1.2 bar	+6 K	Dimension drawing	M297100
setpoint reduction	0.6...0 bar	–6 K	Fitting instructions	MV 3257

1) See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperatures.

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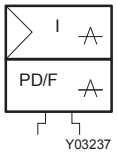
→ PDS 67.301

RLP 10: Pneumatic volume-flow controller

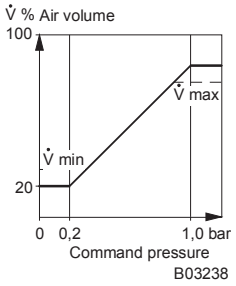
How energy efficiency is improved
For demand-led control of the air volume in office rooms.

Areas of application
Control of the supply and exhaust air of individual rooms or duct pressures. Can be used in potentially explosive areas.

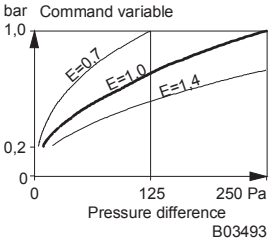
Features
- ATEX certification for use in Zone 1 potentially explosive areas
- Conformity tested as per EN 13463-1 and EN 1127-1 (Ex II 2 G T6)
- Control of constant, switchable or variable air volumes
- Static differential pressure sensor with large measuring range (10 to 250 Pa)
- Controller front panel is printed with circuit diagram for rapid identification of function
- Thermoplastic housing suitable for wall or top-hat rail mounting (rail EN 60715)
- Compressed-air connections with Rp 1/8" female thread
- Low-pressure connections in form of stepped nipples for flexible plastic hose (internal Ø 4 and 6 mm)
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment



Technical description
- Supply pressure 1.3 bar ± 0.1
- Response sensitivity of sensor 0.5 Pa
- Linearity, square root extraction accuracy 2%
- One input for command variable
- Two outputs for:
  - actual value
  - activation of damper drive
- Two setpoint adjusters for maximum and minimum limiting of volume flow



Type	Control action	Setpoint range Volume flow % V̇	Setpoint range Pressure diff. [1] Pa	Air capacity l_n/h	Weight kg
Integral volume-flow controller for supply and return air					
RLP 10 F001	B	20...100	10...250	330	0.2
RLP 10 F905	A	20...100	10...250	330	0.2
Integral volume-flow controller for aggressive gases in return air					
RLP 10 F904	B	20...100	10...250	330	0.2
RLP 10 F916	A	20...100	10...250	330	0.2



Output pressure	0.2...1.0 bar	Input: setpoint shift *w* [3]	
Response sensitivity	0.5 Pa	20...100 % V̇ ≙	0.2...1.0 bar
Linearity; accuracy of		Usable range p_{stat}	0...3 kPa
root extraction [2]	2%	Permissible pressure (low-pressure connections)	10 kPa

Supply pressure [4]	1.3 bar ± 0.1	Connection diagram	A02888
Air consumption	44 l_n/h	Dimension drawing	M297240
Permissible ambient temp.	0...55 °C	Fitting instructions	MV 505677
Degree of protection	IP 20		

Accessories
0226551 015 Scale (10...250 Pa) when used as duct pressure controller
0226551 017 Scale (20...500 Pa) when used as duct pressure controller [1]
0296936 000* Fixing bracket for rail EN 60715, 35 × 7.5 and 35 × 15
0297354 000* Short screw-type connector (R 1/8) for soft plastic tubing, int. Ø 4 mm; 3 pcs required
0297680 001 Setpoint V̇ min. and V̇ max. set and marked
0297680 002 Influence E set and marked

*) Dimension drawing or wiring diagram are available under the same number

1) Factory setting 10...250 Pa. Using the XYP 3 test unit, the range can be altered from 5...125 Pa (E = 0,7) to 20...500 Pa (E = 1,4)
2) The percentages refer to 100% air volume
3) For connection 6, we recommend the use of temp. controllers without amplifier (TS. P 80 or TK. P 80), since they are supplied directly by the internal restrictor of the RLP
4) See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperatures

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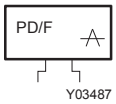
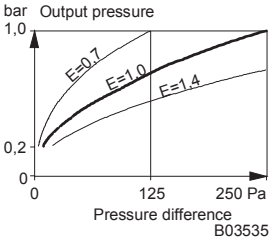
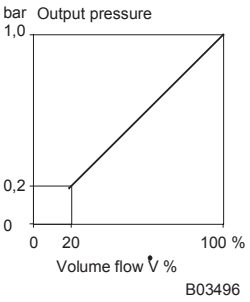
→ PDS 67.320

RLP 10 F902: Pneumatic volume-flow transducer







How energy efficiency is improved

Enables the accurate recording of volume flows for the optimisation of energy consumption in ventilation systems.

Areas of application

Measuring actual volume flow value using a suitable dynamic pressure sensor

Features

- Conversion of pressure difference by means of a square root extracting transducer into a linear flow signal
- Application of output signal as a command variable of a volume flow controller in the supply air
- Static differential pressure sensor with large measuring range (10 to 250 Pa)
- Controller front panel is printed with circuit diagram for rapid identification of function
- Thermoplastic housing suitable for wall or top-hat rail mounting (rail EN 60715)
- Compressed-air connections with Rp 1/8" female thread
- Low-pressure connections in form of stepped nipples for flexible plastic hose (internal Ø 4 and 6 mm)
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

Technical description

- Supply pressure 1.3 bar ± 0.1
- Response sensitivity of sensor 0.5 Pa
- Linearity, square root extraction accuracy 2%
- One output for:
  - actual value of volume-flow

Type	Description	Measuring range Volume flow % V̇	Measuring range Pressure diff. 1) Pa	Weight kg
RLP 10 F902	–	20...100	10...250	0.2

Output pressure	0.2...1.0 bar	Response sensitivity	0.1 Pa
Usable range p_{stat}	0...3 kPa	Linearity; accuracy of root extraction 2)	2%
Permissible pressure (low-pressure connections)	10 kPa		
Supply pressure 3)	1.3 bar ± 0.1	Permissible amb. temp.	0...55 °C
Air capacity	330 l_n/h		
Air consumption	19 l_n/h	Connection diagram	A02889
		Dimension drawing	M297240
		Fitting instructions	MV 505678

Accessories

0297354 000* Short screw-type connector (R 1/8) for soft plastic tubing,internal Ø 4 mm; 2 pcs required

0296936 000* Fixing bracket for rail EN 60715, 35 × 7,5 and 35 × 15

*) Dimension drawing or wiring diagram are available under the same number

1) Factory setting 10...250 Pa. Using the XYP 3 test unit, the range can be altered from 5...125 Pa (E = 0.7) to 20...500 Pa (E = 1,4)
2) The percentages refer to 100% air volume.
3) See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperatures

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→ PDS 67.400

RLP 100: Pneumatic air-volume controller

How energy efficiency is improved

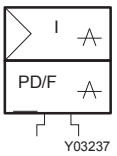
Enables the demand-led volume flow control of fume cupboards, laboratory rooms and clean rooms.

Areas of application

Specially designed for volume flow control equipment in VAV installations. In combination with a highly accurate, static differential pressure transmitter and a pneumatic damper drive, it is possible to control laboratory fume cupboards, laboratory rooms and room pressures.

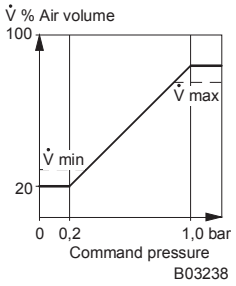
Features

- ATEX certification for use in Zone 1 potentially explosive areas
- Conformity tested as per EN 13463-1 and EN 1127-1 (Ex II 2 G T6)
- Control of constant, switchable or variable air volumes
- Highly accurate, static differential pressure sensor with large measuring range (1 to 160 Pa)
- Controller front panel is printed with circuit diagram for rapid identification of function
- Glass-fibre-reinforced thermoplastic housing suitable for wall or top-hat rail mounting (rail EN 60715)
- Compressed-air connections with Rp 1/8" female thread
- Special measuring connection for recording the volume flow with M4 connector
- Low-pressure connections in form of stepped nipples for flexible plastic hose (internal Ø 4 and 6 mm)
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

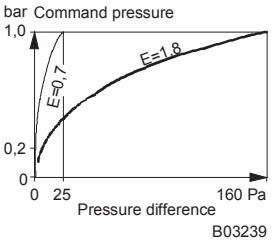


Technical description

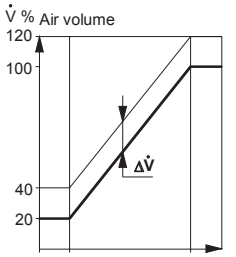
- Supply pressure 1.3 bar ± 0.1
- Response sensitivity of sensor 0.1 Pa
- Linearity, square root extraction accuracy 2%
- Two inputs for:
  - command variable
  - setpoint adjustment Δ V̇
- Two outputs for:
  - actual value
  - activation of damper drive
- One adjuster for adjustment of the sensor measuring range
- Three setpoint adjusters for maximum and minimum limiting of volume flow, plus limiting setpoint adjustment ΔV to max. ± 20%



Type	Control action	Setpoint-shift Δ V̇ % V̇	Sequence relay	Air capacity [1] l_n/h	Weight kg
For supply air and return air (room-air control, integral)					
RLP 100 F003	B/A	3...20	–	330	0.6
For return air in aggressive gases (fume-cupboard control, PI)					
RLP 100 F123	A	–	–	900	0.6
For return air in aggressive gases (room-air control, integral)					
RLP 100 F914	A	3...20	–	330	0.6
For supply air and return air, with interface relay (room-air control, integral)					
RLP 100 F919	A	–	–	330	0.6



Output pressure	0.2...1.0 bar	Reset time, F123	1 s
Setpoint range for air volume	20...100% V̇	Input: setpoint shift w_1	
Measuring range Δp (factory setting)	6.4...160 Pa	20...100% V̇	0.2...1.0 bar
reducible to	1...25 Pa	Usable range p_{stat}	0...3000 Pa
Response sensitivity	0.1 Pa	Permissible pressure	
Linearity; root extraction [2]	2%	(low-pressure connections)	3000 Pa



Supply pressure [3]	1.3 bar ± 0.1	Connection diagram	
Air consumption	44 l_n/h	F003	A02878
F123	90 l_n/h	F914, F123	A02879; A07495
with setpoint shift Δ V̇	60 l_n/h	F919	A08621
Permissible ambient temp.	0...55 °C	Dimension drawing	M297570
Degree of protection	IP 30	Fitting instructions	MV 505804
		F123	MV 505546
		F914; F919	MV 505337; MV 505263

1) For controlled networks that are dynamically problematical, the integration time can be increased (accessory 0297653)
2) The percentage refers to 100% air volume
3) See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperatures

Accessories see next page >>>

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→ PDS 67.400

Accessories

0297354 000*	Short screw-type connector R ⅛ for soft plastic tubing, internal Ø 4 mm; F003, F919: 4 pcs required, F123, F914: 5 pcs required
0297653 000	Resistor 10 Ωf, for air capacity of 180 l_n/h (not for F123)
0297762 001	Restrictor Ø 0,8 mm for attenuating turbulent low-pressure signals; 2 pcs required
0274571 000	Restrictor Ø 0,5 mm for attenuating turbulent low-pressure signals; 2 pcs required
0297800 001*	Manual switch, Open-Closed (min. air volume), for panel mounting; A07667, MV505784 [1)]
0297772 001*	Screw-in push-on adaptor M4 with seal for soft plastic tubing of Ø 4 mm internal
0297838 001*	Bracket for two XMP pressure gauges (see PDS, Section 68) [1)]
0297091 000*	Blanking piece for unused pressure-gauge aperture
0297680 001	Setpoint $\hat{V}$ in., $\hat{V}$ max. set and marked (not for F123)
0297680 002	Influence E set and marked
0297870 001*	Fixing bracket for fitting the controller to ceilings, floors or panels [1)]

*) Dimension drawing or wiring diagram are available under the same number

1) The accessories were tested for protection against explosion when fitted to the standard version of this product

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→ PDS 67.440

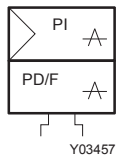
RLP 100 F916, F918, F910: Dual-channel air-volume controller

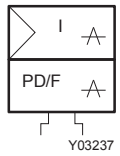
How energy efficiency is improved
For demand-led volume flow control of dual-channel systems in offices.

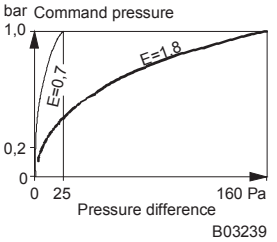
Areas of application
Room air-conditioning using VAV in dual-channel ventilation systems.

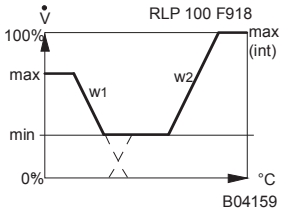
Features
- Optimal use of energy thanks to RLP 100 dual-channel controller in combination with room control equipment in the TSP, TSFP, TSSP series
- Can be combined with virtually all mixing boxes currently on the market
- ATEX certification for use in Zone 1 potentially explosive areas
- Conformity tested as per EN 13463-1 and EN 1127-1 (Ex II 2 G T6)
- Control of constant, switchable or variable air volumes
- Highly accurate, static differential pressure sensor with large measuring range (1 to 160 Pa)
- Controller front panel is printed with circuit diagram for rapid identification of function
- Glass-fibre-reinforced thermoplastic housing suitable for wall or top-hat rail mounting (rail EN 60715)
- Compressed-air connections with Rp 1/8" female thread
- Special measuring connection for recording the volume flow with M4 connector
- Low-pressure connections in form of stepped nipples for flexible plastic hose (internal Ø 4 and 6 mm)
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

Technical description
- Supply pressure 1.3 bar ± 0.1
- Response sensitivity of sensor 0.1 Pa
- Linearity, square root extraction accuracy 2%
- Two inputs for:
  - command variable
  - day/night changeover or heating/cooling signal
- Three outputs for:
  - actual value of air volume
  - activation of two damper drives, heating and cooling
- Adjuster for adjustment of the sensor measuring range
- Two setpoint adjusters for maximum and minimum limiting of volume flow









Type	Description	Weight kg
RLP 100 F916	constant air-volume controller (PI) for sequence drives	0.6
RLP 100 F918	VAV controller (Integral) for full-range drives	0.6
RLP 100 F910	Constant air-volume controller (PI) for full-range drives [1]	0.6

Output pressures	0,2...1,0 bar
Setpoint range for air volume	20...100% V̇
Measuring range Δp (factory setting)	6.4...160 Pa
reducible to	1...25 Pa
Response sensitivity	0,1 Pa
Linearity; accuracy of root extraction	2% of 100% V̇

Input: setpoint shift w_1, w_2 20...100% V̇	0.2...1.0 bar
Usable range p_{stat}	0...3000 Pa
Permissible pressure (low-pressure connect.)	3000 Pa

Supply pressure [2]	1.3 bar ± 0.1		
Air capacity	**F916**	**F918**	**F910**
Output 2, cooling	100 l_n/h	120 l_n/h	400 l_n/h
Output 7, heating	18 l_n/h	80 l_n/h	400 l_n/h
Air consumption	60 l_n/h	80 l_n/h	53 l_n/h
P-band (fixed)	400%	–	100%

Permissible amb. temp.		0...55 °C
Degree of protection		IP 30
Connection diagr.	F916	A02881
	F918	A02882
	F910	A08620
Dimension drawing		M297570
Fitting instructions	F916	MV 505338
	F918	MV 505262
	F910	MV 505089

Accessories see next page >>>

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→ PDS 67.440

Accessories

0297354 000*	Short screw-type connector (R ⅛) for soft plastic tubing, internal Ø 4 mm; five pieces required.
0297762 001	Restrictor Ø 0.8 mm for attenuating turbulent low-pressure signals; 2 pcs required
0274571 000	Restrictor Ø 0.5 mm for attenuating turbulent low-pressure signals; 2 pcs required
0297870 001*	Fixing bracket for fitting the controller to ceilings, floors or panels.

*) Dimension drawing or wiring diagram are available under the same number

1) Can be used for mixing boxes made by *Hesco-Trox* and *Buensas*
2) See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperatures

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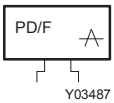
→ PDS 67.430

RLP 100 F903, F908: Pneumatic volume-flow transducer



How energy efficiency is improved

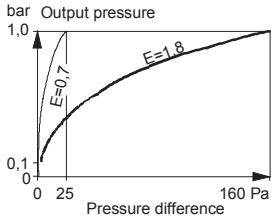
Enables the demand-led control of the air volume in fume cupboards, laboratories and clean rooms.

Areas of application

In combination with an orifice plate or a dynamic pressure sensor, measurement of the actual volume flow in the case of dust-laden or contaminated air in ventilation systems.

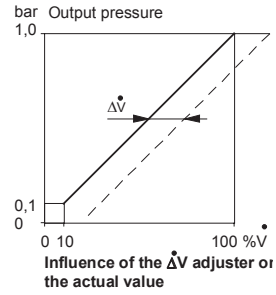
Features

- Square-root-extracted output signal can be used as a command variable for extended control loops
- Special version for the measurement of aggressive gases available
- ATEX certification for use in Zone 1 potentially explosive areas
- Conformity tested as per EN 13463-1 and EN 1127-1 (Ex II 2 G T6)
- Highly accurate, static differential pressure sensor with large measuring range (1 to 160 Pa)
- Controller front panel is printed with circuit diagram for rapid identification of function
- Glass-fibre-reinforced thermoplastic housing suitable for wall or top-hat rail mounting (rail EN 60715)
- Compressed-air connections with Rp 1/8" female thread
- Special measuring connection for recording the volume flow with M4 connector
- Low-pressure connections in form of stepped nipples for flexible plastic hose (internal Ø 4 and 6 mm)
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment



Technical description

- Supply pressure 1.3 bar ± 0.1
- Response sensitivity of sensor 0.1 Pa
- Linearity, square root extraction accuracy 2%
- One input for:
  - setpoint adjustment ΔV
- One output for:
  - actual volume flow value
- One adjuster for adjusting the sensor measuring range
- One setpoint adjuster for limiting setpoint adjustment ΔV to max. +/- 20%



Influence of the ΔV̇ adjuster on the actual value

B03492

Type	Description	Measuring range		Weight
		Air volume % V̇	Pressure difference [1] Pa	kg
RLP 100 F903	–	10...100	1.6...160	0.6
RLP 100 F908	for aggressive gases	10...100	1.6...160	0.6

Output pressure	0.1...1.0 bar	Response sensitivity	0.1 Pa
Input: setpoint shift Δ V̇	3...20% V̇	Linearity, square-root error	
Usable range p_{stat}	0...3000 Pa	between 20...100% V̇	2% of $\dot{V}_{100}$
Permissible pressure		between 10...20% V̇	4% of $\dot{V}_{100}$
(low-pressure connections)	3000 Pa		

Supply pressure [2]	1.3 bar ± 0.1	Permissible amb. temp.	0...55 °C
Air capacity	320 l_n/h		
Air consumption	38 l_n/h	Connection diagram	A02884
Degree of protection	IP 30	Dimension drawing	M297570
		Fitting instructions	MV 505019

Accessories

0297354 000* Short screw-type connector (R 1/8) for soft plastic tubing, internal Ø 4 mm; 3 pcs required
0297762 001 Restrictor Ø 0,8 mm for attenuating turbulent low-pressure signals; 2 pcs required
0274571 000 Restrictor Ø 0,5 mm for attenuating turbulent low-pressure signals; 2 pcs required
0297870 001* Fixing bracket for fitting the controller to ceilings, floors or panels.

*) Dimension drawing or wiring diagram are available under the same number

1) Factory setting (E = 1,8); using the adjuster E, this can be reduced to 1...25 Pa (E = 0,7)
2) See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperatures

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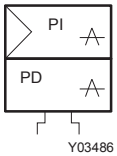
→ PDS 67.420

RLP 100 F901, F915, F924: Pneumatic room-pressure controller



How energy efficiency is improved

Enables the precise measurement and control of pressure differentials in clean rooms or laboratories without creating additional pressure compensation openings which lead to unnecessary losses of energy.

Areas of application

Room pressure control of extremely well-sealed rooms, e.g. clean rooms or laboratories (up to BSL-4).

Features

- Fast, accurate control system in combination with RLP 100 pneumatic volume-flow controllers
- Highly precise, static sensor, can also be used in areas with contaminated room air
- Measuring ranges up to max. +/- 185 Pa
- ATEX certification for use in Zone 1 potentially explosive areas
- Conformity tested as per EN 13463-1 and EN 1127-1 (Ex II 2 G T6)
- Controller front panel is printed with circuit diagram for rapid identification of function
- Glass-fibre-reinforced thermoplastic housing suitable for wall or top-hat rail mounting (rail EN 60715)
- Compressed-air connections with Rp 1/8" female thread
- Special measuring connection for recording the volume flow with M4 connector
- Low-pressure connections in form of stepped nipples for flexible plastic hose (internal Ø 4 and 6 mm)
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

Technical description

- Supply pressure 1.3 bar ± 0.1
- Response sensitivity of sensor 0.1 Pa
- Linearity 1%
- One input for:
  - remote setpoint adjustment
- Two outputs for:
  - actual volume flow value
  - command variable signal for volume-flow controllers
- Setpoint adjuster for room pressure, as well as adjuster for T_n and X_p

Type	Setting range Pa	Air capacity l_n/h	Weight kg
RLP 100 F901	–20...+20	400	0.6
RLP 100 F915	–50...+50	400	0.6
RLP 100 F924	–180...–35 / +35...+180 1)	400	0.6

Output pressure	0.2...1.0 bar		
Remote setpoint adjust.	0.2...1.0 bar		
	F901	**F915**	**F924**
Response sensitivity	0.1 Pa	0.25 Pa	0.36 Pa
P-band 0...100% ≙	0...40 Pa	0...100 Pa	0...145 Pa

Reset time (0...100%)	0...15 s
Linearity	1%
Permiss. operation pressure p_{stat}	± 3 kPa
Permissible pressure to the low-pressure connections	± 3 kPa

Supply pressure 2)	1.3 bar ± 0,1
Air consumption	50 l_n/h
Permissible amb. temp.	0...55 °C
Degree of protection	IP 30

Connection diagram	A02883
Dimension drawing	M297570
Fitting instructions	MV 505811

Accessories

-XMP50/50P	Pressure gauge, range –50...+50 Pa or –20...+20 Pa (see PDS, Section 68)
0297354 000*	Short screw-type connector (R 1/8) for soft plastic tubing, internal dia. 4 mm; 3 pcs req.
0297838 001*	Bracket for two XMP pressure gauges
0297091 000*	Blanking piece for unused opening in bracket
0297867 001*	Reference pressure container
0297870 001*	Fixing bracket for fitting the controller to ceilings, floors or panels.

*) Dimension drawing or wiring diagram are available under the same number

1) Change from measuring over-pressure to under-pressure by transposing the Δp measuring lines
2) See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperatures

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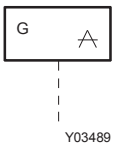
→ PDS 67.520

TUP 224 F901: Pneumatic sash sensor



How energy efficiency is improved
Enables the demand-led control of the air volume in laboratory fume cupboards.

Areas of application
Creation of VAV systems for fume cupboards, can be used especially in potentially explosive areas, in combination with the RLP 100 F123 pneumatic volume-flow controller.

Features
- Continuous output signal is specified as command variable to the volume flow controller
- Installation preferably to be on counterweight of laboratory fume cupboard sash
- ATEX certification for use in Zone 1 potentially explosive areas
- Conformity tested as per EN 13463-1 and EN 1127-1 (Ex II 2 G T6)
- Compressed-air connections with Rp 1/8" female thread
- Long-term-stable stainless steel spring

Technical description
- Supply pressure 1.3 bar ± 0.1
- Measuring ranges up to 2 m possible for free-standing fume cupboards
- Linearity 2%

Type	Measuring span [1] m	Output pressure bar	Weight kg
TUP 224 F901	0.45...0.75	0.2...1.0	0.14

Supply pressure [2]		Permissible ambient temp.	0...55 °C
via external restrictor, Ø 0,2 mm	1.3 bar ± 0.1		
Air capacity, air consumption	33 l_n/h	Connection diagram	A03488
		Dimension drawing	M00909
Linearity	2%	Fitting instructions	MV 505210
Control action	B		

Accessories
0297832 001 Extension spring for man-sized (walk-in) fume cupboards with sliding-door movement of 2 m. Measuring span: 0.9...1.5 m.

1) Factory setting: 0,5 m; can be changed by varying the length of the spring (6 holes); measuring span: 0,9...1,5 m; with accessory no. 0297832 001

2) On the RLP volume-flow controllers, the restrictor (Ø 0,14 mm) is fitted at input 6. For regulations on the quality of the air supply, especially at low ambient temperatures, see Section 60

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→ PDS 67.500

RXP 101: Air-volume adding relay

T03059

Y03186

How energy efficiency is improved

For the reliable and demand-led control of air in laboratories.

Areas of application

Synchronisation of room air in laboratories, can also be used in Zone 1 potentially explosive areas.

Features

- Maximum of 4 inputs for actual values
- Easy adjustment of exact partial air volumes using adjusters
- ATEX certification for use in Zone 1 potentially explosive areas
- Conformity tested as per EN 13463-1 and EN 1127-1 (Ex II 2 G T6)
- Compressed-air connections with Rp 1/8" female thread

Technical description

- Supply pressure 1.3 bar ± 0.1
- Four inputs for:
  - room return air
- One output for:
  - command variable signal for supply-air controller
- Setpoint adjuster for weighting partial volumes and setpoint adjustment ΔV

Type	Function	Air capacity	Air consumption [1]	Weight kg
RXP 101 F001	addition of 4 air volumes	400 l_n/h	40 l_n/h	0.7

Supply pressure [2]	1.3 bar ± 0.1	Permissible amb. temp.	0...55 °C
Input pressures	0.2...1.0 bar		
Output pressure	0.2...1.0 bar	Connection diagram	A03187
Setpoint shift Δ V̂	3...20% V̂	Dimension drawing	M297100
Control action	A	Fitting instructions	MV 505207

1) Without transducer; air consumption for transducer connections 3, 4, 5 and 6 is 33 l_n/h each
2) See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperatures

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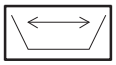
→ PDS 67.525

RXP 200: Dual-channel, VAV master controller

T05181


Y05261

How energy efficiency is improved

Spreading the heating-cooling sequence during night mode and in the case of higher outside temperatures to save energy

Areas of application

Creating a heating-cooling sequence with adjustable zone in combination with a room temperature controller, type TSP 80A, as well as a dual-channel volume flow controller, type RLP 100 F918.

Features

- Controller front panel is printed with circuit diagram for rapid identification of function
- Thermoplastic housing suitable for wall or top-hat rail mounting (rail EN 60715)
- Compressed-air connections with Rp 1/8" female thread
- Low-pressure connections in form of stepped nipples for flexible plastic hose (internal Ø 4 and 6 mm)
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

Technical description

- Supply pressure 1.3 bar ± 0.1
- Three inputs for:
  - outside temperature
  - room temperature
  - setpoint adjustment: 2 outputs for heating and cooling

Type	Description	Air consumption	Weight kg
RXP 200 F001	neutral zone, expansion	40 l_n/h	0.2

Supply pressure [1]	1.3 bar ± 0.1	Neutral zone NZ	0...2 K (variable)
Input pressures		Air delivery	
Connector 3 (room)	0.2...1.0 bar	Connector 2, cooling	6.5 l_n/h
with overflow	0.08...1.16 bar	Connector –, heating	none
Connector 6 (master)		Air recovery	
night expansion	at 0 bar	Connector 2, cooling	none
summer shift	at 0.6...1.3 bar	Connector –, heating	100 l_n/h
Connector +	0.2...1.0 bar	Perm. ambient temp.	0...55 °C
with overflow	0...1.3 bar		
Output pressures		Connection diagram	A05257
Connector 2, cooling	0...1.0 bar	Dimension drawing	M297240
Connector –, heating	0...1.0 bar	Fitting instructions	MV 505398

Accessories

0296936 000* Bracket for rail EN 60715, 35 × 7,5 and 35 × 15

0297354 000* Short screw-in connector R 1/8 for soft plastic tubing of internal dia. 4 mm, four pieces required

*) Dimension drawing or wiring diagram are available under the same number

1) For regulations on the quality of the air supply, especially at low ambient temperatures, see Section 60.

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→ PDS 67.531

RXP 210: Air-volume alarm unit

Y03188

How energy efficiency is improved

Areas of application

Monitoring laboratory fume cupboard as per EN14175 in combination with an air-volume controller, type RLP100 F123, and the RXP 212 fume cupboard operating unit. Zone 1 potentially explosive areas.

Features

- Comparison of sash opening setpoint with actual value of air volume
- Feeding setpoint difference to alarm unit
- Acoustic alarm in the event that the actual value falls below or exceeds the specified value
- Thermoplastic housing suitable for wall or top-hat rail mounting (rail EN 60715)
- Compressed-air connections with Rp 1/8" female thread
- Low-pressure connections in form of stepped nipples for flexible plastic hose (internal Ø 4 and 6 mm)
- ATEX certification for use in Zone 1 potentially explosive areas
- Conformity tested as per EN 13463-1 and EN 1127-1 (Ex II 2 G T6)
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

Technical description

- Supply pressure 1.3 bar ± 0.1
- Response sensitivity 1%

Type	Description	Air capacity [3]	Air consumption [1)]	Weight kg
RXP 210 F001	for monitoring the air flow	180 l_n/h	40 l_n/h	0.2

Supply pressure [2)]	1.3 bar ± 0.1	Response sensitivity	1%
Input pressures		Perm. ambient temp.	0...55 °C
connector 3	0...1.3 bar	Degree of protection	IP 20
connector 6	0.1...0.6 bar		
Output pressures		Connection diagram	A09890
connector 2	0...1.3 bar	Dimension drawing	M297240
connector +	approx. 1.0 bar	Fitting instructions	MV 505381

Accessories

0296936 000* Bracket for rail EN 60715, 35 × 7,5 and 35 × 15

0297354 000* Short screw-in connector R 1/8 for soft plastic tubing of internal dia. 4 mm, four pieces required

0297797 001* Manometer with indication of deviation in air volume

*) Dimension drawing or wiring diagram are available under the same number

1) Extra air consumption when whistle is activated: 180 l_n/h
2) For regulations on the quality of the air supply, especially at low ambient temperatures, see section 60
3) Air output at connector +

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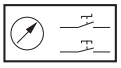
→ PDS 67.535

RXP 212: Pneumatic operating unit


Y05981

How energy efficiency is improved
Permits fume cupboards to be switched off manually in order to save energy.

Areas of application
Monitoring of fume cupboards in combination with an air-volume controller, type RLP 100.

Features
- Alarm function
- Visual monitoring of deviation
- Setpoint of front sash opening is fed to the controller by the TUP 224F901
- Comparison with actual value
- Setpoint is specified to controller via the manual switch on the operating unit
- Aluminium front panel with manual switch, mute button and pressure gauge
- Suitable for panel or wall mounting
- Compressed-air connection on plug nipple for flexible plastic hose (dia. = 4 mm)

Technical description
- Pressure gauge in accuracy class 1.6
- Manual switch for selecting between manual and automatic operation
- Mute button for acknowledging the acoustic alarm

Type	Fitting	Position of manual switch $\dot{V}_{max}$	Positions	Weight kg
RXP 212 F001	vertically	emergency mode; damper fully open	2	0.2
RXP 212 F002	horizontally	emergency mode; damper fully open	2	0.2
RXP 212 F003	vertically	100% air volume, controlled	4	0.2
RXP 212 F004	horizontally	100% air volume, controlled	4	0.2

Manual switch and *Mute* button:			**Pressure gauge**:	
Nominal flow Q_N	(1.0 bar → 0)	3.0 m^3_n/h	Error	Class 1,6
Max. leakage rate	(2.5 bar → 0)	1.2 l_n/h	Max. operating pressure	1.4 bar
Max. pressure/differential pressure		2.5 bar		

Permissible ambient temp.		0...55 °C	Dimension drawing	M03226
Wiring diagram	F001/F002	A04869	Fitting instructions	MV 505314
	F003/F004	A08539		

Accessories
0297780 001* Housing, including two screws, for wall mounting; not tested for explosion-free zones.

*) Dimension drawing or wiring diagram are available under the same number

For regulations on the quality of the air supply, especially at low ambient temperatures, see Section 60

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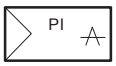
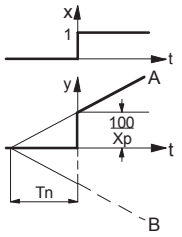
→ PDS 68.051

RCP 10, 11: PI-controller

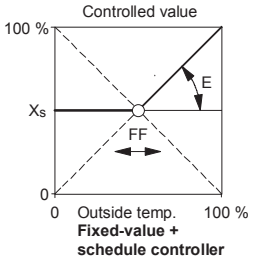


Y03248



PI-controller

B02214



Fixed-value + schedule controller

B03257

How energy efficiency is improved

Enables the implementation of individually optimised controls for maximum efficiency in pneumatic installations.

Areas of application

Pneumatic control in ventilation and air-conditioning equipment of temperature, pressure, pressure differential, humidity and flow rate in combination with appropriate transducers.

Features

- PI fixed-value controller
- PI fixed-value/schedule controller
- Controllers can be used universally for the most varied of applications
- Housing, rack and front doors made of thermoplastic
- Suitable for wall or panel mounting
- Functional description and commissioning help inserted in front door
- Front panel with adjusters and 3 covered recesses for plug-in pressure gauge (XMP) making commissioning easier
- Setpoint adjuster X_S adjustable manually with scales for all Centair ranges
- All settings very easy to make with coin and % scale
- M4 measuring connections, control action adjustable (delivered with control action B)
- Rp 1/8" female thread
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

Technical description

- Supply pressure 1.3 bar ± 0.1
- Easily accessible adjusters for X_S (setpoint), X_{P4} (P range), T_n (reset time), E (influence) and FF (schedule start point)
- Inputs for:
  - remote setpoint adjustment
  - controlled variable
  - command variable
- Outputs for:
  - output pressure for dampers or valve actuator

Type	Description	Air capacity l_n/h	Air consumption [1] l_n/h	Weight kg
RCP 10 F001	fixed-value PI-controller	400	30	0.7
RCP 11 F001	fixed-value/schedule PI controller	400	30	0.7

RCP 10:		**RCP 11**:	
Setpoint X_S	0...100%	Setpoint X_S	0...100%
Remote adjust. of setpoint	0...100%	Remote adjustment of setpoint	0...100%
P-band X_{P4}	0...100%	P-band X_{P4}	0...100%
Reset time T_n	1...15 min	Reset time T_n	1...15 min
		Shift starting point FF	0...100%
		Influence E	0.25...3

Supply pressure [2]	1.3 bar ± 0.1	Connection diagram, RCP 10	A02690
Input pressures	0.2...1.0 bar	Connection diagram, RCP 11	A02691
Output pressures	0.2...1.0 bar	Dimension drawing	M297100
Permissible amb. temp.	0...55 °C	Fitting instructions	MV 3246

Accessories

0297103 000 Additional bag of scales with 8 different scales according to the transducer used.
0297133 000 Universal scales for setpoint adjuster X_S; gradation 120, 80/160, 50/100, 30/60

1) Without transducer; air consumption for transducer connection 4 is 33 l_n/h more.
2) See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperatures.

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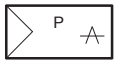
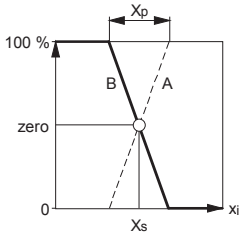
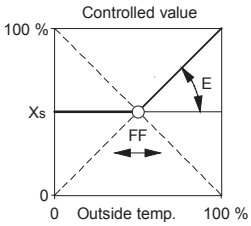
T03054



Y03247



P-controller
B03811



Fixed-value + schedule controller
B03257

→ PDS 68.101

RCP 20, 21: P-controller

How energy efficiency is improved
Enables the implementation of individually optimised controls for maximum efficiency in pneumatic installations.

Areas of application
Pneumatic control in ventilation and air-conditioning equipment of temperature, pressure, pressure differential, humidity and flow rate in combination with appropriate transducers.

Features
- P fixed-value controller
- P fixed-value/schedule controller
- Controllers can be used universally for the most varied of applications
- Housing, rack and front doors made of thermoplastic
- Suitable for wall or panel mounting
- Functional description and commissioning help inserted in front door
- Front panel with adjusters and 3 covered recesses for plug-in pressure gauge (XMP) making commissioning easier
- Setpoint adjuster X_S adjustable manually with scales for all Centair measuring ranges
- All settings very easy to make with a coin and % scale
- M4 measuring connections, control action adjustable (delivered with control action B)
- Compressed-air connections Rp 1/8" female thread
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

Technical description
- Supply pressure 1.3 bar ± 0.1
- Easily accessible adjusters for X_S (setpoint), X_{P4} (P range), T_n (reset time), E (influence) and FF (schedule start point)
- Inputs for:
  - remote setpoint adjustment
  - controlled variable
  - command variable
- Outputs for:
  - output pressure for dampers or actuator

Type	Description	Air capacity [1] l_n/h	Air consumption [2] l_n/h	Weight kg
RCP 20 F001	fixed-value P-controller, min. limiter	400	40	0.7
RCP 21 F001	fixed-value + schedule P-controller	400	60	0.7

RCP 20:		**RCP 21**:	
Setpoint X_S	0...100%	Setpoint X_S	0...100%
Remote adjust. of setpoint	0...100%	Remote adjustment of setpoint	0...100%
P-band X_{P3}	0...100%	P-band X_{P3}	0...100%
Zero point	0...100%	Zero point	0...100%
Limiter B	0...100%	Shift starting point FF	0...100%
		Influence E	0.25...3

Supply pressure [3]	1.3 bar ± 0.1	Connection diagram, RCP 20	A02686
Input pressures	0.2...1.0 bar	Connection diagram, RCP 21	A02687
Output pressures	0.2...1.0 bar	Dimension drawing	M297100
Permissible amb. temp.	0...55 °C	Fitting instructions	MV 3246

Accessories

0297103 000	Additional bag of scales with 8 different scales according to the transducer used.
0297133 000	Universal scales for setpoint adjuster X_S; gradation 120, 80/160, 50/100, 30/60

1) 200 ln/h for RCP 20 with limiter B activated.
2) Without transducer; air consumption for transducer connection 3 is 33 ln/h more.
3) See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperatures.

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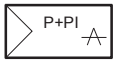
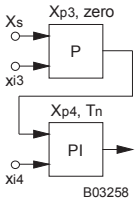
→ PDS 68.151

RCP 30, 31: P+PI cascade controller



Y03249



B03258

How energy efficiency is improved

Enables the implementation of individually optimised controls for maximum efficiency in pneumatic installations.

Areas of application

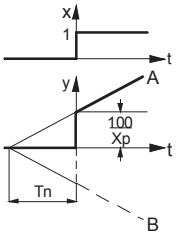
Room-temperature control (P) with supply-air temperature as auxiliary control loop (PI) in ventilation and air-conditioning equipment. Pneumatic control of temperature, pressure, differential pressure, humidity and flow rate in combination with appropriate transducers.

Features

- P+PI cascade controller
- P+PI cascade schedule controller
- Controllers can be used universally for the most varied of applications
- Housing, rack and front doors made of thermoplastic
- Suitable for wall or panel mounting
- Functional description and commissioning help inserted in front door
- Front panel with adjusters and 3 covered recesses for plug-in pressure gauge (XMP) making commissioning easier
- Setpoint adjuster X_S adjustable manually with scales for all Centair measuring ranges
- All settings very easy to make with a coin and % scale
- M4 measuring connections, control action adjustable (delivered with control action B)
- Compressed-air connections Rp 1/8" female thread
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

Technical description

- Supply pressure 1.3 bar ± 0.1
- Easily accessible adjusters for X_S (setpoint), X_{P4} (P range), T_n (reset time), E (influence) and FF (schedule start point)
- Inputs for:
  - remote setpoint adjustment
  - main controlled variable
  - auxiliary controlled variable
  - command variable
- Outputs for:
  - output pressure for dampers or actuator



PI-controller

B02214

Type	Description	Air capacity l_n/h	Air consumption [1] l_n/h	Weight kg
RCP 30 F001	fixed-value controller, P+PI	400	70	0.7
RCP 31 F001	fixed-value + schedule controller, P+PI	400	90	0.7

RCP 30:		**RCP 31**:	
Setpoint X_S	0...100%	Setpoint X_S	0...100%
Remote adjust. of setpoint	0...100%	Remote adjustment of setpoint	0...100%
P-band X_{P3}, X_{P4}	0...100%	P-band X_{P3}, X_{P4}	0...100%
Reset time T_n	1...15 min	Reset time T_n	1...15 min
Zero point	0...100%	Zero point	0...100%
Limiter B	0...100%	Limiter B	0...100%
		Shift starting point FF	0...100%
		Influence E	0.25...3

Supply pressure [2]	1.3 bar ± 0.1	Connection diagram, RCP 30	A02688
Input pressures	0.2...1.0 bar	Connection diagram, RCP 31	A02689
Output pressures	0.2...1.0 bar	Dimension drawing	M297100
Permissible amb. temp.	0...55 °C	Fitting instructions	MV 3246

Accessories

0297103 000 Additional bag of scales with 8 different scales according to the transducer used.
0297133 000 Universal scales for setpoint adjuster X_S; gradation 120, 80/160, 50/100, 30/60

1) Without transducer; air consumption for transducer connections 3 and 4 is 33 ln/h more in each case.
2) See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperatures.

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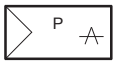
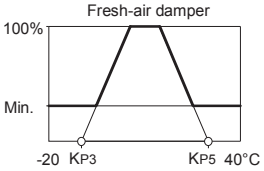
→ PDS 68.210

RCP 40: Damper control unit





Trapezium diagram
B03259

How energy efficiency is improved

Enables the implementation of individually optimised controls for maximum efficiency in pneumatic installations.

Areas of application

Activation of a temperature-dependent outside-air/return-air damper in combination with a transducer in ventilation and air-conditioning equipment. Control of the mixed-air temperature with two separate transducers, e.g. in winter operating mode.

Features

- Control of fresh air damper, depending on trapezium diagram for the outdoor temperature
- Housing, rack and front doors made of thermoplastic
- Suitable for wall or panel mounting
- Functional description and commissioning help inserted in front door
- Front panel with adjusters and 3 covered recesses for plug-in pressure gauge (XMP) making commissioning easier
- All settings very easy to make with a coin and % scale
- M4 measuring connections, control action adjustable (delivered with control action B)
- Compressed-air connections Rp 1/8" female thread
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

Technical description

- Supply pressure 1.3 bar ± 0.1
- Easily accessible adjusters for KP_{3+5} (schedule start point), XP_{3+5} (P range)
- Inputs for:
  - control action
- Outputs for:
  - output pressure for damper drive

Type	Description	Air Capacity l_n/h	Air consumption [1] l_n/h	Weight kg
RCP 40 F001	trapezium diagram	400	70	0.7

Supply pressure [2]	1.3 bar ± 0.1	Permissible amb. temp.	0...55 °C
Input pressures	0.2...1.0 bar		
Output pressures	0.2...1.0 bar	Connection diagram	A02692
Shift starting pt. KP_3, KP_5	0...100%	Dimension drawing	M297100
P-band X_{P3}, X_{P5}	0...100%	Fitting instructions	MV 3247
Minimum limiter B	0...100%		

Accessories

0297103 000 Additional bag of scales with 8 different scales according to the transducer used.
0297133 000 Universal scales for setpoint adjuster X_S; gradation 120, 80/160, 50/100, 30/60

1) Without transducer; air consumption for transducer connections 3 and 5 is 33 ln/h more in each case.
2) See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperatures.

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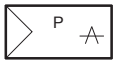
→ PDS 68.240

RPP: P-controller



Y03247

How energy efficiency is improved

Enables the implementation of individually optimised controls for maximum efficiency in pneumatic installations.

Areas of application

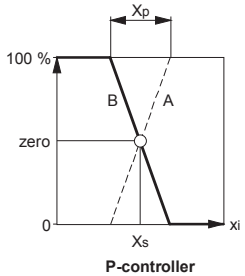
Pneumatic control of temperature, pressure, differential pressure, humidity and flow rate in combination with appropriate transducer.

Features

- P fixed-value controller for universal use
- Application as switching relay (On/Off controller) possible
- Controller front panel is printed with circuit diagram for rapid identification of function
- Thermoplastic housing suitable for wall or top-hat rail mounting
- Compressed-air connections with Rp 1/8" female thread
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

Technical description

- Supply pressure 1.3 bar ± 0.1
- Easily accessible adjusters for X_S (setpoint), X_P (P range), zero point
- Inputs for:
  - actual value
  - remote setpoint adjustment
- Outputs for:
  - output pressure for damper drive

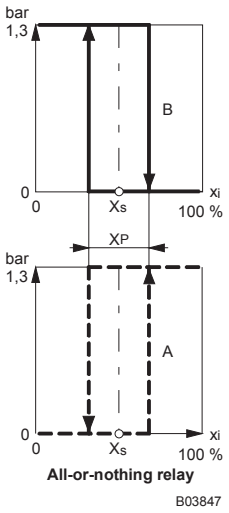


P-controller

B03811

Type	Description	Air capacity l_n/h	Air consumption [1] l_n/h	Weight kg
RPP 20 F001	P-fixed-value controller [2]	400	40	0.2

Supply pressure [3]	1.3 bar ± 0.1	Zero point	0...100%
Input pressures	0.2...1.0 bar	Permissible amb. temp.	0...55 °C
Output pressures	0.2...1.0 bar		
Setpoint X_S	0...100%	Connection diagram	A02886
Remote adjustment of setpoint	0...100%	Dimension drawing	M297107
P-band X_P	0...100%	Fitting instructions	MV 3248



All-or-nothing relay

B03847

Accessories

0296936 000* Bracket for rail EN 50022, 35 × 7,5 and 35 × 15
0297103 000 Additional bag of scales with 8 different scales according to the transducer used.
0297113 000* Manometer bracket for two XMP manometers, including fixing material, MV 3255
0297091 000* Cover for unused manometer apertures when 0297113 is used.
0297133 000 Universal scales for setpoint adjuster X_S, gradation 120, 80/160, 50/100, 30/60

*) Dimension drawing or wiring diagram are available under the same number

1) Without transducer; air consumption for transducer connection 3 is 33 ln/h more.
2) Can be used as a switching relay (on/off controller) by transposing two tubes.
3) See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperatures.

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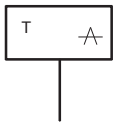
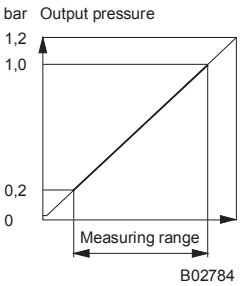
→ PDS 68.311

TUP 214...262 F001: Stem-type temperature transducer





How energy efficiency is improved

Accurate recording of temperature in pneumatic installations for optimal control of HVAC systems.

Areas of application

Pneumatic temperature measurement and/or control of liquid or gaseous media in tanks, boilers or pipelines in combination with pneumatic control equipment (Centair).

Features

- Part of the Centair family of systems
- Immersion stem made of nickel filled with expansion fluid
- Conversion of temperature into a standard 0.2 to 1.0 bar pneumatic signal
- Compressed-air connections with Rp 1/8" female thread

Technical description

- Supply pressure 1.3 bar ± 0.1
- Nozzle/ball system
- Linearity of output signal <2%

Type	Measuring range °C	Length of stem total mm	Length of stem active mm	Temp. range of sensor °C	Weight kg
TUP 214 F001	–20...40	304	201	–25...70	0.16
TUP 224 F001	5...35	304	201	–25...70	0.16
TUP 242 F001	0...120	214	112	–25...150	0.15
TUP 262 F001	80...200	214	112	–25...210	0.15

Supply pressure [1]		Time constant in air	0.5 m/s 3.2 min
via external restrictor ø 0,2 mm	1.3 ± 0.1 bar		3.0 m/s 1.6 min
Output pressure	0.2...1.0 bar	Influence of temp. at head	
Air consumption	33 l_n/h	TUP 214, TUP 224	0,07 K/K
Linearity	< 2%	TUP 242, TUP 262	0,12 K/K
Time constant in water		Permissible ambient temp.	0...70 °C
without sheath	12 s	Connection diagram	A02781
with sheath	70 s	Dimension drawing	M297632
sheath and heat-conducting paste	25 s	Fitting instructions	MV 23210

Accessories

0364439 300* LW7 sheath of brass, 300 mm, for TUP 214/224 with R½ thread; max. 16 bar [2].
0364439 225* LW7 sheath of brass, 225 mm, for TUP 242/262 with R½ thread; LW7 max. 16 bar [2].
0226811 300* LW7 sheath of stainless-steel, 300 mm, for TUP 214/224 with G½ A; max. 25 bar [2].
0226811 225* LW7 sheath of stainless-steel, 225 mm, for TUP 242/262 with G½ A; max. 25 bar [2].
0364263 000* Welding bushing of steel, with G½ female thread; flat seal of copper [2].
0364264 000* Welding bushing of stainless-steel, with G½ female thread; flat seal of copper and Teflon (for aggressive media) [2].
0297631 000* Fixing flange of thermoplastic for direct fitting onto air duct.

*) Dimension drawing for accessory is available under the same number.

1) In the RCP and RPP 20 controllers, the restrictors ø 0,2 mm are fitted at inputs 3 and 4.
See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperatures.
2) See page 29.01 or 29.001 for further technical details.

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→ PDS 68.330

TSUP: Room-temperature transducer

How energy efficiency is improved

Accurate recording of room temperature in pneumatic installations for optimal control of HVAC systems.

Areas of application

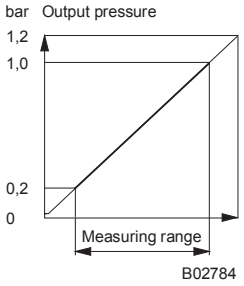
Continuous pneumatic measurement and/or control of room temperature in combination with pneumatic control equipment (Centair).

Features

- Part of the Centair family of systems
- Conversion of room temperature into a standard 0.2 to 1.0 bar pneumatic signal
- Lid in thermoplastic with grey/white frame (RAL 9002) and pure-white front panel (RAL 9010)
- Compressed-air connection on plug nipple for flexible plastic hose int. ø 4 mm
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

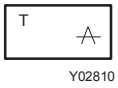
Technical description

- Supply pressure 1.3 bar ± 0.1
- Nozzle/ball system
- Linearity of output signal <2%



Type	Measuring range °C	Output pressure bar	Weight kg
TSUP 1 F001	5...35	0,2...1,0	0.17

Supply pressure [1]		Permissible ambient temp.	0...70 °C
via external restrictor ø0,2 mm	1.3 ± 0.1 bar		
Air capacity, air consumption	33 l_n/h	Connection diagram	A02781
Linearity	< 2%	Dimension drawing	M303048
Time constant (0,2 m/s)	5 min	Fitting instructions	MV 23153



Accessories

0296218 000* Buckle-proof adaptor for push-on fitting.
0296990 000* Buckle-proof adaptor for screw-type fitting; see MV 7322.
0303124 000* Recessed junction box.
0310315 000* Surface junction box.

*) Dimension drawing or wiring diagram are available under the same number

1) In the RCP and RPP 20 controllers, the restrictors (ø0,2 mm) are fitted at inputs 3 and 4.
See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperatures.

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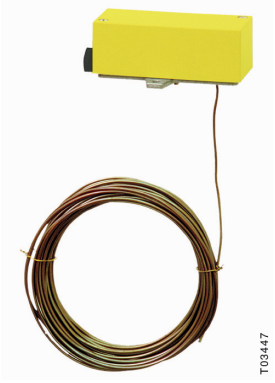
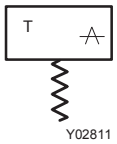
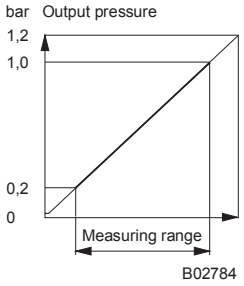
→ PDS 68.351

TMUP: Average-temperature transducer







How energy efficiency is improved

Accurate recording of temperature in pneumatic installations for optimal control of HVAC systems.

Areas of application

Measurement and/or control of average temperature value in air ducts in combination with pneumatic control equipment (Centair).

Features

- Part of the Centair family of systems
- Capillary tube filled with expansion fluid (10 m long)
- Conversion of temperature into a standard 0.2 to 1.0 bar pneumatic signal
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

Technical description

- Supply pressure 1.3 bar ± 0.1
- Nozzle/ball system
- Linearity of output signal <2%

Type	Measuring range °C	Capillary tube m	Temp. range of sensor °C	Weight kg
TMUP 210 F001	–20...40	10	–25...70	0.36
TMUP 220 F001	5...35	10	–25...70	0.36

Supply pressure [1]			Influence of temp. at instrument head	0.08 K/K
via external restrictor ø0,2 mm		1.3 ± 0.1 bar	Permissible ambient temp.	0...70 °C
Output pressure		0.2...1.0 bar		
Air capacity, air consumption		33 l_n/h	Connection diagram	A02781
Linearity		< 2%	Dimension drawing	M297633
Time constant in air	0.5 m/s	1.0 min	Fitting instructions	MV 23211
	3.0 m/s	0.5 min		

Accessories

0303167 000* Five brackets for fitting the capillary tubing.

*) Dimension drawing or wiring diagram are available under the same number

1) In the RCP and RPP 20 controllers, the restrictors (ø0,2 mm) are fitted at inputs 3 and 4.
See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperatures.

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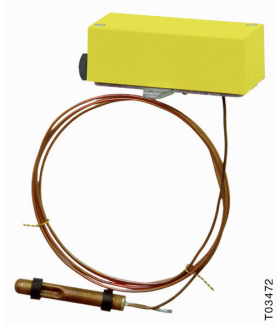
→ PDS 68.371

TWUP: Outdoor-temperature transducer



How energy efficiency is improved

Accurate recording of temperature in pneumatic installations for optimal control of HVAC systems.

Areas of application

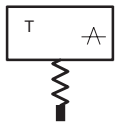
Pneumatic measurement and/or control of outside temperature in combination with pneumatic control equipment (Centair).

Features

- Part of the Centair family of systems
- Capillary tube and cartridge filled with expansion fluid
- Conversion of temperature into a standard 0.2 to 1.0 bar pneumatic signal

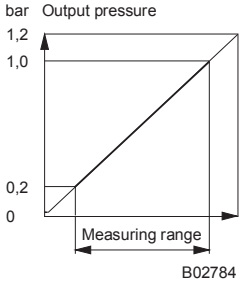
Technical description

- Supply pressure 1.3 bar ± 0.1
- Nozzle/ball system
- Linearity of output signal <2%



Type	Measuring range °C	Cartridge ø mm	Capillary tube m	Sensor temp. °C	Weight kg
TWUP 210 F001	–20...40	9	1.5	–25...70	0.24
TWUP 220 F001	5...35	9	1.5	–25...70	0.24

Supply pressure [1]		Time constant in air	
via external restrictor ø0,2 mm	1.3 ± 0.1 bar	0,5 m/s	3.2 min
Output pressure	0.2...1.0 bar	3,0 m/s	1.6 min
Air capacity, air consumption	33 l_n/h		
Linearity	< 2%	Influence of temp. at instrument head	0.1 K/K
		Permissible ambient temp.	0...70 °C
Time constant in water			
without sheath	12 s	Connection diagram	A02781
with sheath	70 s	Dimension drawing	M297634
sheath plus heat-conducting paste	25 s	Fitting instructions	MV 23212



Accessories

0364440 120* LW15 pocket of brass, 120mm, with R½ thread; 16bar[)]
0364258 120* LW15 pocket of inox, 120mm, with G½ thread; 25bar; bushing (0364140) also required [2)]
0364140 000* Support to relieve pressure on capillary tube in sheath
0303212 000* Sensor holder for duct mounting

*) Dimension drawing or wiring diagram are available under the same number

1) In the RCP and RPP 20 controllers, the restrictors (ø0,2 mm) are fitted at inputs 3 and 4. See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperatures.
2) For further technical details, see page 29.01 or 29.001

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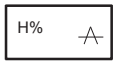
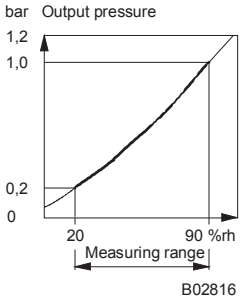
→ PDS 68.410

HSUP: Room transducer for relative humidity



Y02815



B02816

How energy efficiency is improved

Accurate recording of air humidity in pneumatic installations for optimal control of HVAC systems.

Areas of application

Continuous measurement and/or control of relative humidity in combination with pneumatic control equipment (Centair), e.g. in rooms.

Features

- Part of the Centair family of systems
- Conversion of relative humidity into a standard 0.2 to 1.0 bar pneumatic signal
- Lid in thermoplastic with grey/white frame (RAL 9002) and pure-white front panel (RAL 9010)
- Compressed-air connection on plug nipple for flexible plastic hose int. ø 4 mm
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

Technical description

- Supply pressure 1.3 bar ± 0.1
- Nozzle/ball system
- Linearity of output signal <2%

Type	Measuring range %rh	Output pressure bar	Weight kg
HSUP 1 F001	20...90	0.2...1.0	0.17

Supply pressure [1]		Effect of temperature	–0.5 %rh/K
(via ext. restrictor of ø0,2 mm)	1.3 ± 0.1 bar	Permissible ambient temp.	10...40 °C
Air capacity, air consumption	33 l_n/h		
Max. hysteresis	5 %rh	Connection diagram	A02782
Linearity	see characteristic	Dimension drawing	M303048
Time constant (0,2 m/s)	approx. 10 min	Fitting instructions	MV 2427

Accessories

0296218 000* Buckle-proof adaptor for push-on connection
0296990 000* Buckle-proof adaptor for screw-on connection, MV 7322
0303124 000* Recessed junction box
0310315 000* Surface junction box

*) Dimension drawing or wiring diagram are available under the same number

1) In the RCP and RPP 20 controllers, the restrictors (ø0,2 mm) are fitted at inputs 3 and 4.
See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperatures.

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→ PDS 68.421

HTP: Duct transducer for relative humidity

How energy efficiency is improved

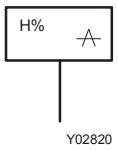
Accurate recording of air humidity in pneumatic installations for optimal control of HVAC systems.

Areas of application

Continuous measurement and/or control of relative humidity in combination with pneumatic control equipment, e.g. in ducting.

Features

- Part of the Centair family of systems
- Conversion of relative air humidity into a standard 0.2 to 1.0 bar pneumatic signal
- Sensor tube made of glass-fibre-reinforced thermoplastic
- Measuring element consists of temperature-compensated humidity sensor with stabilised artificial textile tape
- Fixing flange supplied with seal for duct and wall mounting
- Compressed-air connection Rp 1/8"
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

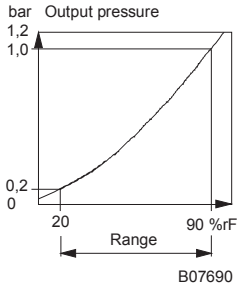


Technical description

- Supply pressure 1.3 bar ± 0.1
- Nozzle/ball system
- Hysteresis of output signal <4% rH

Type	Range %rh	Output pressure bar	Weight kg
HTP 151 F001	20...90	0.2...1.0	0.3

Supply pressure[1)]		Permissible ambient temp.	0...70 °C
via ext. restrictor ø0,2 mm	1.3 bar ± 0.1	Effect of temperature	compensated
Air capacity, air consumption	33 l_n/h		
Linearity	see characteristic	Wiring diagram	A07692
Hysteresis	4 %rh	Dimension drawing	M07694
Time constant at 0,2 m/s	approx. 3 min	Fitting instructions	MV 505514
Max. air speed	10 m/s		



1) In the RCP/RPP 20 standard controllers, the restrictors (ø0,2 mm) are fitted at inputs 3 and 4. For regulations concerning the quality of the air supply, especially at low ambient temperatures, see Section 60.

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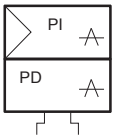
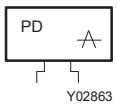
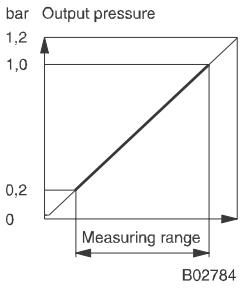
→ PDS 68.451

RUP: Differential-pressure controller/transducer







How energy efficiency is improved

Efficient control of the duct pressure for optimised system operation.

Areas of application

Measurement and/or control of differential pressures in positive-pressure or negative-pressure areas, e.g. in air ducts in combination with pneumatic control equipment (Centair) or with air-volume controllers in air-conditioning systems.

Features

- Part of the Centair family of systems
- Conversion of pressure differentials into standard 0.2 to 1.0 bar signal by a pressure sensor
- PI controller
- Easy to use as PI controller is not in operation if the application is only as a transducer
- Ranges up to 500 and 4000 Pa
- Controller front panel is printed with circuit diagram for rapid identification of function
- Thermoplastic housing suitable for wall or top-hat rail mounting
- Compressed-air connections with Rp 1/8" female thread
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

Technical description

- Supply pressure 1.3 bar ± 0.1
- Nozzle/ball system
- Linearity of output signal 2%
- Hysteresis of output signal 0.5%

Type	Measuring range Pa	Output pressure bar	Weight kg
RUP 105 F001	0...500	0.2...1.0	0.15
RUP 140 F001	0...4000	0.2...1.0	0.15

Supply pressure	1.3 ± 0.1 bar	Linearity	2%
Transducer via ext. restrictor ø0,2 mm [1]		Hysteresis	0.5%
Air capacity	100 l_n/h	Max. pressure (low-press. connections)	100 mbar
Air consumption	50 l_n/h	Permissible ambient temp.	0...55 °C
Transducer: air capacity, air consumption	33 l_n/h		
P-band	400% (fixed)	Wiring diagram	A08789
Setpoint	0...100%	Dimension drawing	M297240
Integral action time	0.5...3 s	Fitting instructions	MV 505658
Setpoint remote adjustment	0.2...1.0 bar		

Accessories

0297354 000* Short R 1/8 connector for soft plastic tubing, internal ø4 mm.
0296936 000* Bracket for EN 60715, 35 × 7,5 and 35 × 15 rails

*) Dimension drawing or wiring diagram are available under the same number

1) In the RCP and RPP 20/RPJP 80 controllers, the restrictors (ø0,2 mm) are fitted at inputs 3 and 4.
See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperatures.

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→ PDS 68.470

XMP: Manometer for indicating measured values

Y03334

Areas of application
Displaying measured values in pneumatic control equipment.

Features
- Part of the Centair family of systems
- Several versions for displaying different values and ranges
- Pressure gauges are suitable for incorporating into standard controllers in the RCP product range
- Accessories make it possible to build into various controllers or panels
- Removable Plexiglas cover for readjusting the pointer
- Connection via thread G 1/8" A or 2.3 mm ø plug nipple
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

Technical description
- Pressure gauge in accuracy class 1.6

Type	Scale range	Rough scale	Use	Weight kg
XMP 020/40 F001	–20...40 °C	0,2...1.0 bar	temperature	0.05
XMP 5/35T F001	5...35 °C	0,2...1.0 bar	temperature	0.05
XMP 0/120T F001	0...120 °C	0,2...1.0 bar	temperature	0.05
XMP 80/200 F001	80...200 °C	0,2...1.0 bar	temperature	0.05
XMP 20/90F F001	20...90 %rf	0,2...1.0 bar	rel. humidity	0.05
XMP 0/20AF F002	0...20 g/kg	0,2...1.0 bar	abs. humidity	0.05
XMP 0/5ND F001	0...5.0 mbar	0,2...1.0 bar	low pressure	0.05
XMP 5/10ND F001	5...10 mbar	0,2...1.0 bar	low pressure	0.05
XMP 0/100E F001	0...100%	0,2...1.0 bar	standard signal	0.05
XMP 0/16B F001	0...1.6 bar	–	output pressure	0.05
XMP 50/50P F001	–50...50 Pa 1)	–	low pressure	0.05

Accuracy	Class 1,6	Permissible ambient temp.	0...55 °C
Max. operating pressure	1.4 bar		
XMP 0/16B	1.6 bar	Dimension drawing	M297045

Accessories
0226561...565 Scales for indicating the position of the valve; block of 25 labels
0226569 000 Universal scales, gradation 120, 50/100, 30/60, 80/160, $\dot{V} = \sqrt{\Delta p}$, block of 25 labels
0226584 000 Scales for indicating the volume flow; block of 25 labels
0297044 000* Accessories for panel fitting

*) Dimension drawing or wiring diagram are available under the same number

1) Pressure gauge for RLP 100 F901/F915 room-pressure controller; indication of room press. Double scale: –20...+20/–50...+50 Pa = 0,2...1,0 bar. The range can be selected by ticking one of two boxes on the scale.

For accessory details, see next page >>>

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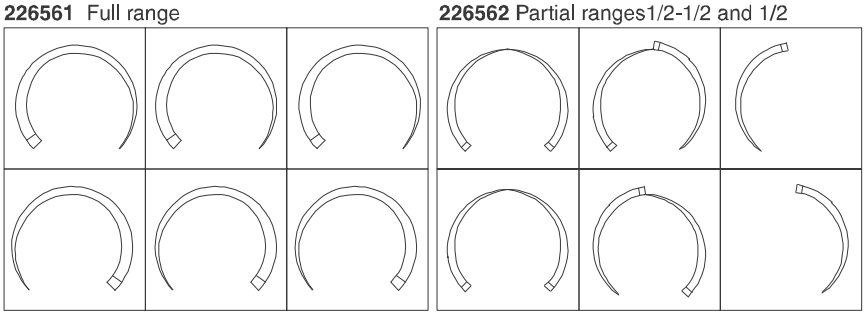
→ PDS 68.470

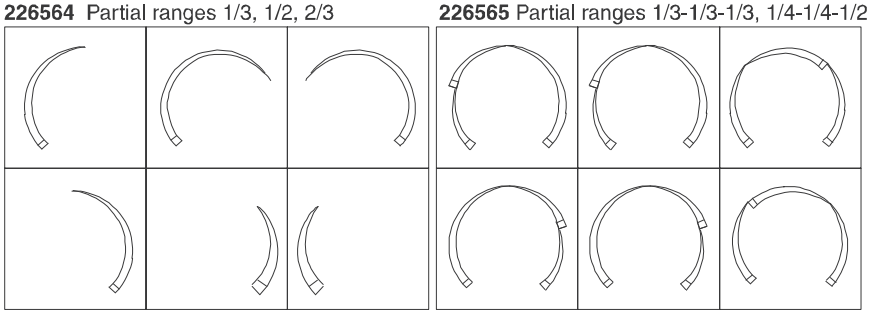
226561 Full range

226562 Partial ranges1/2-1/2 and 1/2



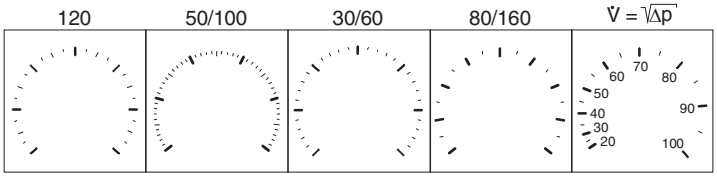
226564 Partial ranges 1/3, 1/2, 2/3

226565 Partial ranges 1/3-1/3-1/3, 1/4-1/4-1/2



B03331b

226569 Universal scales for self-inscription



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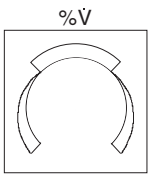
226584



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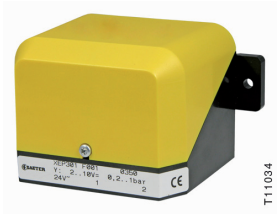
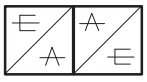
→ PDS 69.010

XEP: E-P and P-E converter



Y02120


Y02187

How energy efficiency is improved

Combines the advantages of electronic controls with those of pneumatic controls for optimal system operation.

Areas of application

Connecting module between electronic and pneumatic controllers. Electronic activation of pneumatic drives in HVAC systems.

Features

- Available with or without electric amplifier for use in combination with devices with small air capacity
- XEP 301 has an electric amplifier and p/e converter for bi-directional conversion of signals
- Simplest integration of standard pneumatic signals at automation level
- Compressed-air connections with Rp 1/8" female thread
- Thermoplastic housing suitable for wall or top-hat rail mounting (rail EN60715)
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment.

Technical description

- Power supply 24 V~/=
- Linearity e/p <2%
- Linearity p/e 0.3%

Type	Curve input	Curve output	Air capacity l_n/h	Voltage	Weight kg
E-P converter without electric pre-amplifier					
XEP 1 F001	2...10 V	0.2...1.0 bar	19 1)	–	0.24
XEP 1 F002	4...20 mA	0.2...1.0 bar	19 1)	–	0.24
XEP 10 F001	2...10 V	0.2...1.0 bar	400	–	0.26
XEP 10 F002	4...20 mA	0.2...1.0 bar	400	–	0.26
E-P converter with electric pre-amplifier					
XEP 110 F001	2...10 V	0.2...1.0 bar	400	24 V~/=	0.27
XEP 110 F011	0...10 V	0.2...1.0 bar	400	24 V~/=	0.27
E-P converter with electric pre-amplifier and additional P-E converter					
XEP 301 F001	2...10 V 0.2...1.0 bar	0.2...1.0 bar 2...10 V	16 2)	24 V~/=	0.26
XEP 301 F011	0...10 V 0.2...1.0 bar	0.2...1.0 bar 0...10 V	16 2)	24 V~/=	0.26

		XEP 1, XEP 10	XEP 110	XEP 301
Power supply	24 V~	–	± 20%, 50...60 Hz	± 20%, 50...60 Hz
	24 V =		± 20%	+20%, –10%
Power consumption		–	2 VA	2 VA
Input resistance		590 Ω	100 kΩ	100 kΩ
F002 (current input)		120 Ω	–	–
Temperature influence		± 0.04%/K	± 0.02%/K	± 0.05%/K
Perm. ambient temp.		0...55 °C	0...50 °C	0...55 °C
Linearity E-P		< 2%	1%	1% 2)
Air consumption		20 ln/h	20 ln/h	16 ln/h 2)
Linearity P-E		–	–	0.3%
Max. load P-E		–	–	> 5 kΩ

Supply pressure 3)	1.3 ± 0.1 bar
Control action	A (direct)
Perm. ambient humidity	< 90 %rh
Degree of protection	IP 54 (EN 60529)

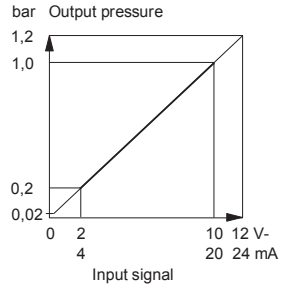
Connection diagram	
XEP 1	A02055
XEP 10	A02057
XEP 110	A02056
XEP 301	A02058
Dimension drawing	M274950
Fitting instructions	MV 505428

1) Normally, supply is via an in-built restrictor in connection 1. If there is continuous air recovery from RCP or RLP (connection 6), connection 1 should be closed off.

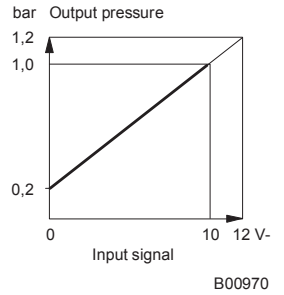
2) Normally, supply is from another bleed-off Sauter device with restrictor of Ø 0,14 mm (e.g. RLP). In autonomous mode with a line restrictor (e.g. XP 4), or in circuitry supplied by TSFP 80 (restrictor of Ø 0,2 mm), the following applies: air capacity = air consumption = 33 ln/h; linearity 2%; zero offset approx. +3%, can be corrected as per MV 505428.

3) See Section 60 for regulations on the quality of the air supply, particularly at low ambient temperatures.

E-P curve F001, F002



E-P curve F011



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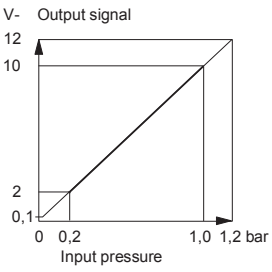
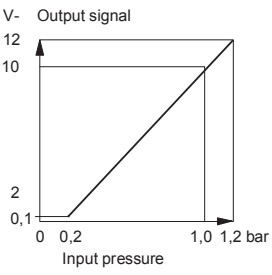
P-E curve XEP 301 F001



P-E curve XEP 301 F011



B00971

Accessories see next page >>>

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→ PDS 69.010

Accessories

0274700 000* Fixing bracket for AVP 142, AV 43, AV 44 (including connecting parts to the drive).
0296936 000* Fixing bracket for rail EN 50022, 35 × 7,5 and 35 × 15
0370560 011 Cable screw fitting (Pg 11) of glass-fibre-reinforced polyamide, grey, with brass nut.

*) Dimension drawing or wiring diagram are available under the same number

→ PDS 69.150

XHP: Pneumatic manual switch

Areas of application

Manual change-over of pneumatic signal lines.

Features

- Four stages
- Can be built into panel or wall-/rail-mounted

Technical description

- k_V (water) = 0.11 m³/h
- Nominal flow rate = 3 $m^3{}_n$/h

T03069

Y03321

Type	k_V-value water Δp = 1 bar	Nominal flow Q_N 1 bar with respect to atmosphere	Weight kg
XHP 3 F001	0.11 m³/h	3.0 $m^3{}_n$/h	0.03

Max. leakage rate (2.5 bar → 0)	1.2 l_n/h	Connection diagram	A03322
Permissible pressure or differential pressure	2.5 bar	Dimension drawing	M297193
		Fitting instructions	none
Permissible ambient temperature	0...70 °C		

Accessories

0296936 000* Fixing bracket for rail EN 60715, 35 × 20.5 and 35 × 15.
0296937 000* Fixing bracket for C-rail EN 60715-C 20 and for wall mounting.
0296990 000* Buckle-proof adaptor for screw-type installation, MV 7322.
0296218 000* Buckle-proof adaptor for push-on installation.

*) Dimension drawing or wiring diagram are available under the same number

Universal scale (enclosed)	'Open-closed' scale (fitted)	'Manual-closed' scale (rear)	Operation
1	closed	closed	Passage from 1 to 0
2	Aut.	Aut.	Passage from 2 to 0
3	open		Passage from 3 to 0
4	Stop	Stop	No passage to 0

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→ PDS 69.400

XP : Pneumatic restrictor

Areas of application
Air supply of bleed-off pneumatic devices, e.g. transmitters, transducers and controllers.

Features
- As air supply if no alternative is available

Technical description
- Supply pressure 1.3 bar ± 0.1
- Nominal flow rate 33 l_n/h

Type	Restrictor Ø mm	Type of connection	Weight kg
XP22 F001	0.2	for copper or hard plastic pipes of Ø 6 mm (external)	0.09
XP4 F002	0.2	for soft plastic tubing of Ø 4 mm (internal)	0.005
XP41 F001	0.2	for hard plastic tubing of Ø 4 mm (internal)	0.01

Supply pressure [2]	1.3 ± 0.1 bar	Dimension drawing	XP22	M193234
Nominal flow	33 l_n/h		XP4	M277901
			XP41	M277936
Permissible ambient temp.	0...70 °C	Fitting instructions		none

1) In the RCP and RPP 20 controllers, the restrictors (Ø 0,2 mm) are fitted at inputs 3 and 4.
2) See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperature.

→ PDS 69.300

XGP 2: Pneumatic control-pressure adjuster

Areas of application
Remote adjuster for setpoint adjustment of pneumatic controllers (e.g. Centair), plus manual control of small pneumatic control units.

Features
- Setting knob with interchangeable scales and 2 stops for limiting the setting range or locking the setting
- Suitable for fitting into panels or for recessed mounting
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

Technical description
- Supply pressure 1.3 bar ± 0.1

Type	Setting range bar	Setting span [1] bar	Scale [2] °C	Weight kg
XGP 2 F001	0...1.2	–	5...35	0.029
XGP 2 F002	–	± 0.1	± 3.75	0.029

Supply pressure [3]	1.3 ± 0.1 bar	Permissible ambient temp	0...55 °C
Air capacity, air consumption			
with restrictor Ø 0,14 mm	16 l_n/h	Connection diagram	A03462
with restrictor Ø 0,2 mm	33 l_n/h	Dimension drawing	M297201
Output pressure	0...1.2 bar	Fitting instructions	MV 7320

Accessories
0303124 000* Recessed junction box
0297212 000* Intermediate plate for fitting into recessed junction box
0296218 000* Buckle-proof connector-adaptor for push-on installation
0296990 000* Buckle-proof connector-adaptor for screw-type installation; MV 7322

*) Dimension drawing or wiring diagram are available under the same number

1) Zero point is variable between 0,2 and 1,0 bar; factory setting is 0,6 bar.
2) F001: rear 0...120 °C. Included are: 20...90 %rh, % scale, gradation 5, gradation 6.
F002: rear ± 8,75 %rh. Inscribable scale is included.
3) See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperature.

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→ PDS 69.310

XGP 2L: Heavy-duty, pneumatic control-pressure adjuster

Areas of application

Remote adjuster for setpoint adjustment of pneumatic controllers (e.g. Centair) with large capacity. Manual control of pneumatic control units.

Features

- Integrated minimum or maximum limiting of control pressures
- Setting knob with interchangeable scales and 2 stops for limiting the setting range or locking the setting
- Suitable for fitting into panels or for recessed mounting
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

Technical description

- Supply pressure 1.3 bar ± 0.1

Type	Setting range [1] bar	Air capacity l_n/h	Weight kg
XGP 2L F001	0...1.2	400	0.09

Supply pressure [2]	1.3 ± 0.1 bar	Permissible ambient temp.	0...55 °C
Air consumption [3]	7 l_n/h		
Output pressure	0...1.2 bar	Connection diagram	A03466
		Dimension drawing	M297370
		Fitting instructions	MV 7321

Accessories

0296936 000* Bracket for EN 60715, 35 × 7,5 and 35 × 15 rail
0296937 000* Bracket for C EN 60715-C20 rail and for wall mounting
0296218 000* Buckle-proof connector-adaptor for push-on installation
0296990 000* Buckle-proof connector-adaptor for screw-type installation; MV 7322

*) Dimension drawing or wiring diagram are available under the same number

1) Scale: 0...1,2 bar, 'tail' increasing in thickness. Rear scale: 0...1,2 bar, 'tail' decreasing. Inscribable scale (0...100%) is included underneath the normal scale.
2) See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperature.
3) 40 l_n/h when measuring connection is open (provides greater response sensitivity).

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→ PDS 69.455

XFRP: Pressure-reducing station

How energy efficiency is improved
Filter elements with special filter materials which cause minimal drops in pressure.

Areas of application
Supply, reduction and cleaning of compressed air for pneumatic measuring and control equipment.

Features
- For removing dust, water and oil from compressed air
- Visual display of degree of contamination of sub-micron filter
- Accurate pressure controller for keeping supply pressure constant
- Integrated safety valve protects pneumatic controller from overloading
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

Technical description
- Fine filter with 99.999% separation factor of particles as small as 0.01 µm
- Residual oil content 1 mg/m³

Type	Supplied	Setting range bar	Max. air output	Air consumption	Weight kg
XFRP 5 F001	assembled	0.2...1.7	20 m^3_n/h	75 l_n/h	2.2
XFRP 5 F002	not assembled	0.2...1.7	20 m^3_n/h	75 l_n/h	2.2

Max. upstream pressure [1]	8 bar	Permissible ambient temp	0...55 °C
Min. upstream pressure	2 bar		
Manometer scale	0...2.5 bar	Dimension drawing	M297646
		Fitting instructions	MV 7337

Accessories
0277938 000* Stop-cock of brass; fitted as per MV 7337
0381003 001* Fine-filter with clogging indicator and double connector for fitting to submicrofilter; fitted as per MV 7337

XFRP parts, to be assembled as per MV 7337
0297651 000 Positive-pressure valve with flat seal; blows off at 1,7 bar
0297652 000 Fitting material
0381002 001 Submicrofilter with clogging indicator
0381007 001 Pressure controller with 2 manometer connections
0381008 001 Manometer 0...2,5 bar; class of accuracy 1,6

*) Dimension drawing or wiring diagram are available under the same number

1) See Section 60 on regulations concerning the quality of supply air, especially chapter 4: Guidelines for supply-air distributor installations.

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→ PDS 69.360

XTP: Time-lag relay

Y03176

Areas of application

Adjustable attenuation of pneumatic signals, e.g. for switched (immediate) control pressures.

Features

- Front panel with printed circuit diagram for easier commissioning
- Plastic housing suitable for wall or top-hat rail mounting (rail EN 60715)
- Compressed-air connections with Rp 1/8" female thread
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

Technical description

- Supply pressure 1.3 bar ± 0.1
- Adjustable time constant between 0.2 and 3 min.

Type	Time constant min	Air output	Air consumption	Weight kg
XTP 2 F001	0.2...3 1)	400 l_n/h	6 l_n/h	0.15

Supply pressure 2)	1.3 ± 0.1 bar	Permissible amb. temperature	0...55 °C
Input pressure	0...1.4 bar		
Output pressure	0...1.4 bar	Connection diagram	A02895
		Dimension drawing	M297107
		Fitting instructions	MV 7329

Accessories

0296936 000* Fixing bracket for rail 35 × 7,5 and 35 × 15

0297277 000 Resistor and scale for increasing the time constant to between 3 and 6 minutes

*) Dimension drawing or wiring diagram are available under the same number

1) Accessory 0297277 allows the time constant to be increased to between 3 and 6 minutes

2) See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperature.

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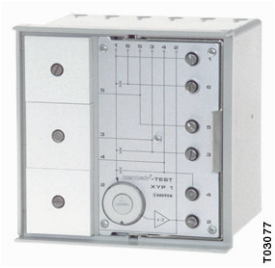
→ PDS 69.700

XYP 1: Pneumatic test unit



Areas of application
Checking peripheral equipment in the Centair range and for system faults in installations with Centair control equipment.

Features
- Simulation of output pressure
- Enables the testing of supply pressure, actual values, command variables and remote setpoint settings
- Plastic housing suitable for wall or top-hat rail mounting (rail EN 60715)
- Compressed-air connections with Rp 1/8" female thread
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

Technical description
- Supply pressure 1.3 bar ± 0.1
- Setting accuracy 5%

Type	Description	Weight kg
XYP 1 F001	*centair* test unit	0.7

Supply pressure p_1 1)	1.3 ± 0.1 bar	Connection diagram	A03207
Output pressure p_2	0...1.3 bar	Dimension drawing	M297100
Input pressure p_3, p_4, p_5, p_6	0.2...1.0 bar	Fitting instructions	MV 7317

Accessories

-XMP	Plug-in manometer for the *centair* measuring ranges; see Section 68.

1) See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperature.

→ PDS 69.710

XYP 2: Pneumatic test unit for controllers

Areas of application
Device for operational testing of controllers in the Centair range.

Features
- Simulation of an open or closed control network
- Operating check of Centair range by simulating transducers and remote setpoint adjusters
- Plastic housing suitable for wall or top-hat rail mounting (rail EN 60715)
- Compressed-air connections with Rp 1/8" female thread
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

Technical description
- Supply pressure 1.3 bar ± 0.1
- Setting accuracy 5%

Type	Description	Weight kg
XYP 2 F001	*centair* controller test unit	1.0

Supply pressure p_1 1)	1.3 ± 0.1 bar	Connection diagram	A03208
Output pressure p_2	0...13 bar	Dimension drawing	M297100
Input pressure p_3, p_4, p_5, p_6	0.2...1.0 bar	Fitting instructions	Manual (Accessories)

Accessoires

-XMP	Plug-in pressure gauge for the Centair measuring ranges, see Section 68.
0297168 000	Set of ancillary material for RCP test (Centair)
0304100 001	Service manual for Centair German, for XYP 2
0304100 002	Service manual for Centair French, for XYP 2
0304100 003	Service manual for Centair English for XYP 2

1) See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperature.

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→ PDS 69.720

XYP 3: Low-pressure test unit

Areas of application

Operational testing and modification of measuring range of controllers in the RLP, RLE and ASV ranges.

Features

- Simulation of actual value and setpoint
- Display of control output pressure
- Adjustable low-pressure source enables simulation of actual values of other low-pressure units
- Plastic housing suitable for wall or top-hat rail mounting (rail EN 60715)
- Compressed-air connections with Rp 1/8" female thread
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

Technical description

- Supply pressure 1.3 bar ± 0.1
- Setting accuracy 5%

Type	Actual-value signal x_i Low-pressure source	Setpoint signal X_S Volume flow	Weight kg
XYP 3 F001	5...500 Pa [1]	0.2...1.0 bar ≙ 20...100% $\dot{V}$	0.4
XYP 3 F002	1...100 Pa	0.2...1.0 bar ≙ 20...100% $\dot{V}$	0.4

Pressure supply [2]		1.3 bar ± 0.1	Connection diagram		A03209
Output pressure		0...1,3 bar	Dimension drawing		M297503
Air consumption	F001	48 l_n/h	Fitting instructions	F001	MV 7327
	F002	76 l_n/h		F002	MV 7339
Setting accuracy x_i [3]		5%			

Accessories

0297502 000 Bag with fitting material

1) Conversion kit (1...100 Pa) included.
2) See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperature.
3) For more accurate testing, check the setting x_i with a fine-pressure meter.
The percentage stated is based on 100% volume flow.

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→ PDS 69.610

XRP: Pneumatic relay, plug-in type

1:1
Y07575

Y07576

Y07578

Y07577

Areas of application

Conversion and/or isolation of pneumatic pressure signals, e.g. in the case of command variables and small drives.

Features

- Auxiliary relay with low air capacity for conversion and/or isolation of pneumatic pressure signals
- Can be used as interface, reversing, sequence or reversing/sequence relay
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

Technical description

- Bleed-off nozzle/deflector system

Type	Description	Input bar	Output bar	Weight g
XRP 101 F001	interface relay	0.2...1.0	0.2...1.0	22
XRP 102 F001	reversing relay	0.2...1.0	1.0...0.2	50
XRP 103 F001	sequence relay 2)	0.6...1.0	0.2...1.0	10
XRP 104 F001	sequence-reversing relay 3)	0.2...0.6	1.0...0.2	50

Supply pressure 1)	1.3 ± 0.1 bar
Air output, air consumption	33 l_n/h
Reversing relay 297600	19 l_n/h
Max. air exhaust	50 l_n/h
Perm. input pressure	0...1.4 bar
Perm. output pressure	0...1.4 bar
Perm. ambient temp.	0...55 °C

Documentation	Connection	Dimensions	Fitting
XRP 101	A03940	M00876	MV 505088
XRP 102	A03941	M00132	MV 7334
XRP 103	A03940	M00131	MV 7333
XRP 104	A03940	M00132	MV 7335

Accessories

0296936 000 Bracket for rail EN 60715, 35 × 7.5 and 35 × 15 (not for XRP 103)
0296937 000 Bracket for rail C, EN 60715-C20 (not for XRP 103)

1) Supply via external restrictor of Ø 0,2 mm (reversing relay 297600: internal restrictor of Ø 0,2 mm). When used in conjunction with RLP controllers, the restrictor and the air consumption do not apply. Up to three RLP controllers can be connected to each relay.
See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperatures.
2) Starting point can be set anywhere between 0,2 and 0,6 bar; factory setting is 0,6 bar.
3) Starting point can be set anywhere between 0,6 and 1,0 bar; factory setting is 0,6 bar.

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→ PDS 69.600

Connecting pieces for push-on pneumatic measuring lines

Areas of application
Pneumatic systems

Features
- PDS offers an overview of connection components for plug-in measuring lines

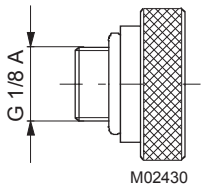
Type	Description
0193822 000*	Connection nipple, G ⅛ external, for plug d = 6
0193830 000*	Connection nipple, M4, for plug d = 6
0193832 000*	Connector G ⅛ external, for plug d = 6
0193834 000*	Connector Rp ⅛ internal, for plug d = 6
0198142 000*	Distribution piece, 5 × G ⅛ internal
0213654 000*	Blanking plug d = 6, long
0277101 000*	Blanking plug d = 6, short
0277102 000*	Socket for plug d = 6, for panel mounting
0277791 000*	Plug d=6 for tube di = 4
0296980 000*	Connector M10 × 1 external, for plug d = 6
0296982 000*	Connector M10 × 1 internal, for plug d = 6
0297112 000*	Connection nipple, M4, for tube d = 2.3
0297162 000*	T-piece; 1 plug; 2 sockets d = 6 mm for various pneumatic uses
0297508 000*	Pneumatic service set: adjuster & tube removers

Accessories

5658803 000	1m polyurethane tube, colourless, for pneumatic use
5658804 000	1m polyurethane tube, black, for pneumatic use
5658805 000	1m polyurethane tube, red, for pneumatic use
5658806 000	1m polyurethane tube, green, for pneumatic use

*) Dimension drawing or wiring diagram are available under the same number

193822



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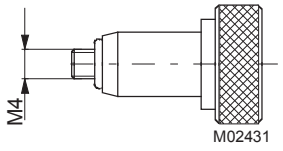
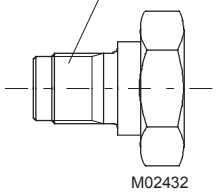
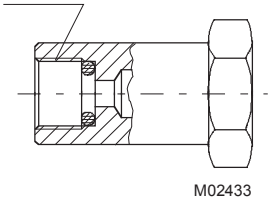


193832 G 1/8 A
296980 M10 × 1



193834 Rp 1/8
296982 M10 x 1



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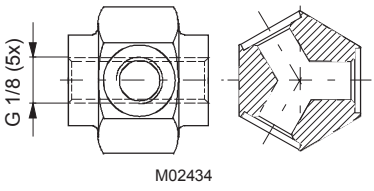

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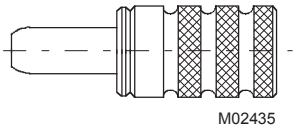

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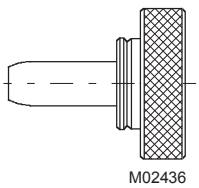

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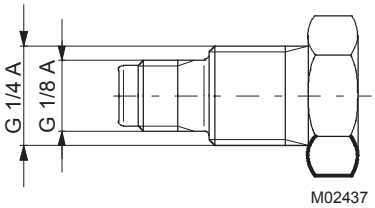

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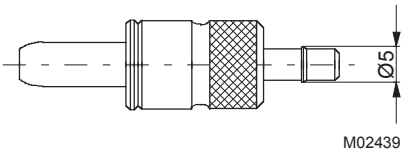

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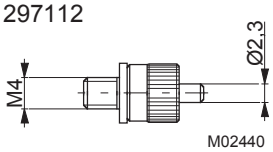

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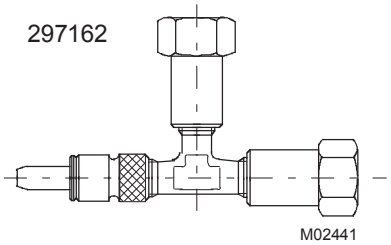

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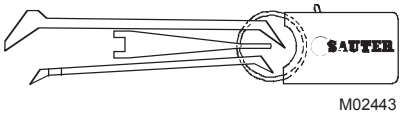

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→ PDS 69.605

Connecting pieces and fitting material for pneumatic uses

Areas of application
Pneumatic systems

Features
- PDS offers an overview of connection components and installation equipment
- Item for fast fitting on site or in motor control centre

Type	Description	Tube di mm	Thread	Material
0277790 000*	Hose clamp d = 6 for T > 40 °C			
0296218 000*	Union piece, plug-in type	4		
0296990 000*	Union piece, screw type	4		
0297169 000*	'Plasto-Joint' sealing stick			
0297354 000*	Connection nipple, R ⅛, for tube d = 4	4		
0297772 001*	Screw-type nipple, M4	4		
0382050 004*	Screw-in connector, straight	4	G ⅛	Brass, nickel-plated
0382050 006*	Screw-in connector, straight	6	G ⅛	Brass, nickel-plated
0382050 008*	Screw-in connector, straight	8	G ⅛	Brass, nickel-plated
0382051 004*	T-piece	4		Polymer H.F.
0382051 006*	T-piece	6		Polymer H.F.
0382051 008*	T-piece	8		Polymer H.F.
0382052 010*	T-piece	10		Polymer H.F.
0382053 004*	Union piece	4 - 6		Polymer H.F.
0382053 006*	Union piece	6 - 8		Polymer H.F.
0382054 004*	*Schott* connector	4		Polymer H.F.
0382054 006*	*Schott* connector	6		Polymer H.F.
0382054 008*	*Schott* connector	8		Polymer H.F.
0382055 004*	Plug	4		Polymer H.F.
0382055 006*	Plug	6		Polymer H.F.
0382055 008*	Plug	8		Polymer H.F.
0382056 004*	Y-piece	4 - 6		Polymer H.F.
0382056 006*	Y-piece	6 - 6		Polymer H.F.
0382057 004*	Y-piece, screw-in plug	4	G ⅛	Polymer/brass
0382057 006*	Y-piece, screw-in plug	6	G ⅛	Polymer/brass
0382058 008*	Screw-in connector	8	R ⅜	Polymer/brass
0382059 006*	Elbow, screw-on connector		G ⅛	Polymer/brass
0382059 008*	Elbow, screw-on connector		G ⅛	Polymer/brass
0382060 004*	Elbow, screw-in connector		G ⅛	Polymer/brass
0382060 006*	Elbow, screw-in connector		G ⅛	Polymer/brass
0382060 008*	Elbow, screw-in connector		G ¼	Polymer/brass
0382060 010*	Elbow, screw-in connector		G ⅜	Polymer/brass
0382061 004*	Elbow, screw-in rotary connector			Polymer/brass
0382062 008*	T-shaped, three-fold, plug-in connector	8 - 6		Polymer/brass
0382062 010*	T-shaped, three-fold, plug-in connector	10 – 8		Polymer/brass
0382063 006*	8-fold distributor	6	G ¼	Anodised aluminium
0382063 008*	6-fold distributor	8	G ⅜	Anodised aluminium
0382064 007*	Through ball valve		G ⅜	Brass, nickel-plated

Accessories

5658900 000	100m flexible tube, da/di = 8/5,5mm, black, for Dp measurement [effect. pressure (+/-)]
5658901 000	100m flexible tube, da/di = 6/4mm, black, for actuating pressure for damper drive
5658902 000	100m flexible tube, da/di = 8/5,5mm, red, for supply pressure
5658903 000	100m flexible tube, da/di = 4/2,5mm, green, for V (actual) room balancing, TUP224 F901
5658904 000	100m flexible tube, da/di = 6/4mm, red, for supply pressure
5658905 000	100m flexible tube, da/di = 8/5,5mm, blue, for reference pressure line, room pressure
5658906 000	100m flexible tube, da/di = 6/4mm, yellow, for signal pressure line, room sensor
5658907 000	100m flexible tube, da/di = 4/2,5mm, yellow, room pressure shift, RXP 212
5658920 000	25m flexible double tube, da/di = 6/4, black+blue, for Dp measurement [ef. press. (+/-)]

*) Dimension drawing for accessories is available under the same number.

Accessories see next page >>>

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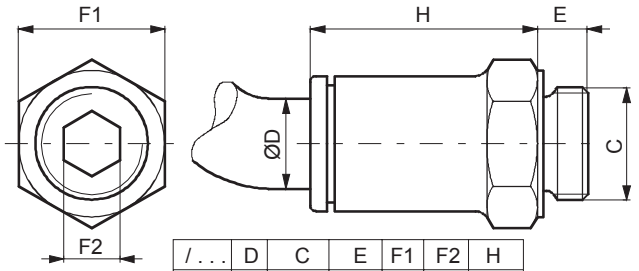
→ PDS 69.605

Dimension drawings

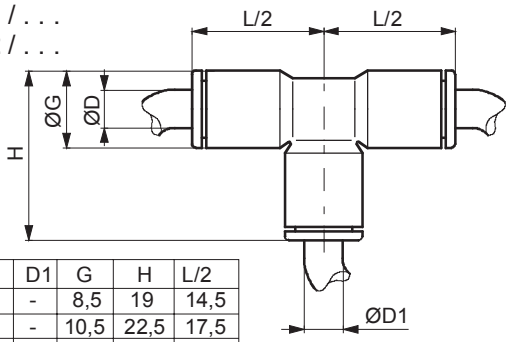
382050 / . . .



/ . . .	D	C	E	F1	F2	H
004	4	G1/8	4.5	13	3	11.5
006	6	G1/8	4.5	13	4	13
008	8	G1/8	4.5	13	5	20.5

M09577

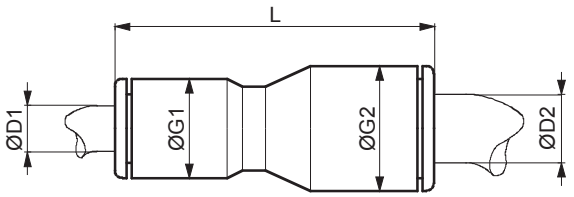
382051 / . . .
382052 / . . .



/ . . .	D	D1	G	H	L/2
004	4	-	8,5	19	14,5
006	6	-	10,5	22,5	17,5
008	8	-	13,5	29,5	23
010	10	8	16	34,5	26,5

M09578

382053 / . . .



/ . . .	D1	D2	G1	G2	L
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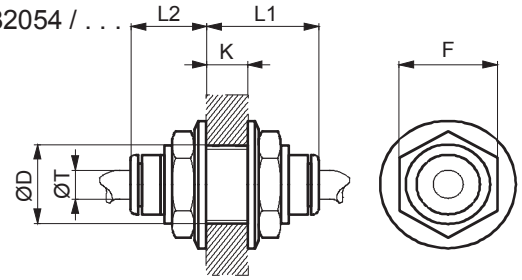
006	6	8	13,5	13,5	38

M09579

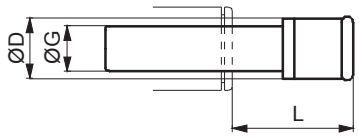
382054 / . . .



/ . . .	D	f	k maxi	L1	L2	T mini
004	4	13	5,5	15	10	10,5
006	5	15	8,5	18	10,5	12,5
008	8	18	14,5	25	13,5	15,5

M09580

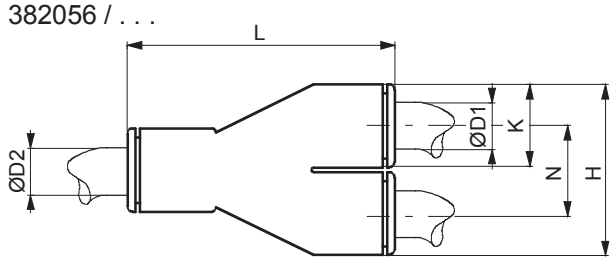
382055 / . . .



/ . . .	D	G	L
004	4	4	15,5
006	6	8	16,5
008	8	10	17,5

M09581

382056 / . . .



/ . . .	D1	D2	H	K	L	N
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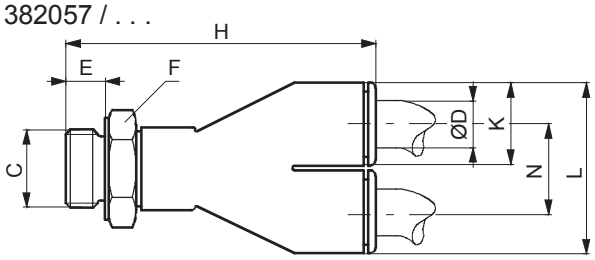
006	6	6	21,5	10,5	35	11

M09582

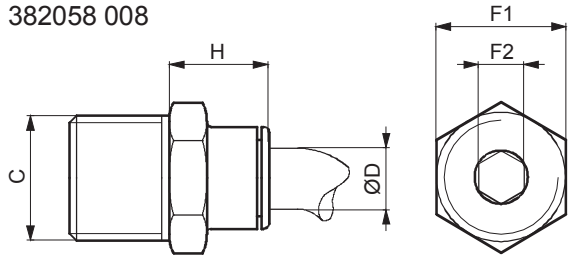
382057 / . . .



/ . . .	D	C	E	F	H	K	L	N
004	4	G1/8	5	13	32	8,5	17,5	9
006	6	G1/8	5	13	39	10,5	21,5	11

M09583

382058 008



D	C	F1	F2	H
8	R3/8	17	6	13

M09584

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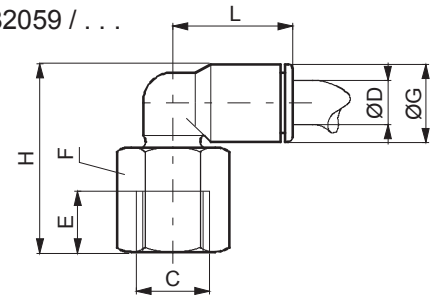
→ PDS 69.605

382059 / . . .



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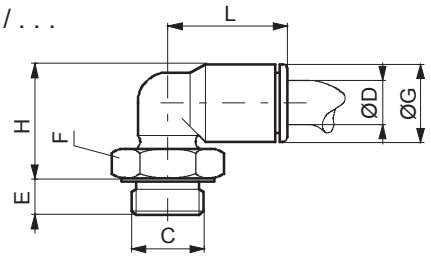
008	8	G1/8	8,5	13	13,5	28	23

M09585

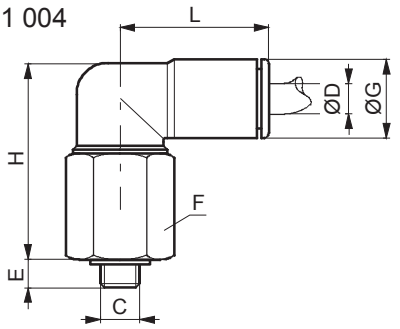
382060 / . . .



/ . . .	D	C	E	F	G	H	L
004	4	G1/8	5	13	8,5	13	14
006	6	G1/8	5	13	10,5	15	16
008	8	G1/4	5,5	16	13,5	18,5	23
010	10	G3/8	5,5	20	16	22	26,5

M09586

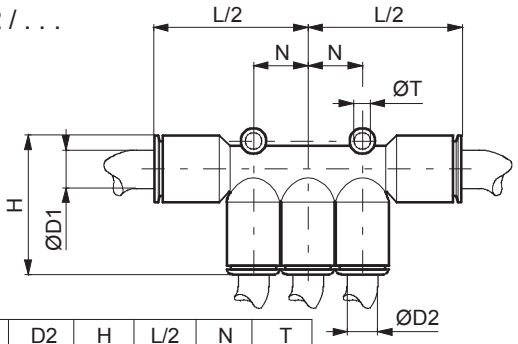
382061 004



D	C	E	F	G	H	L
4	M5×0,8	3,5	12	10	25	19,5

M09587

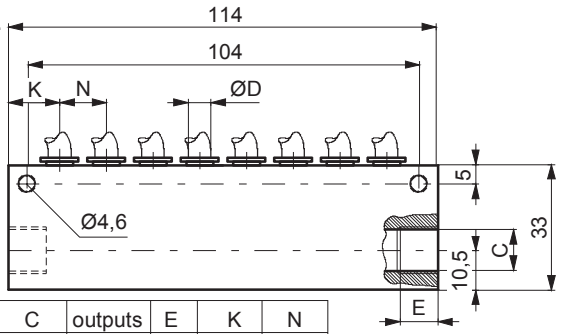
382062 / . . .



/ . . .	D1	D2	H	L/2	N	T
008	8	6	24,5	37	11,5	4,2
010	10	8	36	40,5	14,5	4,2

M09588

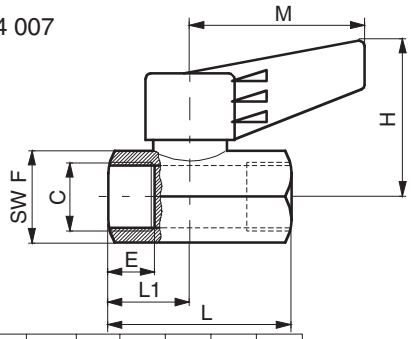
382063/...



/ . . .	D	C	outputs	E	K	N
006	6	G1/4	8	10	13,5	12,5
008	8	G3/4	6	12	19	15

M09589

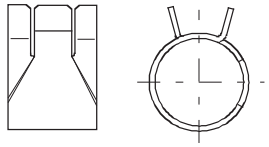
382064 007



C	E	DN	F	H	L	L1	M
G3/8	11	7	22	38	45	20	43

M09590

277790



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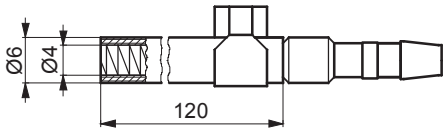

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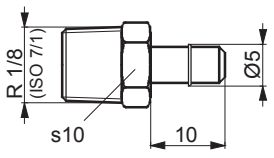

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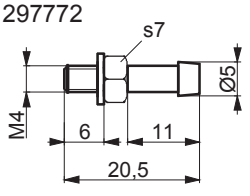

M03499

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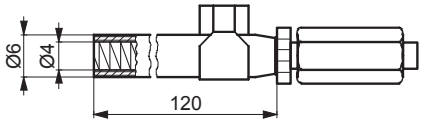
M02442

296990



M00564

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7 Pneumatic drives Valves

71	**Pneumatic drives**	Actuators Valve drives
76	**Regulating valves, combined with drive**	Valves with screw-type connection PN 16 Valves with flange connection PN 6 Valves with flange connection PN 16, 10 Valves with flange connection PN 25, 16 Valves with flange connection PN 25 Valves with flange connection PN 40
79	**Accessories**	Positioners Position indicators Position transmitters

→ PDS 71.060

AK31 P.: Pneumatic damper drive

Y07550

How energy efficiency is improved

Accurate activation of dampers with minimal air consumption.

Areas of application

Controlling or open/closed control of final control elements, e.g. in ventilation and air-conditioning systems.

Features

- ATEX certification for use in Zone 1 potentially explosive areas
- Complies with EN 13463-1 and EN 1127-1 (Ex II 2 G T6)
- Housing made of self-extinguishing plastic
- Roller membranes made of silicone, drive spindles in stainless steel with M8 male thread
- Plug nipple for connecting plastic hoses with an internal diameter of 4 mm

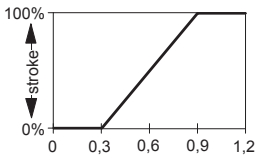
Technical description

- Control pressure 0 - 1.2 bar
- Max. damper area 0.6 m²

Type	Working range bar	max. force at 0 bar N	max. force at 1,2 bar N	max. torque at 0 bar Nm	max. torque at 1,2 bar Nm	Permissible damper area [1] m²	Weight kg
AK31 P1 F001	0.3...0.9	70	70	1.8	1.8	0.6	0.3
AK31 P2 F001	0.2...0.6	40	160	1	4	0.3	0.32
AK31 P3 F001	0.6...1.0	160	40	4	1	0.3	0.32

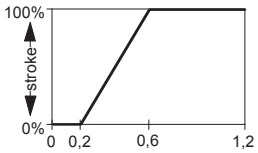
Control pressure	0...1.2 bar [2]	Air consumption for 100% stroke	
Max. permissible pressure	1.5 bar	AK31 P1	0.3 l_n
Effective area	30 cm²	AK31 P2, P3	0.2 l_n
Stroke	50 mm	Perm. ambient temp.	–5...60 °C
Lever length for 90°	35 mm	Degree of protection	IP 20
Running time for 100% stroke [3]	5 s	Dimension drawing	M00965
		Fitting instruction	MV 505113

AK31 P1



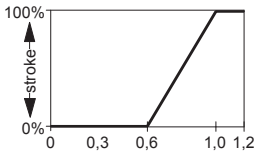
B00969

AK31 P2



B00976

AK31 P3



B00977

Accessories

0274587 000* Fixing console
0274589 000* Straight ball-joint with 2 nuts (M8)
0274591 000* Fixing bracket with 4 screws Ø 5,5 × 13
0274593 000* Angled ball-joint with 2 nuts (M8)
0370039 000* Connecting nut, 2 locking nuts (M8)
0370040 000* Threaded rod (M8), 500 mm long
0370059 000* Clamping lever for shaft diameter 8...18 mm

*) Dimension drawing or wiring diagram are available under the same number

1) Recommended value for equal-sided, easy-action air dampers.
In cases where the air dampers are tight-sealing in accordance with DIN 1946, the increased actuating power required to overcome the lamella seals must be taken into account.
2) Necessary for obtaining the actuating power.
See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperatures.
3) Based on the Centair air capacity (400 l_n/h) and a line of 20 m length and 4 mm diameter

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→ PDS 71.111

AK41...43 P: Pneumatic damper drive

How energy efficiency is improved

Accurate activation of dampers with minimal air consumption.

Areas of application

Controlling or open/closed control of final control elements, e.g. air dampers in ventilation and air-conditioning systems.

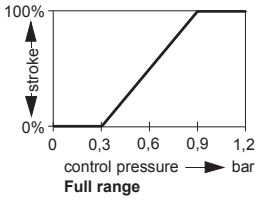
Features

- ATEX certification for use in Zone 1 potentially explosive areas
- Complies with EN 13463-1 and EN 1127-1 (Ex II 2 G T6) with actuators in the AK41 P and AK42 P product ranges
- Housing made of self-extinguishing plastic, (AK41, 42)
- Housing made of light metal alloy (AK43)
- Roller membranes made of silicone, drive spindles stainless steel with M8 male thread
- Plug nipple for connecting plastic hoses with an internal diameter of 4 mm (AK41)
- Compressed-air connection with Rp 1/8" female thread (AK42, 43)
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

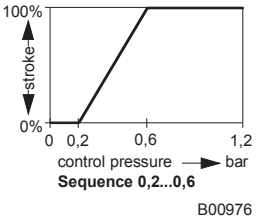
Technical description

- Control pressure 0 - 1.2 bar
- Damper area up to 6 m²

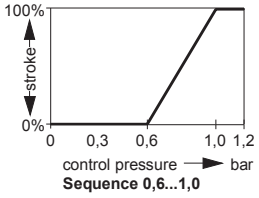
AK41...43 P



AK41 P2



AK41 P3



Type	Operating range bar	Force at 0 bar N	Force at 1,2 bar Nm	Torque at 0 bar Nm	Torque at 1,2 bar Nm	Permissible damper area[1] m²	Weight kg
AK41 P1 F003	0.3...0.9	100	100	3	3	1	0.55
AK41 P2 F003	0.2...0.6	60	200	2	6	0.6	0.55
AK41 P3 F003	0.6...1.0	200	60	6	2	0.6	0.6
AK42 P F003	0.3...0.9	200	200	10	10	3	1.4
AK43 P F002	0.3...0.9	400	400	20	20	6	4.8

		AK41 P1	AK41 P2	AK41 P3	AK42 P	AK43 P
Control pressure [2]	bar	0...1.2	0...1.2	0...1.2	0...1.2	0...1.2
Max. pressure	bar	1.5	1.5	1.5	1.5	1.5
Stroke	mm	63	63	63	100	100
Effective area	cm^2	40	40	40	80	160
Length of lever for 90°	mm	44	44	44	70	70
Air consumption for 100% stroke	l_n	0.5	0.4	0.5	1.7	3.5
Running time for 100% stroke [3]	s	7	6	7	20	35
Permissible ambient temp. [4]	°C	–10...70	–10...70	–10...70	–10...70	–10...70
Expl. protection		yes	yes	yes	yes	no
Degree of protection		IP 20	IP 20	IP 20	IP 20	IP 20
Dimension drawing		M274941	M274941	M274941	M274942	M274943
Fitting instructions		MV 505518	MV 505518	MV 505518	MV 505519	MV 505520

1) Recommended value for equal-sided, smooth-action air dampers. When tight-sealing dampers (as per DIN 1946) are used, the increased actuating power needed to overcome the louvre seals must be taken into account.
2) Needed in order to attain the actuating power.
See Section 60 on regulations concerning the quality of supply air, especially at lower ambient temperatures.
3) Based on the Centair air capacity (400 ln/h) and a line of 20 m length and 4 mm diameter
4) Down to –20 °C for short periods when used in fresh-air ducts

Accessories see next page >>>

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→ PDS 71.111

Accessories

-**XSP 31**	Positioner (see Section 79), fitted to actuator in factory
-**XAP 1**	Aux. contact unit (see Section 79), fitted to actuator in factory
-**XAP 2**	Potentiometer unit (see Section 79), fitted to actuator in factory
0274354 000*	Rod, 600 mm long, Ø 10 mm, with ball joint
0370059 000*	Clamp-on lever for shaft Ø 8...18 mm
-**Accessories for AK41 and AK42**	
0226518 003	Material for fitting XAP to AK41, separate delivery
0226519 003	Material for fitting XAP to AK42, separate delivery
0226521 002	Material for fitting XSP 31 to AK41, separate delivery
0226522 002	Material for fitting XSP 31 to AK42, separate delivery
0274586 000*	Straight ball joint with 2 nuts (M8) for fitting XSP 31 to AK4
0274587 000*	Fixing bracket for AK41
0274589 000*	Straight ball joint with 2 nuts (M8) for AK41
0274591 000*	Fixing bracket with screw Ø 5,5 × 13 (4×) for AK4
0274593 000*	Angled ball joint with 2 nuts (M8)
0274595 000*	Fixing console with screw (M8 × 30)
0274597 000*	Adaptor with nut (M8)
0370039 000*	Coupling nut with two locking nuts (M8)
0370040 000*	Rod with thread (M8) 500 mm long
-**Accessories for AK43**	
0226520 003	Material for XAP, separate delivery
0226523 002	Material for XSP 31, separate delivery
0274596 000*	Fixing console with screw (M10 × 40)
0274598 000*	Adaptor with nut (M10)
0274605 000*	Angled ball joint with 2 nuts (M10)

*) Dimension drawing or wiring diagram are available under the same number

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T03066

Y07550

→ PDS 71.245

AV43 P: Pneumatic valve drive

How energy efficiency is improved
Accurate activation of valves with minimal air consumption.

Areas of application
Actuation of through and three-way valves in the V6R and B6R product series in continuous control equipment or open/closed control.

Features
- Silicone-free, can therefore be used in many areas
- Housing and mounting bracket made of light-metal alloy
- Long-term-stable rubber membranes
- Reverse direction of travel by fitting other way round on mounting bracket
- Compressed-air connection with Rp 1/8" female thread
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

Technical description
- Control pressure 0 - 1.2 bar
- Effective drive surface 250 cm²

Type	For valves with stroke mm	Air consumption for 100% stroke l_n	Control span [1] bar	Effective drive area cm²	Weight kg
AV43 P15 F001 [2]	14	1.2	0.6	250	5.2

Control pressure [3]	0...1.2 bar	Dimension drawing	M274951
Max. pressure	1.5 bar	Fitting instructions	
		Assembly	MV 40.136
Permissible ambient temp.	–15...50 °C	Valve/drive	MV 43190
Temperature at the diaphragm	max. 70 °C		

Accessories
-**XSP 31** [6]	Positioner [4] (see Section 79)
-**XAP 1** [6]	Aux. contact unit [4] (see Section 79)
-**XAP 2** [6]	Potentiometer unit [4] (see Section 79)
-**XEP**	Electro-pneumatic converter [4] for continuous signals (see Section 69)
0274521 000	Manual-adjustment facility [5] for AV43 weight 1,7 kg; MV 505819

*) Dimension drawing for accessory is available under the same number

Assembly material for valve series V6R, B6R

Drive type	XSP 31	XSP 31 G	XAP	XEP
AV43 P15	0226506 002	0226532 002	0226513 003	0274700

1) Pressure–stroke curves: see valve data sheet, Section 78.
2) Only for valves with O-ring stuffing box.
3) Needed in order to attain the actuating power.
See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperatures.
4) Of the accessories, only a positioner (XSP 31 or 31 G), a feedback unit (XAP) and an electro-pneumatic transducer (XEP) can be fitted.
When fitting XSP 31 and XAP, the XEP must be screwed sideways onto the fixing bracket.
5) Can be used for minimum or maximum limitation of the stroke. Removable hand wheel.
6) Fitted to valve/actuator at the factory

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→ PDS 71.246

AVP 142: Pneumatic actuator

How energy efficiency is improved
Accurate activation of valves with minimal air consumption.

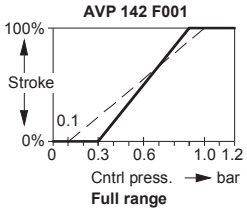
Areas of application
Actuation of through and three-way valves in the V6R, B6R product series in continuous control equipment or open/closed control.

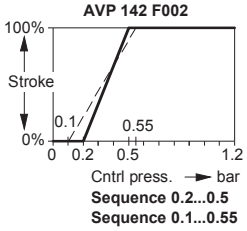
Features
- Silicone-free, can therefore be used in many areas
- Housing made of glass-fibre-reinforced plastic and mounting bracket in light metal alloy
- Long-term-stable rubber membranes
- Reverse direction of travel by fitting other way round on mounting bracket
- Stroke indicator for rapid determination of position of drive setting
- Compressed-air connection with Rp 1/8" female thread
- Complies with directive 97/23/EC Art. 3.3 on pressure equipment

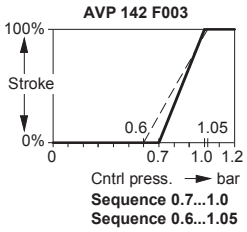
Technical description
- Control pressure 0 - 1.2 bar
- Effective drive surface 180 cm²

Type		For valves with stroke of 14 mm		For valves with stroke of 20 mm		
	Character-istic [1]	Spanne bar	Air consumption per stroke l_n	Spanne bar	Air consumption per stroke l_n	Weight kg
AVP 142 F001	full	0.6	0.8	0.9	1.1	2.0
AVP 142 F002	bottom	0.3	0.7	0.45	0.9	2.0
AVP 142 F003	top	0.3	0.7	0.45	0.9	2.0

Control pressure [2]	0...1.2 bar	Dimension drawing	M09477
Max. pressure	1.5 bar	Fitting instructions	
Effective area	180 cm²	Valve/drive	MV 505766
Permissible ambient temp.	–15...50 °C	Declaration of materials	MD 71.246
Temperature at the diaphragm	max. 70 °C		







14 mm stroke
20 mm stroke
B09568

Accessories
-**XSP 31** [5]	Positioner [3] (see Section 79)
-**XAP 1** [5]	Aux. contact unit [3] (see Section 79)
-**XAP 2** [5]	Potentiometer unit [3] (see Section 79)
-**XEP**	Electro-pneumatic converter [3] for continuous signals (see Section 69)
0274730 001	Manual adjuster [4] for AVP142; weight 0.6 kg; MV 505819

*) Dimension drawing or wiring diagram are available under the same number

Assembly material for valve series V6R, B6R			
Drive type	XSP 31	XAP	XEP
AVP 142	0226504 002	0226512 003	0274700

1) Pressure–stroke curves: see valve data sheet, Section 76.
2) Needed in order to attain the actuating power.
See Section 60 for regulations concerning the quality of supply air, especially at low ambient temperatures.
3) Of the accessories, only a positioner (XSP 31 or 31 G), a feedback unit (XAP) and an electro-pneumatic transducer (XEP) can be fitted. When fitting XSP 31 and XAP, the XEP must be screwed onto the fixing bracket at the side.
4) Can be used for minimum or maximum limitation of the stroke. Removable hand wheel.
5) Fitted to valve/actuator at the factory

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→ PDS 71.247

AVP 242...244: Pneumatic actuators

How energy efficiency is improved
Accurate activation of valves with minimal air consumption.

Areas of application
Actuation of through and three-way valves in continuous control equipment or open/closed control.

Features
- Silicone-free, can therefore be used in many areas
- Long-term-stable rubber membranes
- Reverse direction of travel by fitting other way round on mounting bracket
- Stroke indicator for rapid determination of position of drive setting
- Compressed-air connection with Rp 1/8" female thread
- Patented drive-valve coupling aids quick and easy connection of the drive with the valve
- Complies with directive 97/23 EEC on pressure equipment

Technical description
- Control pressure 0 - 1.2 bar
- Effective drive surface 180 to 500 cm²

Type	For valve with stroke mm	Air consumption for 100% stroke l_n	Control span [1] bar	Effective drive area cm²	Weight kg
AVP 242 F001 [2]	8	0.30	0.6	180	3
AVP 242 F021	20	0.65	0.6	180	3
AVP 243 F021	20	1.1	0.6	250	6
AVP 243 F031	40	2.0	0.6	250	6
AVP 244 F021	20	1.9	0.6	500	12
AVP 244 F031	40	3.3	0.6	500	12

Control pressure [3]	0...1.2 bar
Max. pressure	1.5 bar
Permitted ambient temperature	–15...50 °C
Temperature on membrane	max. 70 °C

Dimension drawing		
	AVP242	M 10428
	AVP243/244	M 10429
Fitting instructions		
Assembly	AVP 242 F001	MV 506041
	AVP 242 F021	MV 506012
	AVP 243/244	MV 506013
Declaration of materials		
	AVP 242/243/244	MD 71.247

Accessories

-XSP 31	Positioner [4] (see data sheet, section 79), fitted at factory to the valve/drive combination
-XAP 1	Auxiliary contact unit [4] (see data sheet, section 79), fitted at factory to the valve/drive combination
-XAP 2	Potentiometer unit [4] (see data sheet, section 79), fitted at factory to the valve/drive combination
-XEP	Electro-pneumatic transducer [4] for continuous signals (see data sheet, section 69)
0274521 000*	Manual adjuster [5] for AVP 243 and AVP 244, weight 1.7 kg, MV 505819
0274730 001*	Manual adjuster [5] for AVP 242, weight 0.6 kg, MV 505819

*) Dimension drawing for accessory available under same number

Assembly kit for valve type series VUD/BUD, VUE/BUE, VUG/BUG, VUS/BUS and VUP

Drive type	XSP 31	XAP	XEP
AVP 242 F001	297933 001	297934 001	297935 001
AVP 242 / AVP 243 / AVP 244 F021	297933 001	297934 001	297935 001
AVP 243 F031 AVP 244 F031	297933 001	297934 001	297935 001

1) Pressure-stroke characteristics: see valve data sheet, section 76
2) Only for valve design version with O-ring stuffing box
3) Required to achieve the actuating forces.
For regulations regarding the quality of the supply air, especially with a low ambient temperature, see section 60.
4) In addition to the XSP 31 positioner, only one other accessory can be fitted (either the XAP position monitor/indicator or the XEP electro-pneumatic converter).
5) Can be used for minimum or maximum limitation of the stroke. Handwheel can be removed.

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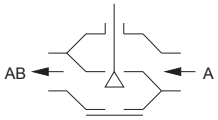
→ PDS 76.321

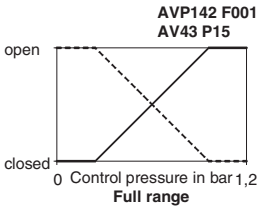
V6R: Through valve with female thread, PN 16

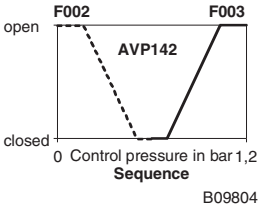
Y07544



B01133

Pressure-stroke-curve
(with integrated valve)





B09804

——— As delivered ex works
— — Fitting variant A

How energy efficiency is improved

Accurate control with high reliability.

Areas of application

Continuous control of cold and hot water or air in closed networks[1]. Water quality as per VDI 2035. Assembly with actuators AVP 142 and AV43 as regulating unit.

Features

- Nominal pressure PN 16
- Nominal diameter DN15, DN25, DN40 and DN50 with reduction steps
- Basic characteristic equal percentage (F3 . .), or linear (F2 . .)
- Characteristic equal percentage or linear
- With the spindle retracted, the valve is closed
- Closes against or with the pressure

Technical description

- Valve with female thread DIN EN ISO 228-1 G
- Valve body and seat in gun metal
- Stainless steel spindle
- Plug made of stainless steel DN15 or brass from DN20
- Stuffing box made of brass with EPDM wiper ring and double O-ring seal

Type	Nominal diameter DN	k_{VS} value m^3/h	Valve plug material	Weight kg
V6R 15 F350	15	0.4	stainless steel	1.2
V6R 15 F340	15	0.63	stainless steel	1.2
V6R 15 F330	15	1	stainless steel	1.2
V6R 15 F320	15	1.6	stainless steel	1.2
V6R 15 F310	15	2.5	brass	1.2
V6R 15 F300	15	4	brass	1.2
V6R 25 F310	25	6.3	brass	1.6
V6R 25 F300	25	10	brass	1.6
V6R 40 F310	40	16	brass	3.4
V6R 40 F300	40	25	brass	3.4
V6R 50 F300	50	35	brass	4.6

Operating temperature [1]	–15...130 °C	Valve stroke	14 mm
Operating pressure	up to 120 °C 16 bar		
	up to 130 °C 13 bar	Dimension drawing	7M100
Valve curve	equal percent	Fitting instructions	MV 505580
Control ratio	50 (typical)	AVP142 Complete regulating unit	MV 505766
Leakage rate	≤ 0.05% of k_{VS}-value	AV43 Regulating unit	MV 43190
		AV43 Fitting	MV 40.136

Variants

F2 . . With linear valve curve (available from DN 15 k_{VS} 4 m^3/h onwards only), same price and pressure as **V6R..F3..**

Accessories

0217268 . . . Stuffing-box heating 15 W; specify when ordering: 24V = /001, 230V = /004, MV 505498

0360391 . . . Union piece incl. asbestos-free seal, 2 pieces required;
specify when ordering: DN 15 = /015, DN 25 = /025 etc.

DN	15	25	40	50

0378034 001 Valve with stuffing box, silicone-free; synthetic lubricant; max. 130 °C

1) At temperatures under 0 °C, use stuffing-box heating (accessory)

For combinations with pneumatic drives, see next page >>>

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→ PDS 76.321

Combination: pneumatic drive AVP142, AV43

Drive reversible max. pressure p_{stat} Operating time [1]	AVP142 F001 ≤ 16 bar 10 s			AVP142 F002, F003 ≤ 13 bar 10 s			AV43 P15 ≤ 16 bar 14 s		
Valve	Δp_{max}	Δp_s		Δp_{max} [2]	Δp_s		Δp_{max}	Δp_s	
V6R 15	4.0	16.0		4.0	16.0		4.0	16.0	
V6R 25	4.0	13.6		4.0	16.0		4.0	16.0	
V6R 40	3.0	3.1		1.0	7.3		3.0	4.0	
V6R 50	2.0	2.3		0.8	5.5		2.0	3.3	

Complete type designation: Valve and drive each with F-variant
Valve: F-variant, technical data and accessories, see valve type table
Drive: F-variant, technical data, accessories and fitting position, see Sect. 71
Example: V6R 15 F300 / AVP142F001
Valve is closed when actuator is pressureless = factory setting
Valve is open when actuator is pressureless = on request

Δpmax[bar]= Max. permissible pressure difference across the valve at which the drive can still safely open and close the valve.
Δps [bar]= Max. permissible pressure difference across the valve during malfunction at which the drive can close the valve.
pstat [bar]= Dormant press. at valve when pump is inactive. Takes into account the fluidic level of the plant and the pressure increase caused by the pressure tank or the steam pressure.

1) Based on the Centair air capacity (400 l_n/h) and a line of 20 m in length and 4 mm in diameter
2) When used with an XSP 31 positioner, the Δp_{max} values are seven times bigger; observe the Δp_v value (see additional technical details).

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→ PDS 76.323

B6R: Three-way valve with female thread, PN 16

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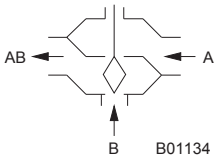
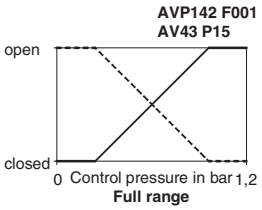
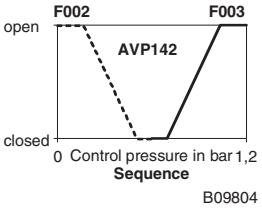


Pressure-stroke curve
(with valve fitted)





B09804

——— As delivered ex works
— — Fitting variant A

How energy efficiency is improved

Accurate control with high reliability.

Areas of application

Continuous control of cold and hot water or air in closed networks[1]. Water quality as per VDI 2035. Assembly with AVP 142 and AV43 actuators as a regulating unit.

Features

- Nominal pressure PN 16
- Nominal diameter DN15, DN25, DN40 and DN50 with reduction steps
- Basic characteristic equal percentage (F3 .), . or linear (F2 . .)
- Linear mixing passage characteristic
- Characteristic equal percentage or linear
- With the spindle retracted, the valve is closed
- Application as control valve or diverting valve

Technical description

- Valve with female thread DIN EN ISO 228-1 G
- Valve body and seat in gun metal
- Stainless steel spindle
- Plug made of stainless steel DN15 or brass from DN20
- Stuffing box made of brass with EPDM wiper ring and double O-ring seal

Type	Nominal diameter DN	k_{VS} value m³/h	Valve plug material	Weight kg
B6R 15 F330	15	1	stainless steel	1.2
B6R 15 F320	15	1.6	stainless steel	1.2
B6R 15 F310	15	2.5	brass	1.2
B6R 15 F300	15	4	brass	1.2
B6R 25 F310	25	6.3	brass	1.6
B6R 25 F300	25	10	brass	1.6
B6R 40 F310	40	16	brass	3.4
B6R 40 F300	40	25	brass	3.4
B6R 50 F300	50	35	brass	4.6

Operating temperature [1]	–15...130 °C	Valve stroke	14 mm
Operating pressure	up to 120 °C 16 bar		
	up to 130 °C 13 bar	Dimension drawing	7M100
Valve curve	equal percent	Fitting instructions	MV 505574
Control ratio	50 (typical)	AVP142 Complete regulating unit	MV 505766
Leakage rate		AV43 Regulating unit	MV 43190
Control flow A-AB	≤ 0.05% of k_{vs} value	AV43 Montage	MV 40.136
Mixing flow B-AB	≤ 1% of k_{vs} value		

Variants

F2 . . With linear valve curve (available from DN 15 k_{vs} 4 m³/h onwards only), same price and pressure as **B6R..F3..**

Accessories

0217268 . . . Stuffing-box heating 15 W; specify when ordering: 24V = /001, 230V = /004, MV 505498

0360391 . . . Union piece incl. asbestos-free seal, 3 pieces required; specify when ordering: DN 15 = /015, DN 25 = /025 etc.

DN	15	25	40	50

0378034 001 Valve with stuffing box, silicone-free; synthetic lubricant; max. 130 °C

1) At temperatures under 0 °C, use stuffing-box heater (accessory)

For combinations with pneumatic drives, see next page >>>

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→ PDS 76.323

Combination: pneumatic actuator AVP142, AV43

Drive reversible max. pressure p_{stat} Operating time [1]	AVP142 F001 ≤ 16 bar 7 s			AVP142 F002, F003 ≤ 6 bar 7 s			AV43 P15 ≤ 16 bar 14 s		
Valve	Δp_{max}	Δp_s		Δp_{max} [2]	Δp_s		Δp_{max}	Δp_s	
B6R 15	4.0	22.3		4.0	16.0		4.0	16.0	
B6R 25	4.0	13.5		4.0	16.0		4.0	13.0	
B6R 40	2.4	3.1		1.0	7.3		2.9	2.9	
B6R 50	2.0	2.3		0.8	5.5		2.0	2.2	

Complete type designation: Valve and drive each with F-variant
Valve: F-variant, technical data and accessories, see valve type table
Drive: F-variant, technical data, accessories and fitting position, see Section 71
Example: B6R 15 F300 / AVP142 F001
Valve control passage A-AB is closed when actuator is pressureless = factory setting
Valve control passage A-AB is open when actuator is pressureless = on request

Δpmax[bar]= Max. permissible pressure difference across the valve at which the drive can still safely open and close the valve.
Δps [bar]= Max. permissible pressure difference across the valve during malfunction at which the drive can close the valve.
pstat [bar]= Dormant pressure at valve when pump is inactive. Takes into account the fluidic level of the plant and the pressure increase caused by the pressure tank or the steam pressure.

1) Based on the Centair air capacity (400 l_n/h) and a line of 20 m in length and 4 mm in diameter
2) When used with an XSP 31 positioner, the Δp_{max} values are seven times bigger; observe the Δp_V value (see additional technical details).

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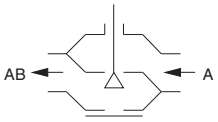
→ PDS 76.110

VUD: Flanged through valve, PN 6



How energy efficiency is improved
Efficient use in continuous controls.

Areas of application
Continuous control of cold/hot water and air in closed networks[1] and flow temperature control in heating systems. Water quality as per VDI 2035. Assembly with AVP 242 to AVP 244 actuators as a regulating unit.

Features
- Nominal pressure 6 bar
- Control valve contains no silicone grease; painted black
- Nominal diameters DN15 to DN100
- Equal-percentage characteristic
- With the spindle retracted, the valve is closed
- Closes against the pressure DN15 to DN100 or with the pressure DN15 to DN50

Technical description
- Valve with flange connection as per EN 1092-2, Form B raised face
- Valve body and seat in cast iron
- Stainless steel spindle
- Brass plug in nominal diameters DN15 to DN50, with glass-fibre-reinforced Teflon sealing ring
- Brass plug in nominal diameters DN65 to DN100, metal-on-metal seal
- Stuffing box made of brass with EPDM wiper ring and double O-ring seal

Type	Nominal diameter DN	Connection PN	k_{VS} value m^3/h	Weight kg
VUD 015 F320	15	6	1.6	3.2
VUD 015 F310	15	6	2.5	3.2
VUD 015 F300	15	6	4.0	3.2
VUD 020 F300	25	6	6.3	4.1
VUD 025 F300	25	6	10	4.7
VUD 032 F300	32	6	16	7.3
VUD 040 F300	40	6	22	8.6
VUD 050 F300	50	6	28	11.2
VUD 050 F200	50	6	40	11.2
VUD 065 F300	65	6	49	11.9
VUD 065 F200	65	6	63	11.9
VUD 080 F300	80	6	78	17.7
VUD 080 F200	80	6	100	17.7
VUD 100 F300	100	6	124	26.0
VUD 100 F200	100	6	160	26.0

Operating temperature	–10...150 °C [2]	Stuffing box	2 O-rings, EPDM
Operating pressure	6 bar	Leakage rate at max. Δp_S	≤ 0.05% of k_{VS} value
Valve characteristic F200	linear	Valve stroke DN 15...50	8 mm
F300	equal-percentage	DN 65...80	20 mm
Valve control ratio	> 50:1	DN 100	40 mm

Accessories

0372240 001*	Manual adjuster for valves with 8 mm stroke; MV 505813
0372249 001*	Adaptor required when temperature of medium >100 °C up to 130°C (recommended at temperatures of < 10 °C) from DN 15 to DN 50, MV 505932
0372249 002*	Adaptor required when temperature of medium >130 °C up to 150°C , from DN 15 to DN 50, MV 505932
0372336 180	Adaptor required when temperature of medium. >130 °C / >150°C from DN 65, MV 505902
0378284 100*	Stuffing box heater, 230 V~; 15 W, for media below 0 °C, DN 15...150, MV 505978
0378284 102*	Stuffing box heater, 24 V~; 15 W, for media below 0 °C, DN 15...150, MV 505978
0378368 001	Complete replacement stuffing box for DN 15 to DN 50
0378369 001	Complete replacement stuffing box for DN 65 to DN 100

*) Dimension drawing or wiring diagram available under the same number

1) Air humidity must not exceed 75%
2) At temperatures below 0 °C, use the stuffing box heater; at temperatures above 100 °C, use the temperature adaptor (accessory).

For documentation, accessories and combinations with pneumatic drives, see next page >>>

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→ PDS 76.110

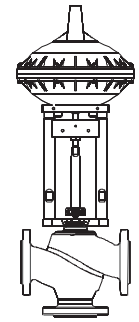
Dimension drawing			Fitting instructions		
DN 15...50	M10470		Assembly	AVP 242 F001	MV 506041
DN 65...100	M10438		Assembly	AVP 242 F021	MV 506012
Fitting instructions			Assembly	AVP 243 / 244	MV 506013
Valve DN 15...50	MV 506008		Declaration on materials		MD 76.110
Valve DN 65...100	MV 505964				

Warranty The technical data and pressure differences indicated here are applicable only in combination with Sauter actuators. Any warranty shall lapse if actuators from other manufacturers are used.

Combination of VUD, PN 6 with pneumatic drive AVP 242

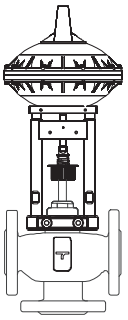
Drive / **Perm. press. p_{stat}** / **Running time** [1] / **Stroke**	**AVP 242 F001** ≤ 6 bar 8 s 8 mm		
Valve	**Δp_{max}**	**Δp_s**	
VUD 015	6.0	6.0	
VUD 020	6.0	6.0	
VUD 025	6.0	6.0	
VUD 032	6.0	6.0	
VUD 040	4.0	4.0	
VUD 050	2.5	2.5	

For temperatures above 100°C, accessories are required


B10680

Drive / **Perm. press. p_{stat}** / **Running time** [1] / **Stroke**	**AVP 242 F021** ≤ 6 bar 8 s 20 mm		
Valve	**Δp_{max}**	**Δp_s**	
VUD 065	1.5	1.5	
VUD 080	1.0	1.0	

For temperatures above 130°C, accessories are required


B10681

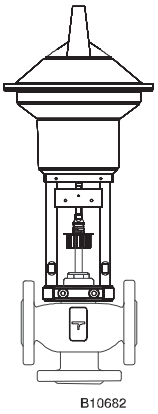
Combination of VUD, PN 6 with pneumatic drive AVP 243 / 244

Drive / **Perm. press. p_{stat}** / **Running time** [1] / **Stroke**	**AVP 243 F021** ≤ 6 bar 24 s 20 mm			**AVP 244 F021** ≤ 6 bar 40 s 20 mm		
Valve	**Δp_{max}**	**Δp_s**		**Δp_{max}**	**Δp_s**	
VUD 065	2.5	2.5		3.0	4.5	
VUD 080	1.5	1.5		3.0	3.0	

For temperatures above 130°C, accessories are required

Drive / **Perm. press. p_{stat}** / **Running time** [1] / **Stroke**	**AVP 243 F031** ≤ 6 bar 24 s 40 mm			**AVP 244 F031** ≤ 6 bar 40 s 40 mm		
Valve	**Δp_{max}**	**Δp_s**		**Δp_{max}**	**Δp_s**	
VUD 100	1.0	1.0		2.0	2.0	

For temperatures above 130°C, accessories are required


B10682

[1] In relation to the Centair air rate (400 l_n/h) and to a pipe with length of 20 m and diameter of 4 mm

Valve: Variant F, for technical data and accessories see Valve Type Table
Drive: Variant F, for technical data, accessories and installation position see section 71
Example: VUD 065 F300 / AVP 243 F031
Valve is closed when actuator is pressureless = factory setting
Valve is open when actuator is pressureless = on request

Δpmax [bar]= Maximum permitted pressure difference across the valve at which the drive can still reliably open and close the valve, taking account of Δpv.

Δps [bar]= Maximum permitted pressure difference across the valve in case of a fault (pipe break downstream of the valve) at which the drive can close the valve reliably with 'fast' performance of the stroke.

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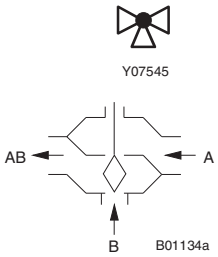
→ PDS 76.111

BUD: Flanged three-way valves, PN 6



How energy efficiency is improved

Accurate control with high reliability.

Areas of application

Continuous control of cold/hot water and air in closed networks[1)] and flow temperature control in heating systems. Water quality as per VDI 2035. Assembly with AVP 242 to AVP 244 actuators as a regulating unit.

Features

- Nominal pressure 6 bar
- Control valve contains no silicone grease; painted black
- Nominal diameters DN15 to DN100
- Equal-percentage characteristic
- Linear mixing passage characteristic
- With the spindle retracted, the valve is closed
- Application as control valve or diverting valve

Technical description

- Valve with flange connection as per EN 1092-2, Form B raised face
- Valve body and seat in cast iron
- Stainless steel spindle
- Brass plug in nominal diameters DN15 to DN50, with glass-fibre-reinforced Teflon sealing ring
- Brass plug in nominal diameters DN65 to DN100, metal-on-metal seal
- Stuffing box made of brass with EPDM wiper ring and double O-ring seal

Type	Nominal diameter DN	Connection PN	k_{VS} value m^3/h	Weight kg
BUD 015 F320	15	6	1.6	3.2
BUD 015 F310	15	6	2.5	3.2
BUD 015 F300	15	6	4.0	3.2
BUD 020 F300	25	6	6.3	4.1
BUD 025 F300	25	6	10	4.7
BUD 032 F300	32	6	16	7.1
BUD 040 F300	40	6	22	8.4
BUD 050 F300	50	6	28	10.9
BUD 050 F200	50	6	40	11.2
BUD 065 F300	65	6	49	11.9
BUD 065 F200	65	6	63	11.9
BUD 080 F300	80	6	78	17.7
BUD 080 F200	80	6	100	17.7
BUD 100 F300	100	6	124	26.0
BUD 100 F200	100	6	160	26.0

Operating temperature		–10...150 °C [2)]	Stuffing box		2 O-rings, EPDM
Operating pressure		6 bar	Leakage rate at max. Δp_S		
Valve characteristic for			control passage		≤ 0.05% of k_{VS} value
control passage	F200	linear	mixing passage		≤ 1% of k_{VS} value
	F300	equal-percentage	Stroke	DN 15...50	8 mm
mixing passage		linear		DN 65...80	20 mm
Valve control ratio		> 50:1		DN 100	40 mm

Accessories

0372240 001*	Manual adjuster for valves with 8 mm stroke; MV 505813
0372249 001*	Adaptor required when temperature of medium >100 °C up to 130°C (recommended at temperatures of < 10 °C) from DN 15 to DN 50, MV 505932
0372249 002*	Adaptor required when temperature of medium >130 °C up to 150°C , from DN 15 to DN 50, MV 505932
0372336 180	Adaptor required when temperature of medium. >130 °C / >150°C from DN 65, MV 505902
0378284 100*	Stuffing box heater, 230 V~; 15 W, for media below 0°C, DN 15...100, MV 505978
0378284 102*	Stuffing box heater, 24 V~; 15 W, for media below 0°C, DN 15...100, MV 505978
0378368 001	Complete replacement stuffing box for DN 15 to DN 50
0378369 001	Complete replacement stuffing box for DN 65 to DN 100

*) Dimension drawing or wiring diagram available under the same number

1) Air humidity must not exceed 75%
2) At temperatures below 0°C, use the stuffing box heater; at temperatures above 100°C, use the temperature adaptor (accessory).

For documentation, accessories and combinations with pneumatic drives, see next page >>>

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→ PDS 76.111

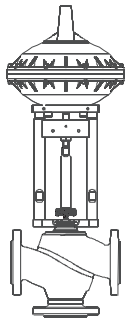
Dimension drawing			Fitting instructions		
	DN 15...50	M10470	Assembly	AVP 242 F001	MV 506041
	DN 65...100	M10440	Assembly	AVP 242 F021	MV 506012
Fitting instructions			Assembly	AVP 243 / 244	MV 506013
Valve	DN 15...50	MV 506008			
Valve	DN 65...100	MV 505964	Declaration on materials		MD 76.111

Warranty The technical data and pressure differences indicated here are only applicable in combination with Sauter actuators. Any warranty shall lapse if actuators from other manufacturers are used.

Combination of BUD, PN 6 with pneumatic drive AVP 242

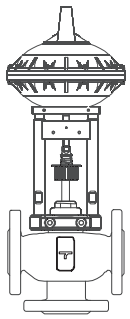
Drive	**AVP 242 F001**		
Perm. press. p_{stat}	**≤ 6 bar**		
Running time [1]	**8s**		
Stroke	**8 mm**		
Valve	**Δp_{max}**	**Δp_s**	
BUD 015	6.0	6.0	
BUD 020	6.0	6.0	
BUD 025	6.0	6.0	
BUD 032	6.0	6.0	
BUD 040	4	4.0	
BUD 050	2.5	2.5	

For temperatures above 100°C, accessories are required


B10680

Drive	**AVP 242 F021**		
Perm. press. p_{stat}	**≤ 6 bar**		
Running time [1]	**8 s**		
Stroke	**20 mm**		
Valve	**Δp_{max}**	**Δp_s**	
BUD 065	1.0	1.5	
BUD 080	1.0	1.0	

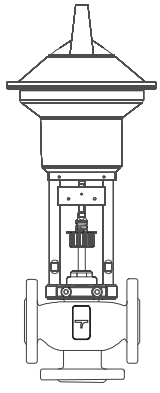
For temperatures above 130°C, accessories are required


B10681

Combination of BUD, PN 6 with pneumatic drive AVP 243 / 244

Drive	**AVP 243 F021**			**AVP 244 F021**		
Perm. press. p_{stat}	**≤ 6 bar**			**≤ 6 bar**		
Running time [1]	**24 s**			**40 s**		
Stroke	**20 mm**			**20 mm**		
Valve	**Δp_{max}**	**Δp_s**		**Δp_{max}**	**Δp_s**	
BUD 065	2	2.3		3.0	4.5	
BUD 080	1.3	1.5		3.0	3.0	

For temperatures above 130°C, accessories are required


B10682

Drive	**AVP 243 F031**			**AVP 244 F031**		
Perm. press. p_{stat}	**≤ 6 bar**			**≤ 6 bar**		
Running time [1]	**24 s**			**40 s**		
Stroke	**40 mm**			**40 mm**		
Valve	**Δp_{max}**	**Δp_s**		**Δp_{max}**	**Δp_s**	
BUD 100	0.9	1.0		2	2	

For temperatures above 130°C, accessories are required

1) In relation to the Centair air rate (400 l_n/h) and to a pipe with length of 20 m and diameter of 4 mm

Valve: Variant F, for technical data and accessories see Valve Type Table
Drive: Variant F, for technical data, accessories and installation position see section 71
Example: BUD 065 F300 / AVP 243 F031
Valve control passage A-AB is closed when actuator is pressureless = factory setting
Valve control passage A-AB is open when actuator is pressureless = on request

Δpmax [bar]=	Maximum permitted pressure difference across the valve at which the drive can still reliably open and close the valve, taking account of ΔPv.
Δps [bar]=	Maximum permitted pressure difference across the valve in case of a fault (pipe break downstream of the valve) at which the drive can close the valve reliably with 'fast' performance of the stroke

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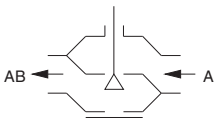
→ PDS 76.115

VUE: Flanged through valve, PN 16/10



B01133a

How energy efficiency is improved

Accurate control with high reliability.

Areas of application

Continuous control of cold/hot water, air and low-pressure steam up to 115°C in closed networks[1]. Water quality as per VDI 2035. Assembly with AVP 242 to AVP 244 actuators as a regulating unit.

Features

- Nominal pressure 16 bar
- Control valve contains no silicone grease; painted black
- Nominal diameters DN15 to DN150
- Equal-percentage characteristic in the case of F300
- Linear characteristic in the case of F200 with increased k_{vs} value
- With the spindle retracted, the valve is closed
- Closes against the pressure DN15 to DN150 or with the pressure DN15 to DN50

Technical description

- Valve with flange connection as per EN 1092-2, Form B, raised face, for PN16 and PN10
- Valve body and seat in cast iron
- Stainless steel spindle
- Brass plug in nominal diameters DN15 to DN50, with glass-fibre-reinforced Teflon sealing ring
- Brass plug in nominal diameters DN65 to DN150, metal-on-metal seal
- Stuffing box made of brass with EPDM wiper ring and double O-ring seal

Type	Nominal diameter DN	Connection PN	k_{VS} value m^3/h	Weight kg
VUE 015 F350	15	16 / 10	0.4	3.2
VUE 015 F340	15	16 / 10	0.63	3.2
VUE 015 F330	15	16 / 10	1.0	3.2
VUE 015 F320	15	16 / 10	1.6	3.2
VUE 015 F310	15	16 / 10	2.5	3.2
VUE 015 F300	15	16 / 10	4.0	3.2
VUE 020 F300	20	16 / 10	6.3	4.1
VUE 025 F300	25	16 / 10	10	4.7
VUE 032 F300	32	16 / 10	16	7.3
VUE 040 F300	40	16 / 10	22	8.6
VUE 050 F300	50	16 / 10	28	11.2
VUE 050 F200	50	16 / 10	40	11.2
VUE 065 F300	65	16 / 10	49	17.3
VUE 065 F200	65	16 / 10	63	17.3
VUE 080 F300	80	16 / 10	78	22.9
VUE 080 F200	80	16 / 10	100	22.9
VUE 100 F300	100	16 / 10	124	33.0
VUE 100 F200	100	16 / 10	160	33.0
VUE 125 F300	125	16 / 10	200	48.0
VUE 125 F200	125	16 / 10	240	48.0
VUE 150 F300	150	16 / 10	300	68.0
VUE 150 F200	150	16 / 10	320	68.0

Operating temperature	–10...150 °C [2]	Dimension drawing	DN 15...50	M10437
Operating pressure	up to 120 °C, 16 bar		DN 50...150	M10439
	up to 130 °C, 13 bar			
	up to 150 °C, 10 bar	Fitting instructions		
Valve characteristic F200	linear	Valve	DN 15...50	MV 506008
F300	equal-percentage	Valve	DN 65...150	MV 505964
Valve control ratio	> 50:1	Assembly	AVP 242 F001	MV 506041
Stuffing box	2 O-rings, EPDM	Assembly	AVP 242 F021	MV 506012
Leakage rate at max. Δp_S	≤ 0.05% of k_{VS} value	Assembly	AVP 243 / 244	MV 506013
Valve stroke DN 15...50	8 mm			
DN 65...80	20 mm	Declaration on materials		MD 76.115
DN 100...150	40 mm			

1) Air humidity must not exceed 75%
2) At temperatures below 0°C, use the stuffing box heater; at temperatures above 100°C, use the temperature adaptor (accessory).

For accessories and combinations with pneumatic drives, see next pages >>>

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→PDS 76.115

Accessories

0372240 001*	Manual adjuster for valves with 8 mm stroke; MV 505813
0372249 001*	Adaptor required when temperature of medium >100 °C up to 130°C (also recommended at < 10 °C) from DN 15 to DN 50, MV 505932
0372249 002*	Adaptor required when temperature of medium >130 °C up to 150°C, from DN 15 to DN 50, MV 505932
0372336 180	Adaptor required when temperature of medium. >130 °C / >150°C from DN 65, MV 505902
0378284 100*	Stuffing box heater, 230 V~; 15 W, for media below 0°C, DN 15...150, MV 505978
0378284 102*	Stuffing box heater, 24 V~; 15 W, for media below 0°C, DN 15...150, MV 505978
0378368 001	Complete replacement stuffing box for DN 15 to DN 50
0378369 001	Complete replacement stuffing box for DN 65 to DN 150

*) Dimension drawing or wiring diagram available under the same number

Warranty The technical data and pressure differences indicated here are only applicable in combination with Sauter actuators. Any warranty shall lapse if actuators from other manufacturers are used.

For combinations with pneumatic drives, see next page >>>

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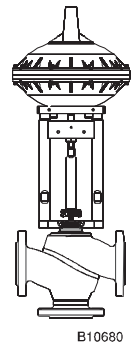
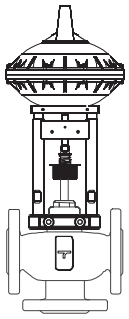
→ PDS 76.115

Combination of VUE, PN 16/10 with pneumatic drive AVP 242


B10680

Drive: AVP 242 F001 Perm. press. $P_{stat::}$ ≤ 16 bar Running time [1]: 8 s Stroke : 8 mm			
Valve	Δp_{max}	Δp_s	
VUE 015	10.0	16.0	
VUE 020	10.0	16.0	
VUE 025	10.0	12.0	
VUE 032	6.5	6.5	
VUE 040	4.0	4.0	
VUE 050	2.5	2.5	

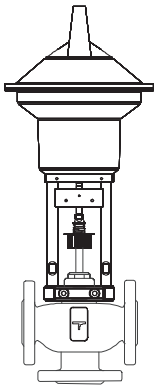
For temperatures above 100°C, accessories are required


B10681

Drive Perm. press. p_{stat} AVP 242 F021 ≤ 16 bar Running time [1] 8 s Stroke 20 mm			
Valve	Δp_{max}	Δp_s	
VUE 065	1.5	1.5	
VUE 080	1.0	1.0	

For temperatures above 130°C, accessories are required

Combination of VUE, PN 16/10 with pneumatic drive AVP 243 / 244


B10682

Drive Perm. press. p_{stat} Running time [1] Stroke	AVP 243 F021 ≤ 16 bar 24 s 20 mm			AVP 244 F021 ≤ 16 bar 40 s 20 mm		
Valve	Δp_{max}	Δp_s		Δp_{max}	Δp_s	
VUE 065	2.3	2.3		3.0	4.5	
VUE 080	1.5	1.5		3.0	3.0	

Drive Perm. press. p_{stat} Running time [1] Stroke	AVP 243 F031 ≤ 16 bar 24 s 40 mm			AVP 244 F031 ≤ 16 bar 40 s 40 mm		
Valve	Δp_{max}	Δp_s		Δp_{max}	Δp_s	
VUE 100	1.0	1.0		2.0	2.0	
VUE 125	0.6	0.6		1.2	1.2	
VUE 150	0.4	0.4		1.0	1.0	

For temperatures above 130°C, accessories are required

1) In relation to the Centair air rate (400 l_N/h) and to a pipe with length of 20 m and diameter of 4 mm

Valve: Variant F, for technical data and accessories see Valve Type Table
Drive: Variant F, for technical data, accessories and installation position see section 71
Example: VUE 065 F300 / AVP 243 F031
Valve is closed when actuator is pressureless = factory setting
Valve is open when actuator is pressureless = on request

Δpmax [bar]= Maximum permitted pressure difference across the valve at which the drive can still reliably open and close the valve, taking account of ΔPv.
Δps [bar]= Maximum permitted pressure difference across the valve in case of a fault (pipe break downstream of the valve) at which the drive can close the valve reliably with 'fast' performance of the stroke

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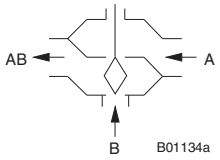
→ PDS 76.116

BUE: Flanged three-way valves, PN 16/10

Y07545



How energy efficiency is improved

Accurate control with high reliability.

Areas of application

Continuous control of cold/hot water, air and low-pressure steam up to 115C in closed networks[1]. Water quality as per VDI 2035. Assembly with AVP 242 to AVP 244 actuators as a regulating unit.

Features

- Nominal pressure 16 bar
- Control valve contains no silicone grease; painted black
- Nominal diameters DN15 to DN150
- Equal-percentage characteristic in the case of F300
- Linear characteristic in the case of F200 with increased k_{vs} value
- Linear mixing passage characteristic
- With the spindle retracted, the valve is closed
- Application as control valve or diverting valve

Technical description

- Valve with flange connection as per EN 1092-2, Form B, raised face, for PN16 and PN10
- Valve body and seat in cast iron
- Stainless steel spindle
- Brass plug in nominal diameters DN15 to DN50, with glass-fibre-reinforced Teflon sealing ring
- Brass plug in nominal diameters DN65 to DN150, metal-on-metal seal
- Stuffing box made of brass with EPDM wiper ring and double O-ring seal

Type	Nominal diameter DN	Connection PN	k_{VS} value m³/h	Weight kg
BUE 015 F330	15	16 / 10	1.0	3.2
BUE 015 F320	15	16 / 10	1.6	3.2
BUE 015 F310	15	16 / 10	2.5	3.2
BUE 015 F300	15	16 / 10	4.0	3.2
BUE 020 F300	20	16 / 10	6.3	4.1
BUE 025 F300	25	16 / 10	10	4.7
BUE 032 F300	32	16 / 10	16	7.1
BUE 040 F300	40	16 / 10	22	8.4
BUE 050 F300	50	16 / 10	28	11.2
BUE 050 F200	50	16 / 10	40	11.2
BUE 065 F300	65	16 / 10	49	17.3
BUE 065 F200	65	16 / 10	63	17.3
BUE 080 F300	80	16 / 10	78	22.9
BUE 080 F200	80	16 / 10	100	22.9
BUE 100 F300	100	16 / 10	124	33.0
BUE 100 F200	100	16 / 10	160	33.0
BUE 125 F300	125	16 / 10	200	48.0
BUE 125 F200	125	16 / 10	240	48.0
BUE 150 F300	150	16 / 10	300	68.0
BUE 150 F200	150	16 / 10	320	68.0

Operating temperature		–10...150 °C [2]
Operating pressure		up to 120 °C, 16 bar
		up to 130 °C, 13 bar
		up to 150 °C, 10 bar
Valve characteristic for		
control passage	F200	linear
	F300	equal-percentage
mixing passage		linear
Valve control ratio		> 50:1
Stuffing box		2 O-rings. EPDM
Leakage rate at max. Δp_S		
control passage		≤ 0.05% of k_{VS} value
mixing passage		≤ 1% of k_{VS} value
Stroke	DN 15...50	8 mm
	DN 65...80	20 mm
	DN 100...150	40 mm

Dimension drawing		
	DN 15...50	M10437
	DN 65...150	M10441
Fitting instructions		
Valve	DN 15...50	MV 506008
Valve	DN 65...150	MV 505964
Assembly	AVP 242 F001	MV 506041
Assembly	AVP 242 F021	MV 506012
Assembly	AVP 243 / 244	MV 506013
Declaration on materials		MD 76.116

1) Air humidity must not exceed 75%
2) At temperatures below 0°C, use the stuffing box heater; at temperatures above 100°C, use the temperature adaptor (accessory).

For accessories and combinations with pneumatic drives, see next pages >>>

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→ PDS 76.116

Accessories

0372240 001*	Manual adjuster for valves with 8 mm stroke; MV 505813
0372249 001*	Adaptor required when temperature of medium >100 °C up to 130°C (recommended at temperatures of < 10 °C) from DN 15 to DN 50, MV 505932
0372249 002*	Adaptor required when temperature of medium >130 °C up to 150°C , from DN 15 to DN 50, MV 505932
0372336 180	Adaptor required when temperature of medium. >130 °C / >150°C from DN 65, MV 505902
0378284 100*	Stuffing box heater, 230 V~; 15 W, for media below 0°C, DN 15...150, MV 505978
0378284 102*	Stuffing box heater, 24 V~; 15 W, for media below 0°C, DN 15...150, MV 505978
0378368 001	Complete replacement stuffing box for DN 15 to DN 50
0378369 001	Complete replacement stuffing box for DN 65 to DN 150

*) Dimension drawing or wiring diagram available under the same number

Warranty The technical data and pressure differences indicated here are only applicable in combination with Sauter actuators. Any warranty shall lapse if actuators from other manufacturers are used.

For combinations with pneumatic drives, see next page >>>

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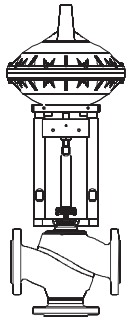
→ PDS 76.116

Combination of BUE, PN 16/10 with pneumatic drive AVP 242

Drive	**AVP 242 F001**		
Perm. press. p_{stat}	**≤ 10 bar**		
Running time [1]	**8 s**		
Stroke	**8 mm**		
Valve	**Δp_{max}**	**Δp_s**	
BUE 015	10.0	16.0	
BUE 020	10.0	16.0	
BUE 025	10.0	12.0	
BUE 032	6.0	6.5	
BUE 040	4.0	4.0	
BUE 050	2.5	2.5	

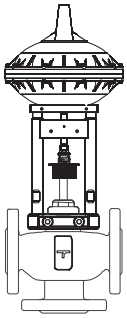
For temperatures above 100°C, accessories are required



B10680

Drive	**AVP 242 F021**		
Perm. press. p_{stat}	**≤ 10 bar**		
Running time [1]	**8 s**		
Stroke	**20 mm**		
Valve	**Δp_{max}**	**Δp_s**	
BUE 065	1.2	1.5	
BUE 080	0.8	1.0	

For temperatures above 130°C, accessories are required

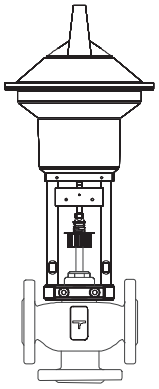


B10681

Combination of BUE, PN 16/10 with pneumatic drive AVP 243 / 244

Drive	**AVP 243 F021**			**AVP 244 F021**		
Perm. press. p_{stat}	**≤ 10 bar**			**≤ 10 bar**		
Running time [1]	**24 s**			**40 s**		
Stroke	**20 mm**			**20 mm**		
Valve	**Δp_{max}**	**Δp_s**		**Δp_{max}**	**Δp_s**	
BUE 065	2.0	2.3		3.0	4.5	
BUE 080	1.3	1.5		3.0	3.0	

For temperatures above 130°C, accessories are required



B10682

Drive	**AVP 243 F031**			**AVP 244 F031**		
Perm. press. p_{stat}	**≤ 10 bar**			**≤ 10 bar**		
Running time [1]	**24 s**			**40 s**		
Stroke	**40 mm**			**40 mm**		
Valve	**Δp_{max}**	**Δp_s**		**Δp_{max}**	**Δp_s**	
BUE 100	1.0	1.0		2.0	2.0	
BUE 125	0.6	0.6		1.2	1.2	
BUE 150	0.4	0.4		1.0	1.0	

For temperatures above 130°C, accessories are required

1) In relation to the Centair air rate (400 l_n/h) and to a pipe with length of 20 m and diameter of 4 mm

Valve: Variant F, for technical data and accessories see Valve Type Table
Drive: Variant F, for technical data, accessories and installation position see section 71
Example: BUE 065 F300 / AVP 243 F031
Valve control passage A-AB is closed when actuator is pressureless = factory setting
Valve control passage A-AB is open when actuator is pressureless = on request

Δpmax [bar]= Maximum permitted pressure difference across the valve at which the drive can still reliably open and close the valve, taking account of Δpv.

Δps [bar]= Maximum permitted pressure difference across the valve in case of a fault (pipe break downstream of the valve) at which the drive can close the valve reliably with 'fast' performance of the stroke.

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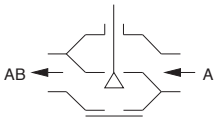
→ PDS 76.120

VUG: Flanged through valve, PN 25/16



How energy efficiency is improved
Accurate control with high reliability.

Areas of application
Continuous control of cold/warm/hot water, water vapour and air in HVAC systems, in closed networks. Water quality as per VDI 2035. Assembly with AVP 242 to AVP 244 actuators as a regulating unit.

Features
- Nominal pressure 25 bar for DN15 to DN150, nominal pressure 16 bar for DN15 to DN80
- Satisfies standard for actuators as per DIN 32730 2) 3)
- Control valve contains no silicone grease; painted black
- Nominal diameters DN15 to DN150
- Equal-percentage characteristic
- With the spindle retracted, the valve is closed
- Closes against or with the pressure
- Temperature range up to 240°C

Technical description
- Valve with flange connection as per EN 1092-2, Form B, raised face, for PN25 and PN16, depending on type
- Ductile cast iron valve body
- Stainless steel valve seat
- Stainless steel spindle
- Stainless steel plug in nominal diameters DN15 to DN50, with glass-fibre-reinforced Teflon sealing ring
- Stainless steel plug in nominal diameters DN65 to DN150, metal-on-metal seal
- Maintenance-free brass stuffing box with spring-loaded Teflon washer

Type	Nominal diameter DN	Connection PN	k_{VS} value m^3/h	Weight kg
VUG 015 F374	15	25 / 16	0.16	4.0
VUG 015 F364	15	25 / 16	0.25	4.0
VUG 015 F354	15	25 / 16	0.40	4.0
VUG 015 F344	15	25 / 16	0.63	4.0
VUG 015 F334	15	25 / 16	1	4.0
VUG 015 F324	15	25 / 16	1.6	4.0
VUG 015 F314	15	25 / 16	2.5	4.0
VUG 015 F304	15	25 / 16	4	4.0
VUG 020 F304	20	25 / 16	6.3	5.0
VUG 025 F304	25	25 / 16	10	5.6
VUG 032 F304	32	25 / 16	16	9.1
VUG 040 F304	40	25 / 16	25	11.2
VUG 050 F304	50	25 / 16	40	13.8
VUG 065 F304	65	25	63	25
VUG 065 F316 1)	65	16	63	25
VUG 080 F304	80	25 / 16	100	37
VUG 100 F304	100	25 / 16	160	50
VUG 125 F304	125	25	250	75
VUG 150 F304	150	25	340	100

Operating temperature2)	–20...240 °C		Dimension drawing	DN 15...50	M10427
Operating pressure	up to 120 °C	25 bar		DN 65...150	M10447
	up to 240 °C	20 bar			
	–20...–10°C	18 bar	Fitting instructions		
Valve characteristic	equal-percentage			DN 15...50	MV 505947
Valve control ratio	> 50:1			DN 65...150	MV 505973
Stuffing box	Brass / Teflon		Assembly	AVP 242	MV 506012
Leakage rate at max. Δps:	≤ 0.05% of k_{vs} value		Assembly	AVP 243 / 244	MV 506013
Stroke DN 15...50	20 mm				
DN 65...150	40 mm		Material declaration		MD 76.120

1) The VUG 065 F316 valves do not have TÜV approval. They do not bear the test institute's code and are classified under Category I of the Directive on Pressure Equipment. These valves cannot be employed with the AVN 224S F… actuator as a safety unit

2) At temperatures below 0°C, use the stuffing box heater; at temperatures above130 °C or 180 °C use the appropriate adaptor (accessory). Down to –10 °C, as per AD code of practice W 10. Water with anti-frost products and brines.

3) DIN 32730 has been substituted by DIN EN 14597.

For accessories and combinations with pneumatic drives, see next page >>>

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→ PDS 76.120

Accessories

0372336 180* Adaptor (required for medium > 130 °C / < 180 °C; MV 505902)
0372336 240* Adaptor (required for medium > 180 °C / < 240 °C; MV 505902)
0378283 001 Replacement pack for stuffing box, nominal diameter DN 15-150; MV 505950
z378284 100* Stuffing box heater, 230 V~; 15 W, for media below 0 °C; MV 505978
0378284 102* Stuffing box heater, 24 V~; 15 W, for media below 0 °C; MV 505978
0378285 001 Stuffing box, stainless steel /Teflon DN 15…150
0378384 001 Anti-torsion device DN 65…150

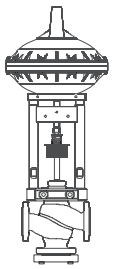
*) Dimension drawing or wiring diagram available under the same number

Warranty The technical data and pressure differences indicated here are only applicable in combination with Sauter actuators. Any warranty shall lapse if actuators from other manufacturers are used.

Combination of VUG, PN 25/16 with pneumatic drive AVP 242...244

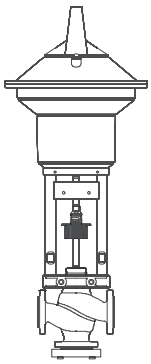
Drive **Perm. press. p_{stat}** **Running time** [1] **Stroke**	**AVP 242 F021** **≤ 25 bar** **8 s** **20 mm**		
Valve	**Δp_{max}**	**Δp_s**	
VUG 015	16.0	16.5	
VUG 020	13.0	13.0	
VUG 025	8.8	8.8	
VUG 032	5.5	5.5	
VUG 040	3.7	3.7	
VUG 050	2.5	2.5	

For temperatures above 130°C, accessories are required


B10689

Drive **Perm. press. p_{stat}** **Running time** [1] **Stroke**	**AVP 243 F021** **≤ 25 bar** **24 s** **20 mm**			**AVP 244 F021** **≤ 25 bar** **40 s** **20 mm**		
Valve	**Δp_{max}**	**Δp_s**		**Δp_{max}**	**Δp_s**	
VUG 015	16.0	22.7		16.0	25.0	
VUG 020	16.0	18.0		16.0	25.0	
VUG 025	12.2	12.2		16.0	24.5	
VUG 032	7.8	7.8		15.5	15.5	
VUG 040	5.2	5.2		10.3	10.3	
VUG 050	3.3	3.3		6.6	6.6	

For temperatures above 130°C, accessories are required


B10683

Drive **Perm. press. p_{stat}** **Running time** [1] **Stroke**	**AVP 243 F031** **≤ 25 bar** **24 s** **40 mm**			**AVP 244 F031** **≤ 25 bar** **40 s** **40 mm**		
Valve	**Δp_{max}**	**Δp_s**		**Δp_{max}**	**Δp_s**	
VUG 065	2.2	2.2		4.4	4.4	
VUG 080	1.5	1.5		3.0	3.0	
VUG 100	1.0	1.0		2.0	2.0	
VUG 125	0.7	0.7		1.3	1.3	
VUG 150	0.5	0.5		1.0	1.0	

For temperatures above 130°C, accessories are required

1) In relation to the Centair air rate (400 l_n/h) and to a pipe with length of 20 m and diameter of 4 mm

Valve: Variant F, for technical data and accessories see Valve Type Table
Drive: Variant F, for technical data, accessories and installation position see section 71
Example: VUD 065 F300 / AVP 243 F031
Valve is closed when actuator is pressureless = factory setting
Valve is open when actuator is pressureless = on request

Δpmax [bar]= Maximum permitted pressure difference across the valve at which the drive can still reliably open and close the valve, taking account of Δpv.
Δps [bar]= Maximum permitted pressure difference across the valve in case of a fault (pipe break downstream of the valve) at which the drive can close the valve reliably with 'fast' performance of the stroke.

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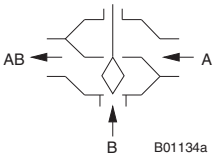
→ PDS 76.121

BUG: Flanged three-way valve, PN 25/16

Y07545



How energy efficiency is improved

Accurate control with high reliability.

Areas of application

Continuous control of cold/warm/hot water, water vapour and air in HVAC systems, in closed networks. Water quality as per VDI 2035. Assembly with AVP 242 to AVP 244 actuators as a regulating unit.

Features

- Nominal pressure 25 bar for DN15 to DN150, nominal pressure 16 bar for DN15 to DN80
- Satisfies standard for actuators as per DIN 32730[2) 3)]
- Control valve contains no silicone grease; painted black
- Nominal diameters DN15 to DN150
- Equal-percentage characteristic
- Linear mixing passage characteristic
- With the spindle retracted, the valve is closed
- Application as control valve or diverting valve
- Temperature range up to 240°C

Technical description

- Valve with flange connection as per EN 1092-2, Form B, raised face, for PN25 and PN16, depending on type
- Ductile cast iron valve body
- Stainless steel valve seat
- Stainless steel spindle
- Stainless steel plug in nominal diameters DN15 to DN50, with glass-fibre-reinforced Teflon sealing ring
- Stainless steel plug in nominal diameters DN65 to DN150, metal-on-metal seal
- Maintenance-free brass stuffing box with spring-loaded Teflon washer

Type	Nominal diameter DN	Connection PN	k_{VS} value m^3/h	Weight kg
BUG 015 F334	15	25 / 16	1	3.1
BUG 015 F324	15	25 / 16	1.6	3.1
BUG 015 F314	15	25 / 16	2.5	3.1
BUG 015 F304	15	25 / 16	4	3.1
BUG 020 F304	20	25 / 16	6.3	4.0
BUG 025 F304	25	25 / 16	10	4.7
BUG 032 F304	32	25 / 16	16	7.2
BUG 040 F304	40	25 / 16	25	9.2
BUG 050 F304	50	25 / 16	40	11.5
BUG 065 F316 [1)]	65	16	63	28
BUG 065 F304	65	25	63	28
BUG 080 F304	80	25 / 16	100	40
BUG 100 F304	100	25	160	57
BUG 125 F304	125	25	250	82
BUG 150 F304	150	25	340	113

Operating temperature[2)]	–20...240 °C			
Operating pressure	up to 120 °C, 25 bar			
	up to 240 °C, 20 bar			
	–20...–10°C, 18 bar			
Valve characteristic				
control passage	equal-percentage			
mixing passage	linear			
Control ratio	> 50:1			
Stuffing box	Brass / Teflon			
Leakage rate at max. Δp_S				
control passage	≤ 0.05% of k_{VS} value			
mixing passage	≤ 1.0% of k_{VS} value			
Stroke DN 15...50	20 mm			
DN 65...150	40 mm			

Dimension drawing		
	DN 15...50 (65)	M10425
	DN 65...150	M10446
Fitting instructions		
Valve	DN 15...50	MV 505947
Valve	DN 65...150	MV 505973
Assembly	AVP 242	MV 506012
Assembly	AVP 243 / 244	MV 506013
Declaration on materials		MD 76.121

1) The VUG 065 F316 valves do not have TÜV approval. They do not bear the test institute's code and are classified under Category I of the Directive on Pressure Equipment.

2) At temperatures below 0 °C, use the stuffing box heater; at temperatures above 100 °C, use the temperature adaptor (accessory).

3) DIN 32730 has been substituted by DIN EN 14597.

For accessories and combinations with pneumatic drives, see next page >>>

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→ PDS 76.121

Accessories

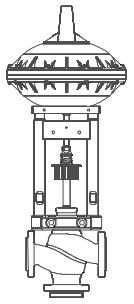
0372336 180* Adaptor (required for medium > 130 °C / < 180 °C; MV 505902)
0372336 240* Adaptor (required for medium > 180 °C / < 240 °C; MV 505902)
0378283 001 Replacement pack for stuffing box, nominal diameter DN 15-150; MV 505950
0378284 100* Stuffing box heater, 230 V~; 15 W, for media below 0 °C; MV 505978
0378284 102* Stuffing box heater, 24 V~; 15 W, for media below 0 °C; MV 505978
0378285 001 Stuffing box, stainless steel /Teflon DN 15…150
0378384 001 Anti-torsion device DN 65…150

*) Dimension drawing or wiring diagram available under the same number

Warranty The technical data and pressure differences indicated here are applicable only in combination with Sauter actuators. Any warranty shall lapse if actuators from other manufacturers are used.

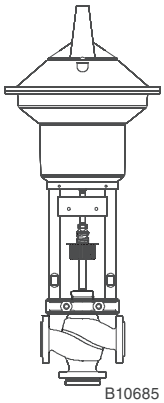
Combination of BUG, PN 25/16 with pneumatic drive AVP 242...244

Drive **Perm. press. p_{stat}** **Running time** [1] **Stroke**	**AVP 242 F021** **≤ 16 bar** **8 s** **20 mm**		
Valve	**Δp_{max}**	**Δp_s**	
BUG 015	16.0	16.5	
BUG 020	10.0	13.0	
BUG 025	6.5	8.8	
BUG 032	4.0	5.5	
BUG 040	2.6	3.7	
BUG 050	1.7	2.4	


B10688

For temperatures above 130°C, accessories are required

Drive **Perm. press. p_{stat}** **Running time** [1] **Stroke**	**AVP 243 F021** **≤ 16 bar** **24 s** **20 mm**			**AVP 244 F021** **≤ 16 bar** **40 s** **20 mm**		
Valve	**Δp_{max}**	**Δp_s**		**Δp_{max}**	**Δp_s**	
BUG 015	16.0	22.7		16.0	25.0	
BUG 020	16.0	18.0		16.0	25.0	
BUG 025	11.9	12.2		16.0	24.4	
BUG 032	7.4	7.8		15.5	15.5	
BUG 040	4.2	5.2		10.3	10.3	
BUG 050	3.1	3.3		6.5	6.5	


B10685

For temperatures above 130°C, accessories are required

Drive **Perm. press. p_{stat}** **Running time** [1] **Stroke**	**AVP 243 F031** **≤ 25 bar** **24 s** **40 mm**			**AVP 244 F031** **≤ 25 bar** **40 s** **40 mm**		
Valve	**Δp_{max}**	**Δp_s**		**Δp_{max}**	**Δp_s**	
BUG 065	2.2	2.2		4.4	4.4	
BUG 080	1.5	1.5		3.0	3.0	
BUG 100	1.0	1.0		2.0	2.0	
BUG 125	0.6	0.7		1.3	1.3	
BUG 150	0.4	0.5		1.0	1.0	

For temperatures above 130°C, accessories are required

1) In relation to the Centair air rate (400 l_n/h) and to a pipe with length of 20 m and diameter of 4 mm

Valve: Variant F, for technical data and accessories see Valve Type Table
Drive: Variant F, for technical data, accessories and installation position, see section 71
Example: VUD 065 F300 / AVP 243 F031
Valve control passage A-AB is closed when actuator is pressureless = factory setting
Valve control passage A-AB is open when actuator is pressureless = on request

Δpmax [bar]= Maximum permitted pressure difference across the valve at which the drive can still reliably open and close the valve, taking account of Δpv.
Δps [bar]= Maximum permitted pressure difference across the valve in case of a fault (pipe break downstream of the valve) at which the drive can close the valve reliably with 'fast' performance of the stroke.

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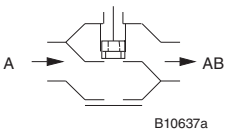
→ PDS 76.122

VUP: Pressure-relieved through flanged valve, PN 25



How energy efficiency is improved

Thanks to the pressure compensation, savings can be made with the actuator. Precision and reliability go without saying.

Areas of application

Continuous control of cold/warm/hot water, water vapour and air in HVAC systems, in closed networks. Water quality as per VDI 2035. Assembly with AVP 242 to AVP 244 actuators as a regulating unit.

Features

- Nominal pressure 25 bar
- Control valve contains no silicone grease; with pressure compensation; galvanised and painted black
- Nominal diameters DN40 to DN150
- Equal percentage characteristic
- With the spindle pressed in, the valve is closed
- Closes only against the pressure
- Temperature range up to 200°C

Technical description

- Valve with flange connection as per EN 1092-2, Form B raised face
- Ductile cast iron valve body
- Stainless steel valve seat
- Stainless steel spindle
- Stainless steel cone
- Maintenance-free brass stuffing box with spring-loaded Teflon/Viton/Teflon washer

Type	Nominal diameter DN	Connection	k_{VS} value m^3/h	Weight kg
VUP 040 F304	40	PN 25	25	10
VUP 050 F304	50	PN 25	40	14
VUP 065 F304	65	PN 25	63	18
VUP 080 F304	80	PN 25	100	25.5
VUP 100 F304	100	PN 25	160	36.5
VUP 125 F304	125	PN 25	250	56.5
VUP 150 F304	150	PN 25	350	84.5

Operating temperature[1)]		–20...200 °C
Operating pressure		up to 120 °C, 25 bar up to 200 °C, 20 bar –20...–10°C, 18 bar
Valve characteristic		equal-percentage
Rangeability		> 100:1
Stuffing box		Brass / Teflon / Viton
Leakage rate at max. Δp_S		≤ 0.05% of k_{VS} value
Stroke	DN 40	14 mm
	DN 50…80	25 mm
	DN 100…150	40 mm

Dimension drawing	M10426
Installation instructions	
Valve	MV 505963
Assembly AVP 242	MV 506012
Assembly AVP 243 / 244	MV 506013
Declaration on materials	MD 76.122

Zubehör

0372336 180* Intermediate piece (required for medium > 130 °C / < 180 °C; MV 505902)
0372336 240* Intermediate piece (required for medium > 180 °C / < 200 °C; MV 505902)
0378284 100* Stuffing box heater, 230 V~; 15 W, for media below 0 °C; MV 505978
0378284 102* Stuffing box heater, 24 V~; 15 W, for media below 0 °C; MV 505978
0378356 001 Replacement pack for stuffing box, nominal diameter DN 40-80; MV 505972
0378357 001 Replacement pack for stuffing box, nominal diameter DN 100-150; MV 505972

*) Dimension drawing or wiring diagram available under the same number

1) At temperatures below 0°C, use the stuffing box heater; at temperatures above130 °C or 180 °C use the appropriate intermediate piece (accessory).

Warranty The technical data and pressure differences indicated here are only applicable in combination with Sauter valve drives. Any warranty shall lapse if valve drives from other manufacturers are used.

For combinations with pneumatic drives, see next page >>>

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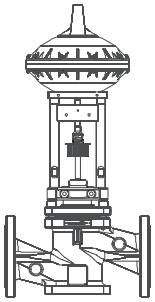
→ PDS 76.122

Combination of VUP, PN 25 with pneumatic drive AVP 242...244

Drive **Running time** 1) **Stroke**	**AVP 242 F021** 2) **8 s** **20 mm**	
Valve	**Δp_{max}**	
VUP 040	22.2	
VUP 050	15.1	
VUP 065	15.1	
VUP 080	9.8	

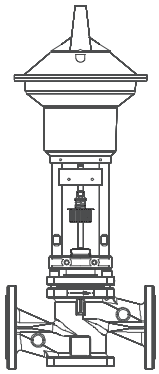
For temperatures above 130°C, accessories are required



B10687

Drive **Running time** 1) **Stroke**	**AVP 243 F031** 2) **24 s** **40 mm**		**AVP 244 F031**2) **40 s** **40 mm**	
Valve	**Δp_{max}**		**Δp_{max}**	
VUP 100	18.5		25	
VUP 125	10.7		25	
VUP 150	10.7		25	

For temperatures above 130°C, accessories are required



B10686

1) In relation to the Centair air rate (400 l_n/h) and to a pipe with length of 20 m and diameter of 4 mm
2) VUP with AVP only in combination with XSP 31 possible

Valve: Variant F, for technical data and accessories see Valve Type Table
Drive: Variant F, for technical data, accessories and installation position see section 71
Example: VUP 040 F304 / AVP 244 F021
Valve control passage A-AB is closed when actuator is pressureless = factory setting
Valve control passage A-AB is open when actuator is pressureless = on request

∆pmax [bar]= Maximum permitted pressure difference over the valve at which the drive can still reliably open and close the valve, taking account of ∆Pv.

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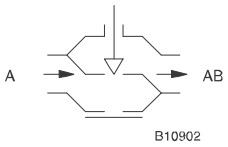
→ PDS 76.125

VUS: Flanged through valve, PN 40



How energy efficiency is improved
Accurate control with high reliability.

Areas of application
Continuous control of cold/warm/hot water, water vapour and air in HVAC systems, in closed networks. Water quality as per VDI 2035. Assembly with AVP 242 to AVP 244 actuators as a regulating unit.

Features
- Nominal pressure 40 bar
- Control valve contains no silicone grease; matt black
- Nominal diameters DN15 to DN150
- Equal-percentage characteristic
- With the spindle pressed in, the valve is closed
- Closes only against the pressure
- Temperature range up to 220°C
- Version with bellows down to -60°C, version with graphite seal up to 260°C

Technical description
- Valve with flange connection as per EN 1092-2, Form B raised face
- Cast steel valve body
- Stainless steel valve seat
- Stainless steel spindle
- Stainless steel plug
- Maintenance-free stainless steel stuffing box with spring-loaded Teflon washer

Type	Nominal diameter DN	Connection PN	k_{VS} value m^3/h	Weight kg
VUS 015 F375	15	40	0.16	5.1
VUS 015 F365	15	40	0.25	5.1
VUS 015 F355	15	40	0.40	5.1
VUS 015 F345	15	40	0.63	5.1
VUS 015 F335	15	40	1.0	5.1
VUS 015 F325	15	40	1.6	5.1
VUS 015 F315	15	40	2.5	5.1
VUS 015 F305	15	40	4.0	5.1
VUS 020 F305	20	40	6.3	5.9
VUS 025 F305	25	40	10.0	6.8
VUS 032 F305	32	40	16.0	8.4
VUS 040 F305	40	40	25.0	10.6
VUS 050 F305	50	40	40.0	13.2
VUS 065 F305	65	40	63.0	18.6
VUS 080 F305	80	40	100.0	25.1
VUS 100 F305	100	40	160.0	36.4
VUS 125 F305	125	40	220.0	56.4
VUS 150 F305	150	40	320.0	77.9

Operating temperature [1]	–10...220°C	Valve stroke	
Operating pressure [2]		DN 15...50	20 mm
at –10...50°C	40,0 bar	DN 65...100	30 mm
at 120°C	36.3 bar	DN 125...150	40 mm
at 220°C	29.4 bar	Dimension drawing	M10461
Valve characteristic	equal-percentage	Fitting instructions	MV 506071
Valve control ratio	> 50:1	AVP 242 assembly	MV 506012
Packing box	stainless steel/Teflon	AVP 243/244 assembly	MV 506013
Leakage rate at max. Δp_S:	≤ 0.05% of k_{VS} value	Declaration on materials	MD 76.125

1) Down to -10°C, no stuffing box heater is required. At temperatures between -10°C and -60°C, use special version with bellows-type mechanical seal (available on request, only to DN 100). Application: water with anti-freeze (glycol to 55% and brine solution), max. operating pressure 30 bar.
Above 130°C or 180°C, use the relevant adaptor (accessory). Above 220°C and up to 260°C, use stuffing box with graphite seal (accessory).

2) For operating pressure, see table of pressure and temperature values

For accessories and combinations with pneumatic drives, see next page >>>

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→ PDS 76.125

Accessories

0372336 180* Adaptor (required for media 130…180°C; MV 505902)
0372336 240* Adaptor (required for media 180…240°C; MV 505902)
0378373 001 Stuffing box with graphite seal for temp. 220…260°C; DN 15…50; MV 506080
0378373 002 Stuffing box with graphite seal for temp. 220…260°C; DN 65…100; MV 506080
0378373 003 Stuffing box with graphite seal for temp. 220…260°C; DN 125…150; MV 506080

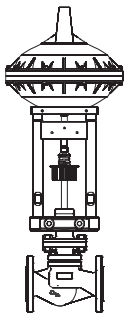
*) Dimension drawing or wiring diagram are available under the same number

Warranty The technical data and pressure differences stated above apply only when used in combination with Sauter actuators. If used together with actuators of a different manufacturer, the warranty becomes invalid.

N.B.: These valves should be used only for closing against the pressure.

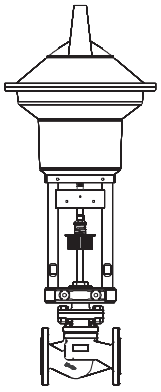
VUS combined with pneumatic actuator

Actuator Pressure p_{stat} Running time: Stroke:	**AVP 242 F021** **32 bar** **8 s** **20 mm**		
Valve	Against the pressure		
	Δp_{max}	**Δp_s**	
VUS 015	15,5	15,5	
VUS 020	15,5	15,5	
VUS 025	9,5	9,5	
VUS 032	7,2	7,2	
VUS 040	4,1	4,1	
VUS 050	2,7	2,7	


B10977

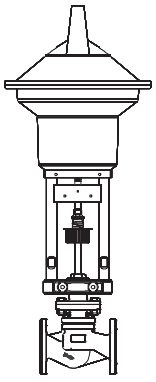
For temperatures above 130°C, accessories are required

Actuator Pressure p_{stat} Running time: Stroke:	**AVP 243 F021** **40 bar** **24 s** **20 mm**			**AVP 244 F021** **40 bar** **40 s** **20 mm**		
Valve	Against the pressure			Against the pressure		
	Δp_{max}	**Δp_s**		**Δp_{max}**	**Δp_s**	
VUS 015	21,7	21,7		40,0	40,0	
VUS 020	21,7	21,7		40,0	40,0	
VUS 025	13,1	13,1		26,2	26,2	
VUS 032	10,0	10,0		19,9	19,9	
VUS 040	5,7	5,7		11,4	11,4	
VUS 050	3,7	3,7		7,4	7,4	


B10978

For temperatures above 130°C, accessories are required

Actuator Pressure p_{stat} Running time: Stroke:	**AVP 243 F031** **25 bar** **24 s** **30 mm / 40 mm**			**AVP 244 F031** **40 bar** **40 s** **30 mm / 40 mm**		
Valve	Against the pressure			Against the pressure		
	Δp_{max}	**Δp_s**		**Δp_{max}**	**Δp_s**	
VUS 065	2,2	2,2		4,4	4,4	
VUS 080	1,5	1,5		2,9	2,9	
VUS 100	1,0	1,0		1,5	1,9	
VUS 125	0,6	0,6		1,0	1,2	
VUS 150	0,4	0,4		0,6	0,8	


B10978

For temperatures above 130°C, accessories are required

Valve: For F-variant, technical data and accessories see table of valve types.
Actuator: For F-variant, technical data, accessories and fitting position, see table of valve types.
Example: VUS 040 F305/AVP 242 F021 or AVP 243 F021
Valve is closed when actuator is pressureless = factory setting
Valve is open when actuator is pressureless = on request

Δpmax [bar]= Max. permissible pressure difference across the valve at which the drive can still firmly open and close the valve while taking Δpv into account.

Δps [bar]= Max. permissible pressure difference across the valve at which, in the event of a malfunction (pipe break after the valve), the drive can close the valve firmly and quickly.

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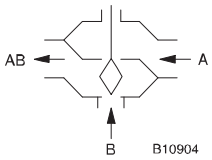
→ PDS 76.126

BUS: Flanged three-way valve, PN 40



How energy efficiency is improved
Accurate control with high reliability.

Areas of application
Continuous control of cold/warm/hot water, water vapour and air in HVAC systems, in closed networks. Water quality as per VDI 2035. Assembly with AVP 242 to AVP 244 actuators as a regulating unit.

Features
- Nominal pressure 40 bar
- Control valve contains no silicone grease; matt black
- Nominal diameters DN15 to DN150
- Linear control passage characteristic DN15 to DN100
- Equal percentage control passage characteristic DN125 to DN150
- Linear mixing passage characteristic
- With the spindle retracted, the valve is closed
- Can only be used as control valve
- Temperature range up to 220°C
- Version with bellows down to -60°C, version with graphite seal up to 260°C

Technical description
- Valve with flange connection as per EN 1092-2, Form B raised face
- Cast steel valve body
- Stainless steel valve seat
- Stainless steel spindle
- Stainless steel plug
- Maintenance-free stainless steel stuffing box with spring-loaded Teflon washer

Type	Nominal diameter DN	Connection PN	k_{VS} value m^3/h	Weight kg
BUS 015 F235	15	40	1.0	7.2
BUS 015 F225	15	40	1.6	7.2
BUS 015 F215	15	40	2.5	7.2
BUS 015 F205	15	40	4.0	7.2
BUS 020 F205	20	40	6.3	8.4
BUS 025 F205	25	40	10.0	9.4
BUS 032 F205	32	40	16.0	12.4
BUS 040 F205	40	40	25.0	15.5
BUS 050 F205	50	40	40.0	19.2
BUS 065 F205	65	40	63.0	27.6
BUS 080 F205	80	40	100.0	36.5
BUS 100 F205	100	40	160.0	61.2
BUS 125 F305	125	40	220.0	82.5
BUS 150 F305	150	40	320.0	113.5

Operating temperature [1]	–10...220°C	Valve stroke	
Operating pressure	–10...50°C 40 bar	DN 15...50	20 mm
	120 °C 36,3 bar	DN 65...100	30 mm
	220 °C 29,4 bar	DN 125...150	40 mm
Valve characteristic for			
ctrl passage DN15…100	linear	Dimension drawing	M10462
ctrl passage DN125…150	equal percentage		
mixing passage	linear	Fitting instructions	MV 506071
Valve control ratio	> 30:1	AVP 242 assembly	MV 506012
Stuffing box	stainless steel/Teflon	AVP 243/244 assembly	MV 506013
Leakage rate at max. Δp_S:			
control passage	≤ 0.05% of k_{VS} value	Declaration on materials	MD 76.126
mixing passage	≤ 1.0% of k_{VS} value		

1) Down to -10°C, no stuffing box heater is required. At temperatures between -10°C and -60°C, use special version with bellows-type mechanical seal (available on request, only to DN 100). Application: water with anti-freeze (glycol to 55% and brine solution), max. operating pressure 30 bar. Above 130°C or 180°C, use the relevant adaptor (accessory). Above 220°C and up to 260°C, use stuffing box with graphite seal (accessory).

For accessories and combinations with pneumatic drives, see next page >>>

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→ PDS 76.126

Accessories

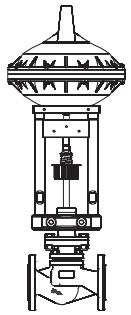
0372336 180* Adaptor (required for medium 130…180°C; MV 505902)
0372336 240* Adaptor (required for medium 180…240°C; MV 505902)
0378373 001 Stuffing box with graphite seal for temp. 220…260°C; DN 15…50; MV 506080
0378373 002 Stuffing box with graphite seal for temp. 220…260°C; DN 65…100; MV 506080
0378373 003 Stuffing box with graphite seal for temp. 220…260°C; DN 125…150; MV 506080

*) Dimension drawing or wiring diagram available under the same number

Warranty The technical data and pressure differences indicated here are only applicable in combination with Sauter actuators. Any warranty shall lapse if actuators from other manufacturers are used.
N.B.: These valves should be used only as control valves. Diverting valves can be ordered on request as a special version.

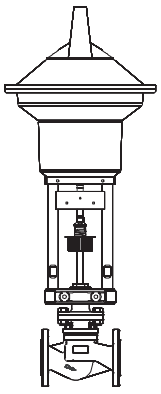
BUS combined with pneumatic actuator

Actuator Pressure p_{stat} Running time: Stroke:	**AVP 242 F021** **32 bar** **8 s** **20 mm**		
Valve	Against the pressure **Δp_{max}**	**Δp_s**	
BUS 015	12.1	15.6	
BUS 020	7.7	15.6	
BUS 025	6.6	9.4	
BUS 032	4.7	7.2	
BUS 040	3.0	4.1	
BUS 050	1.9	2.6	


B10977

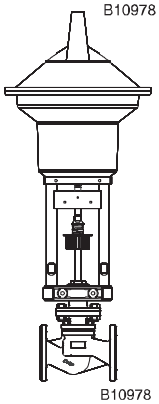
For temperatures above 130°C, accessories are required

Actuator Pressure p_{stat} Running time: Stroke:	**AVP 243 F021** **40 bar** **24 s** **20 mm**			**AVP 244 F021** **40 bar** **40 s** **20 mm**		
Valve	Against the pressure **Δp_{max}**	**Δp_s**		Against the pressure **Δp_{max}**	**Δp_s**	
BUS 015	21.1	21.7		24.5	24.5	
BUS 020	13.5	21.7		17.5	17.5	
BUS 025	11.6	13.1		14.7	14.7	
BUS 032	8.3	9.9		10.4	10.4	
BUS 040	5.3	5.7		6.2	6.2	
BUS 050	3.4	3.7		3.9	3.9	


B10978

For temperatures above 130°C, accessories are required

Actuator Pressure p_{stat} Running time: Stroke:	**AVP 243 F031** **25 bar** **24 s** **30 mm / 40 mm**			**AVP 244 F031** **40 bar** **40 s** **30 mm / 40 mm**		
Valve	Against the pressure **Δp_{max}**	**Δp_s**		Against the pressure **Δp_{max}**	**Δp_s**	
BUS 065	1.7	2.2		4.4	4.4	
BUS 080	1.1	1.5		2.9	2.9	
BUS 100	0.7	0.9		1.9	1.9	
BUS 125	0.4	0.7		1.3	1.3	
BUS 150	0.3	0.5		1.0	1.0	


B10978

For temperatures above 130°C, accessories are required

Valve: Variant F, for technical data and accessories see Valve Type Table
Drive: Variant F, for technical data, accessories and installation position see section 71
Example: BUS 040 F205/AVP 242 F021 or AVP 243 F021
Valve control passage A-AB is closed when actuator is pressureless = factory setting
Valve control passage A-AB is open when actuator is pressureless = on request

Δpmax [bar]= Max. permissible pressure difference across the valve at which the drive can still firmly open and close the valve while taking Δpv into account.
Δps [bar]= Max. permissible pressure difference across the valve at which, in the event of a malfunction (pipe break after the valve), the drive can close the valve firmly and quickly.

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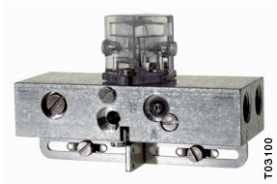
→ PDS 79.010

XSP: Pneumatic positioner



How energy efficiency is improved
Enables precise control of energy consumption using pneumatic actuators.

Areas of application
Can be used in combination with pneumatic actuators AK41 - 43 P and valve actuators AV43, AVP 142 plus AVP242 - 244.

Features
- Conversion of a continuous output signal into a defined position on the pneumatic drive
- The use of a positioner provides increased setting accuracy, range partition, changing direction of travel and an increase in positioning speed
- Housing of light-metal alloy
- Compressed-air connections with Rp 1/8" female thread
- Measuring connection for output pressure with M4 thread
- Measuring valve stroke using a measuring spring
- Complies with directive 97/23/EC Art. 3.3

Technical description
- Supply pressure 1.3 bar ± 0.1
- Linearity 1%

Type	Description	Setting ranges in bar zero	span	Weight kg
XSP 31 F001	fitted with cover	0.2...1.0	0.2...1.0	0.1

Supply pressure [1]	1.3 bar ± 0.1	Connection diagram	A01666
Max. control pressure	1.4 bar	Dimension drawing XSP 31	M274956
Max. air capacity	1000 l_n/h		
Air consumption	approx. 30 l_n/h	Fitting instructions	
Linearity	approx. 1%	XSP 31 on AVP 142, AV43 P	MV 43143
		XSP 31 on AVP 242…244	MV 506039
Perm. ambient temperature	0...70 °C	XSP 31 on AK41...43	MV 506088

Accessories
0274553 000 Restrictor Ø 0,7 mm for reducing the air capacity when the supply pressure is low.
. . . . . Assembly material: see drive data sheet, Section 71.

1) See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperatures.

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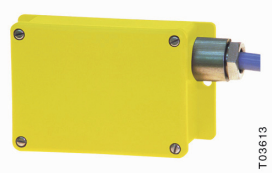
→ PDS 79.030

XAP: Position monitor/indicator



Y03241

Y03308

How energy efficiency is improved

For accurate position indication on pneumatic valve drives. Enables the monitoring of energy consumption in ventilation systems.

Areas of application

Auxiliary units for pneumatic actuators AK41 - 43 P and pneumatic valve actuators AV43, AVP 142 and AVP 242 - 244.

Features

- Position feedback for monitoring tasks
- Housing made of glass-fibre-reinforced, self-extinguishing plastic
- Auxiliary contact unit with two contacts
- Switches the relevant contacts, depending on whether drive spindle is moved in or out
- Potentiometer unit, whose resistance changes depending on the particular drive stroke

Technical description

- Permissible contact rating 10(2) A, 250 V~
- Pot. resistance 2000 Ω

Type	Description	Output signal	Weight kg
XAP 1 F001	aux.-contact unit	2 contacts: open/closed	0.3
XAP 2 F001	potentiometer unit	10 - 1800 Ω approx.	0.3

XAP 1:	
Contact rating	10 (2) A, 250 V~
Switching pt. for 'extended'	~ 5% before end position
Switching pt. for 'retracted'	~ 5% before end position
Switching difference	2.5% of stroke
Connecting cable	4 × 1 mm²

XAP 2:	
Pot resistance	2000 Ω
resistance when 'extended'	10...50 Ω
resistance when 'retracted'	1.5...1.8 kΩ
Resolution	2 Ω
Max. load	4 W, 42 V
Connecting cable	3 × 0.5 mm²

Perm. ambient temp.		–15 to 50 °C
Degree of protection		IP 54 (EN 60529)
Connection diagram	XAP 1	A02446
	XAP 2	A02445

Dimension drawing	M274957
Fitting instructions	
XAP to AV43 P, AVP 142	MV 4151
XAP to AK41...43	MV 4153
AXP to AVP 242…244	MV506040.133

Accessories

. . . . . Assembly material [1]: see drive data sheet, Section 71

[1] Max. equipment on drive: one positioner and one XAP

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9 Building automation and management system

EY-modulo 5

EY-modulo 4

EY-modulo 2

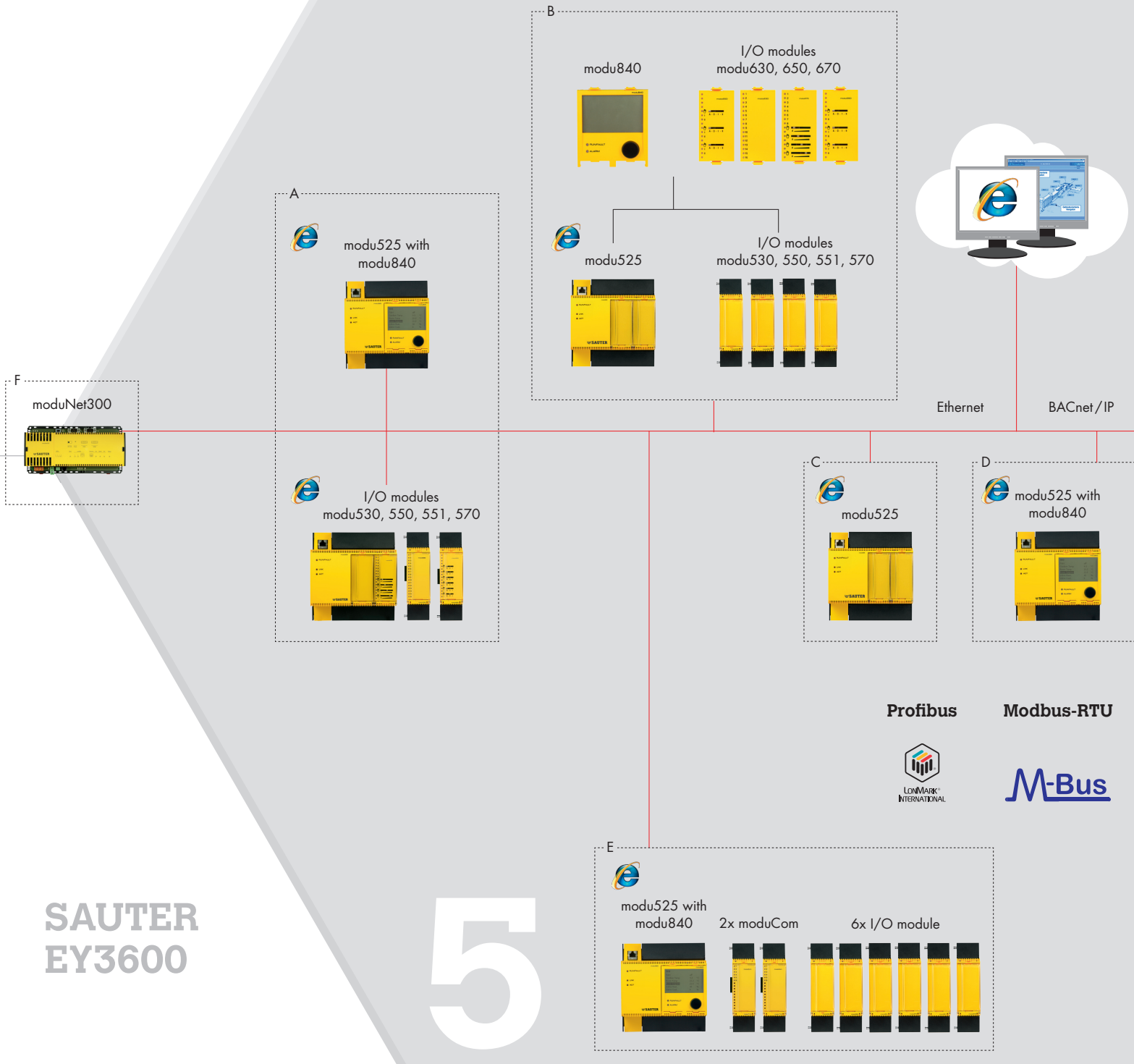
EY-3600

Software management level

CASE
(Computer-Aided Sauter Engineering)

Management level

SAUTER EY-modulo 2



SAUTER EY3600

5

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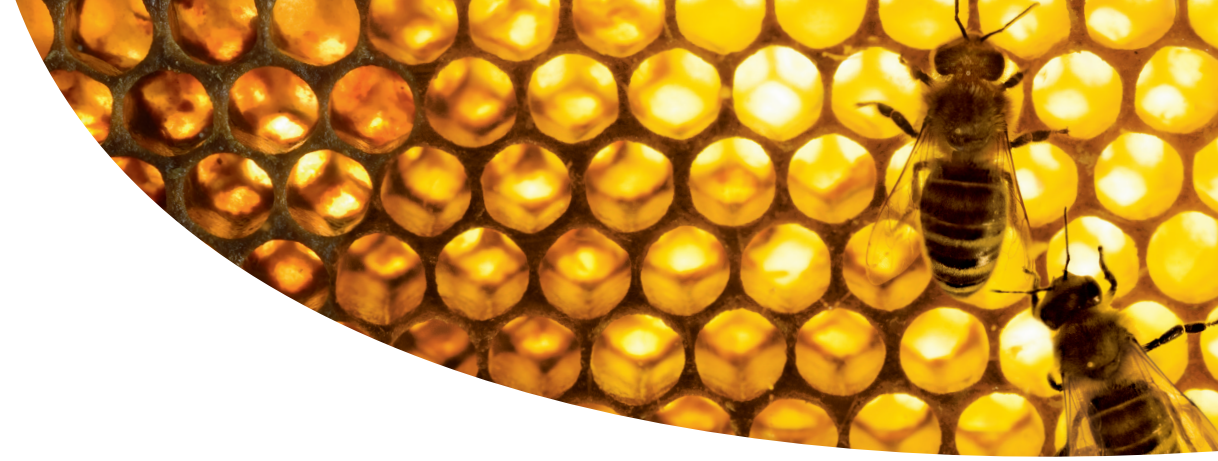

Room management

BACnet®

modu710, 720

KNX / EIB

Unlimited **scalability** in continuously open communication.

A Operation:
Operating elements can be BMKZ schematied directly on the station

B Separability:
Operating elements can be BMKZ schematied in a separate frame a number of meters away

C Base station:
Simplest variant of the automation station

D Third-party connection:
Integration of third-party systems

E Scalability:
The maximum amount of equipment

F Integration of EY-modulo 2
Integration EY3600

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Content EY-modulo 5

EY-AS525	modu525	PDS92.016
EY-IO530	modu530	PDS92.031
EY-IO531	modu531	PDS92.036
EY-IO532	modu532	PDS92.041
EY-IO533	modu533	PDS92.046
EY-IO550	modu550	PDS92.051
EY-IO551	modu551	PDS92.056
EY-IO570	modu570	PDS92.061
EY-IO571	modu571	PDS92.066
EY-IO572	modu572	PDS92.071
EY-LO625... 670	modu625...670	PDS92.081
EY-OP840	modu840	PDS93.015
EY-CM720	modu720	PDS97.011
EY-CM721	modu721	PDS97.012
EY-CM710	modu710	PDS97.016
EY-CM731	modu731	PDS96.021
EY-RC500, 502	ecos500, 502	PDS94.110
EY-RU310...316	ecoUnit310..316	PDS94.051
EY-RU341...346	ecoUnit341...346	PDS94.040
EY-SU306	ecoUnit306	PDS94.035
EY-RU110...146	ecoUnit110...146	PDS94.010
EY-SU106	ecoUnit106	PDS94.025
EY-EM580	ecoMod580	PDS94.015

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modu525: Modular automation station with BACnet/IP and web server

Areas of application

Regulation, control, monitoring and optimisation of technical installations, e.g. HVAC

Features

- Modular automation station
- Extensible by 8 I/O modules for up to 154 Inputs/outputs in total
- Extensible with communication modules for integrated non-Sauter systems
- Part of the SAUTER EY-modulo system family
- Communication: BACnet/IP (EN ISO 16484-5)
- Integrated web server
- Programming/parameterisation via PC with CASE Suite (based on IEC 61131-3)
- Control engineering libraries
- Time and calendar function
- Data recording
- Can be equipped with local override/indicating units

Technical description

- 8 digital inputs (alarm/status)
- 8 universal inputs (Ni/Pt1000, U/I/R, DI)
- 4 analogue outputs (0...10 V)
- 6 digital outputs (relays, 230 V~, 2 A)
- 1 watchdog output, pulsed

Products

Type	Description
EY-AS525F001	Modular automation station with BACnet/IP and web server

Technical data

Electrical supply

Power supply	230 V~, ± 10%, 50...60 Hz
Power consumption	up to 13 VA/5 W (excl. accessories)
Dissipated power	up to 5 W (excl. accessories)
Battery (buffer: RTC/SRAM)	CR2032, plug-in

Interfaces, communication

Ethernet network	1x RJ-45 socket
10/100 BASE-T(X)	10/100 MBit/s
Communication protocol	BACnet/IP (DIX)
Local override unit, modu840 (LOP)	1x integrated interface
Override/indicating units	
modu6.. (LOI)	1x integrated interface
Connection, I/O/COM module	1x integrated I/O bus plug
Hardware extension	Up to 8 I/O modules incl. COM module
Integration of non-Sauter systems	1 COM module

Architecture

Processor	32 Bit, 400 MHz
SDRAM (operational memory)	32 MB
SRAM (static memory)	1 MB
Flash	16 MB
Embedded web server	moduWeb
User data	via CASE Engine

Function	Quantity
BACnet data point objects	512 (incl. HW)
Dynamic objects	
Time programmes	64 (Schedule)
Calendar	16 (Calendar)
Historical data	100 (Trend Log)
	up to 30,000 entries
Alerting	16 (Notification Class)
Chart (only via moduWeb)	32 (Log View)
Control	32 (Loop)
active COV subscriptions	1500
Structured view	64 (Structured View)

1) Only on front side with terminal cover, blanking piece for LOI and transparent cover.

Function (continuation)

BACnet client links	200 (peer to peer)
BBMD in BDT	32
FD in FDT	32

Permitted ambient conditions

Operating temperature	0…45 °C
Storage and transport temperature	-25…70 °C
Humidity	10…85% rh
	no condensation

Installation

Fitting	on top-hat rail
Dimensions W x H x D (mm)	160 x 170 x 115
Weight (kg)	0.8

Standards, guidelines and directives

Type of protection	IP 20 (EN 60529) 1)
Protection class	I (EN 60730-1)
Environmental class	3K3 (IEC 60721)
CE conformity	
electrical safety	EN 60730-1
pursuant to 2006/95/EC	EN 60730-2-9
	EN 60950-1
Software class A	EN 60730-1 Annex H
EMC pursuant to 2004/108/EC	EN 61000-6-1
	EN 61000-6-2
	EN 61000-6-3
	EN 61000-6-4

Additional information

Fitting instructions	MV 506062
Material declaration	MD 92.016
Dimension drawing	M10485
Wiring diagram	A10483

For accessories, see next page >>>

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Accessories

Type	Description
	Plug-in I/O modules
EY-IO530F001	DI universal and digital inputs (8 UI/8 DI)
EY-IO550F001	Digital outputs (6 DO, relays)
EY-IO551F001	Digital outputs (16 DO, open collector)
EY-IO570F001	Universal inputs and analogue outputs (8 UI/4 AO)
	Plug-in communication modules (COM)
EY-CM710F010	Integration of non-Sauter systems via EIA-232 Modbus/RTU-Master
EY-CM710F020	Integration of non-Sauter systems via EIA-232 M-Bus
EY-CM720F010	Integration of non-Sauter systems via EIA-485 Modbus/RTU-Master
	Local override/indicating units (LOI)
EY-LO630F001	Indicating, alarm/status, 16 LEDs, bi-colour
EY-LO650F001	Override/indicating, 6 switches Auto-0-I, 4 LEDs alarm/status
EY-LO650F002	Override/indicating, 3 switches Auto-0-I-II, 4 LEDs alarm/status
EY-LO670F001	Override/indicating, 4 setpoint adjusters (A-0…100%), 8 LEDs for alarm/status
	Local operating panel (LOP)
EY-OP840F001	Local operating and indicating unit modu840
0929360005	Relay PCB (2x pluggable electronic PCB with 3 relays including connection terminals)

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modu530: I/O module, digital and universal inputs

Areas of application

Acquisition of digital inputs (alarm/status) and analogue inputs (Ni/Pt1000, U/I/R) in technical installations, e.g. HVAC.

Features

- Pluggable element for extending the modu525 automation station
- 16 inputs
- Modular design (baseplate/electronics)
- Supply voltage from modu525 automation station
- Direct lettering on the front
- Part of the SAUTER EY-modulo system family
- Can be equipped with a local indicating unit (bi-colour LED)

Technical description

- 8 digital inputs (alarm/status)
- 8 universal inputs (Ni/Pt1000, U/I/R, DI)

Products

Type	Description
EY-IO530F001	I/O module, digital/universal inputs

Technical data

Electrical supply

Power supply	from modu525 via I/O bus
Power consumption [1]	up to 1.6 VA/0.65 W
Dissipated power	up to 0.65 W
Current consumption [2]	40 mA

Version

Digital inputs	8 fixed allocation
Pulse counter	up to 50 Hz
Universal inputs	8
analogue	Ni/Pt1000, U/I/R, Pot
digital	DI (approx 3 Hz)

Interfaces, communication

Connection, modu6 . .(LOI)	6-pole, integrated
Connection, I/O bus	12-pole, integrated
Connection terminals	24, 0.5...2.5 mm²

Permitted ambient conditions

Operating temperature	0…45 °C
Storage and transport temperature	-25…70 °C
Humidity	10…85% rh
	no condensation

1) On the primary side of base station modu525 (230 V~)

2) Supply via base station modu525

Installation

Fitting	on top-hat rail
Dimensions W x H x D (mm)	42 x 170 x 115
Weight (kg)	0.285

Standards, guidelines and directives

Type of protection	IP 30 (EN 60529)
Protection class	I (EN 60730-1)
Environmental class	3K3 (IEC 60721)
CE conformity as per	
EMC Directive to 2004/108/EC	EN 61000-6-1
	EN 61000-6-2
	EN 61000-6-3
	EN 61000-6-4

Additional information

Fitting instructions for electronics	P100001574
Fitting instructions for baseplate	P100001575
Material declaration	MD 92.031
Dimension drawing	M10486
Wiring diagram	A10508

Accessories

Type	Description
	Local override/indicating units (LOI)
EY-LO630F001	16 LED indicators, bi-colour
0920360003	24 V I/O module baseplate (pack of 3)
0929360530	Module electronics modu530 8 UI/8 DI

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modu531: I/O module, digital inputs

How energy efficiency is improved

SAUTER EY-modulo 5 technology: modular, fast and universal

Areas of application

Acquisition of digital inputs (alarm/status) in technical installations, e.g. HVAC

Features

- Pluggable element for extending the modu525 automation station
- 16 inputs
- Modular design (baseplate/electronics)
- Power supply from modu525 automation station
- Direct labelling on the front
- Part of the SAUTER EY-modulo family of systems
- Can be equipped with a local indicating unit (bi-colour LED)

Technical description

- 16 digital inputs (alarm/status, pulse counter)

Products

Type	Description
EY-IO531F001	I/O module, digital inputs

Technical data

Electrical supply

Power supply	from modu525 via I/O bus
Power consumption [1]	up to 1 VA, 0.4 W
Dissipated power	up to 0.4 W
Current consumption [2]	35 mA

Version

Digital inputs	16
Pulse meter	up to 10 Hz

Interfaces, communication

Connection, modu6 . .(LOI)	6-pin, integrated
Connection, I/O bus	12-pin, integrated
Connection terminals	24, 0.5...2.5 mm²

Permitted ambient conditions

Operating temperature	0…45 °C
Storage and transport temperature	-25…70 °C
Humidity	10…85% rh
	no condensation

Installation

Fitting	on top-hat rail
Dimensions W x H x D (mm)	42 x 170 x 115
Weight (kg)	0.285

Standards, guidelines and directives

Type of protection	IP 30 (EN 60529)
Protection class	I (EN 60730-1)
Environmental class	3K3 (IEC 60721)
CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-2
	EN 61000-6-3
	EN 61000-6-4

Additional information

Fitting instructions for electronics	P100001574
Fitting instructions for baseplate	P100001575
Material declaration	MD 92.031
Dimension drawing	M11416
Wiring diagram	A10593

1) On the primary side of base station modu525 (230 V~)

2) Supply via base station modu525

Accessories

Type	Description
	Local override/indicating units (LOI)
EY-LO630F001	16 LED indicators, bi-colour
	Components
0920360003	24 V I/O module baseplate (pack of 3)
0929360531	Electronics module for modu531, 16 DI

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modu532: I/O module, universal inputs

How energy efficiency is improved

SAUTER EY-modulo 5 technology: modular, fast and universal

Areas of application

Acquisition of digital inputs (alarm/status) and analogue inputs (Ni/Pt1000, U/I/R) in technical installations, e.g. HVAC

Features

- Pluggable element for extending the modu525 automation station
- 16 inputs
- Modular design (baseplate/electronics)
- Power supply from modu525 automation station
- Direct labelling on the front
- Part of the SAUTER EY-modulo family of systems
- Can be equipped with a local indicating unit (bi-colour LED)

Technical description

- 16 universal inputs (Ni/Pt1000, U/I/R, DI)

Products

Type	Description
EY-IO532F001	I/O module, universal inputs

Technical data

Electrical supply

Power supply	from modu525 via I/O bus
Power consumption [1]	up to 1.2 VA, 0.5 W
Dissipated power	up to 0.50 W
Current consumption [2]	45 mA

Version

Universal inputs	16
analogue	Ni/Pt1000, U/I/R, Pot
digital	DI (up to 3 Hz)

Interfaces, communication

Connection, modu6 . .(LOI)	6-pin, integrated
Connection, I/O bus	12-pin, integrated
Connection terminals	24, 0.5...2.5 mm²

Permitted ambient conditions

Operating temperature	0…45 °C
Storage and transport temperature	-25…70 °C
Humidity	10…85% rh
	no condensation

Installation

Fitting	on top-hat rail
Dimensions W x H x D (mm)	42 x 170 x 115
Weight (kg)	0.285

Standards, guidelines and directives

Type of protection	IP 30 (EN 60529)
Protection class	I (EN 60730-1)
Environmental class	3K3 (IEC 60721)
CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-2
	EN 61000-6-3
	EN 61000-6-4

Additional information

Fitting instructions for electronics	P100001574
Fitting instructions for baseplate	P100001575
Material declaration	MD 92.031
Dimension drawing	M11416
Wiring diagram	A10594

1) On the primary side of base station modu525 (230 V~)

2) Supply via base station modu525

Accessories

Type	Description
	Local override/indicating units (LOI)
EY-LO630F001	16 LED indicators, bi-colour
	Components
0920360003	24 V I/O module baseplate (pack of 3)
0929360532	Electronics module for modu532, 16 UI

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modu533: I/O module, universal/digital inputs, S0 inputs

How energy efficiency is improved

SAUTER EY-modulo 5 technology: modular, fast and universal

Areas of application

Acquisition of digital inputs (alarm/status), analogue inputs (Ni/Pt1000, U/I/R) and meter signal S0 in technical installations, e.g. HVAC

Features

- Pluggable element for extending the modu525 automation station
- 16 inputs
- Modular design (baseplate/electronics)
- Power supply from modu525 automation station
- Direct labelling on the front
- Part of the SAUTER EY-modulo family of systems
- Can be equipped with a local indicating unit (bi-colour LED)

Technical description

- 8 universal inputs (Ni/Pt1000, U/I/R, DI)
- 4 digital inputs (DI fix)
- 4 meter inputs S0 (S zero)

Products

Type	Description
EY-IO533F001	I/O module, universal inputs, S0 inputs

Technical data

Electrical supply

Power supply	from AS modu525 via I/O bus
Power consumption [1]	up to 2.9 VA, 1.5 W
Dissipated power	up to 1.5 W
Current consumption [2]	100 mA

Version

Universal inputs	8
analogue	Ni/Pt1000, U/I/R, Pot
digital	DI (up to 3 Hz)
Digital inputs	4, permanently assigned
Meter inputs S0	4 (as per IEC 62053-31)

Interfaces, communication

Connection, modu6 . .(LOI)	6-pin, integrated
Connection, I/O bus	12-pin, integrated
Connection terminals	24, 0.5...2.5 mm²

Permitted ambient conditions

Operating temperature	0…45 °C
Storage and transport temperature	-25…70 °C
Humidity	10…85% rh
	no condensation

1) On the primary side of base station modu525 (230 V~)

2) Supply via base station modu525

Installation

Fitting	on top-hat rail
Dimensions W x H x D (mm)	42 x 170 x 115
Weight (kg)	0.285

Standards, guidelines and directives

Type of protection	IP 30 (EN 60529)
Protection class	I (EN 60730-1)
Environmental class	3K3 (IEC 60721)
CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-2
	EN 61000-6-3
	EN 61000-6-4

Additional information

Fitting instructions for electronics	P100001574
Fitting instructions for baseplate	P100001575
Material declaration	MD 92.031
Dimension drawing	M11416
Wiring diagram	A10597

Accessories

Type	Description
	Local override/indicating units (LOI)
EY-LO630F001	16 LED indicators, bi-colour
	Components
0920360003	24 V I/O module baseplate (pack of 3)
0929360533	Module electronics modu533 8 UI, 4 S0, 4DI

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modu550: I/O module digital outputs (relays)

Areas of application

Control of actuators such as contactors, valve actuators or displays in technical installations, e.g. HVAC

Features

- Pluggable element for extending the modu525 automation station
- 6 outputs
- Modular design (baseplate/electronics/relay pcb)
- Power supply from modu525 automation station
- Direct inscription on front
- Part of the SAUTER EY-modulo system family
- Can be equipped with a local override/indicating unit

Technical description

- 6 digital outputs (relays), potential-free

Products

Type	Description
EY-IO550F001	I/O module, digital outputs (relays)

Technical data

Electrical supply

Power supply	from AS modu525 via I/O-Bus
Power consumption [1]	up to 2.9 VA/1.6 W
Dissipated power	up to 1.6 W
Current consumption [2]	up to 100 mA

Version

Digital outputs	6
Type	Relays (0-I), normally-open contact
	electrically isolated
Load	250 V~/2 A
Cycling rate, mechanical	10^6 cycles

Interfaces, communication

Connection, modu6 . . (LOI)	6-pole, integrated
Connection, I/O bus	12-pole, integrated
Connection terminals	12, 0.5...2.5 mm²

Permitted ambient conditions

Operating temperature	0…45 °C
Storage and transport temperature	-25…70 °C
Humidity	10…85% rh
	no condensation

Installation

Fitting	on top-hat rail
Dimensions W x H x D (mm)	42 x 170 x 115
Weight (kg)	0.3

Standards, guidelines and directives

Type of protection	IP 20 (EN 60529)
Protection class	I (EN 60730-1)
Environmental class	3K3 (IEC 60721)
CE conformity as per	
electrical safety	EN 60730-1
2006/95/EG	EN 60730-2-9
Software class A	EN 60730-1
EMC Directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-2
	EN 61000-6-3
	EN 61000-6-4

Additional information

Fitting instructions for electronics	P100001574
Fitting instructions for baseplate	P100001575
Material declaration	MD 92.051
Dimension drawing	M10486
Wiring diagram	A10511

1) On the primary side of base station modu525 (230 V~)

2) Supply via base station modu525

Accessories

Type	Description
	Local override/indicating units (LOI)
EY-LO630F001	16 LED indicators, bi-colour
EY-LO650F001	6 switches, auto-0-I, 4 LED operation/indicating
EY-LO650F002	3 switches, auto-0-I-II, 4 LED operation/indicating
0929360005	Relay pcb (2x pluggable electronic pcb with 3 relays including connection terminals)
0920361003	230 V I/O module baseplate (pack of 3)
0929360550	Module pcb modu550 6 DO 250 V AC

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modu551: I/O module, digital outputs (open collector)

Areas of application

Control of actuators such as relays or displays in technical installations, e.g. HVAC.

Features

- Pluggable element for extending the modu525 automation station
- 16 outputs
- Modular design (baseplate/electronics)
- Power supply from modu525 automation station
- Direct inscription on front
- Part of the SAUTER EY-modulo system family
- Can be equipped with a local indicating unit (bi-colour LED)

Technical description

- 16 digital outputs (open collector)

Products

Type	Description
EY-IO551F001	I/O module, digital outputs (open collector)

Technical data

Electrical supply

Power supply	from modu525 via I/O-Bus
Power consumption 1)	up to 0.7 VA/0.35 W
Dissipated power	up to 0.35 W
Current consumption 2)	up to 20 mA

Version

Digital outputs	16
Type	open collector, normally-open contacts (0-I)
	outputs switching to earth
Power supply	external, positive, up to 24 V=
Load	up to 100 mA

Interfaces, communication

Connection, modu6 . .	6-pole, integrated
Connection, I/O bus	12-pole, integrated
Connection terminals	24, 0.5...2.5 mm²

Permitted ambient conditions

Operating temperature	0…45 °C
Storage and transport temperature	-25…70 °C
Humidity	10…85% rh
	no condensation

Installation

Fitting	on top-hat rail
Dimensions W x H x D (mm)	42 x 170 x 115
Weight (kg)	0.29

Standards, guidelines and directives

Type of protection	IP 30 (EN 60529)
Protection class	I (EN 60730-1)
Environmental class	3K3 (IEC 60721)
CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-2 3)
	EN 61000-6-3
	EN 61000-6-4

Additional information

Fitting instructions for electronics	P100001574
Fitting instructions for baseplate	P100001575
Material declaration	MD 92.056
Dimension drawing	M10486
Wiring diagram	A10509

1) On the primary side of base station modu525 (230 V~)

2) Supply via base station modu525

3) If it is mandatory to comply with the industrial standard (EN 61000-6-2), the connecting cables must not exceed 30 m in length.

Accessories

Type	Description
	Local override/indicating units (LOI)
EY-LO630F001	16 LED indicators, bi-colour
EY-LO650F001	6 switches, auto-0-I, 4 LED operation/indication
EY-LO650F002	3 switches, auto-0-I-II, 4 LED operation/indication
0920360003	24 V I/O module baseplate (pack of 3)
0929360551	Module pcb modu551 16 DO (OC) 24 V

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modu570: I/O module, analogue outputs and universal inputs

Areas of application

Control via standardised signal (0...10 V), acquisition of digital (alarm/status) and analogue inputs (Ni/Pt1000, U/I/Pot) in technical installations, e.g. HVAC.

Features

- Pluggable element for extending the modu525 automation station
- 4 outputs
- 8 inputs
- Modular design (baseplate/electronics)
- Power supply from modu525 automation station
- Direct inscription on front
- Part of the SAUTER EY-modulo system family
- Can be equipped with a local override/indicating unit

Technical description

- 4 analogue outputs (0...10 V)
- 8 universal inputs (Ni/Pt1000, U/I/R, DI)

Products

Type	Description
EY-IO570F001	I/O module, analogue outputs and universal inputs

Technical data

Electrical supply

Power supply	from modu525 via I/O bus
Power consumption [1]	up to 1.5 VA/0.80 W
Dissipated power	up to 0.80 W
Current consumption [2]	up to 50 mA

Version

Analogue outputs	4 (push-pull)
Load	up to 2 mA
Universal inputs	8
Analogue	Ni/Pt1000, U/I/R, Pot
Digital	DI (approx. 3 Hz)

Interfaces, communication

Connection, modu6 . . (LOI)	6-pole, integrated
Connection, I/O bus	12-pole, integrated
Connection terminals	24, 0.5...2.5 mm²

Permitted ambient conditions

Operating temperature	0…45 °C
Storage and transport temperature	-25…70 °C
Humidity	10…85% rh
	no condensation

1) On the primary side of base station modu525 (230 V~)

2) Supply via base station modu525

Installation

Fitting	on top-hat rail
Dimensions W x H x D (mm)	42 x 170 x 115
Weight (kg)	0.285

Standards, guidelines and directives

Degree of protection	IP 30 (EN 60529)
Protection class	I (EN 60730-1)
Environmental class	IEC 60721 3K3
CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-2
	EN 61000-6-3
	EN 61000-6-4

Additional information

Fitting instructions for electronics	P100001574
Fitting instructions for baseplate	P100001575
Material declaration	MD 92.061
Dimension drawing	M10486
Wiring diagram	A10510

Accessories

Type	Description
	Local override/indicating units (LOI)
EY-LO630F001	16 LED indicators, bi-colour
EY-LO670F001	4 setpoint adjusters (A-0…100%), 8 LEDs for operation/indicating
0920360003	24 V I/O module baseplate (pack of 3)
0929360570	Module electronics modu570 8 UI/4 AO 24 V

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modu571: I/O module, digital inputs/outputs (open collector)

How energy efficiency is improved

SAUTER EY-modulo 5 technology: modular, fast and universal

Areas of application

Acquisition of digital inputs (alarm/status) and activation of actuators, such as relays, or indication of technical installations, e.g. HVAC

Features

- Pluggable element for extending the modu525 automation station
- 16 inputs/outputs
- Modular design (baseplate/electronics)
- Power supply from modu525 automation station
- Direct labelling on the front
- Part of the SAUTER EY-modulo family of systems
- Can be equipped with a local indicating unit (bi-colour LED)

Technical description

- 16 digital inputs/outputs (open collector)

Products

Type	Description
EY-IO571F001	I/O module, digital inputs/outputs (open collector)

Technical data

Electrical supply

Power supply	from modu525 via I/O bus
Power consumption [1]	up to 1 VA, 0.4 W
Dissipated power	up to 0.4 W
Current consumption [2]	up to 50 mA

Version

Digital inputs/outputs	16
Type (any combination)	open collector, NO contacts (0-I)
	outputs switched to earth
Supply voltage for DO	external, positive up to 24 V=
Loading	up to 100 mA
Supply voltage for DI	internal 13.5 V
Pulse counter (DI)	up to 10 Hz

Interfaces, communication

Connection, modu6 . .	6-pin, integrated
Connection, I/O bus	12-pin, integrated
Connection terminals	24, 0.5...2.5 mm²

Permitted ambient conditions

Operating temperature	0…45 °C
Storage and transport temperature	-25…70 °C
Humidity	10…85% rh
	no condensation

Installation

Fitting	on top-hat rail
Dimensions W x H x D (mm)	42 x 170 x 115
Weight (kg)	0.29

Standards, guidelines and directives

Type of protection	IP 30 (EN 60529)
Protection class	I (EN 60730-1)
Environmental class	3K3 (IEC 60721)
CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-2 [3]
	EN 61000-6-3
	EN 61000-6-4

Additional information

Fitting instructions for electronics	P100001574
Fitting instructions for baseplate	P100001575
Material declaration	MD 92.056
Dimension drawing	M11416
Wiring diagram	A10596

1) On the primary side of base station modu525 (230 V~)

2) Supply via base station modu525

3) If the industrial standard (EN 61000-6-2) has to be met, the power cables should be no more than 30 metres in length.

Accessories

Type	Description
	Local override/indicating units (LOI)
EY-LO630F001	16 LED indicators, bi-colour
EY-LO650F001	6 switches, Auto-0-I, 4 LEDs for override/indication
EY-LO650F002	3 switches, Auto-0-I-II, 4 LEDs for override/indication
	Components
0920360003	24 V I/O module baseplate (pack of 3)
0929360571	Module electronics modu571 16 DI/DO (OC) 24 V

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modu572: I/O module, analogue outputs, universal and digital inputs

How energy efficiency is improved

SAUTER EY-modulo 5 technology: modular, fast and universal

Areas of application

Activation by standard signal (0...10 V), acquisition of digital inputs (alarm/status) and analogue inputs (Ni/Pt1000, U/I/Pot) in technical installations, e.g. HVAC

Features

- Pluggable element for extending the modu525 automation station
- Four outputs
- 11 inputs
- Modular design (baseplate/electronics)
- Power supply from modu525 automation station
- Direct labelling on the front
- Part of the SAUTER EY-modulo family of systems
- Local override/indication device can be fitted

Technical description

- 4 analogue outputs (0…10 V)
- 8 universal inputs (Ni/Pt1000, U/I/R, DI)
- 3 digital inputs (DI fixed)

Products

Type	Description
EY-IO572F001	I/O module, analogue outputs, universal and digital inputs

Technical data

Electrical supply

Power supply	from modu525 via I/O bus
Power consumption [1]	up to 1.5 VA, 0.8 W
Dissipated power	up to 0.80 W
Current consumption [2]	up to 120 mA

Version

Analogue outputs (0…10V/0…20 mA)	4 (source)
Loading	up to 20 mA
Universal inputs	8
Analogue	Ni/Pt1000, U/I/R, Pot
digital	DI (up to 3 Hz)
Digital inputs	3, fixed allocation
Pulse meter	up to 10 Hz

Interfaces, communication

Connection, modu6 . . (LOI)	6-pin, integrated
Connection, I/O bus	12-pin, integrated
Connection terminals	24, 0.5...2.5 mm²

Permitted ambient conditions

Operating temperature	0…45 °C
Storage and transport temperature	-25…70 °C
Humidity	10…85% rh
	no condensation

1) On the primary side of base station modu525 (230 V~)

2) Supply via base station modu525

Installation

Fitting	on top-hat rail
Dimensions W x H x D (mm)	42 x 170 x 115
Weight (kg)	0.285

Standards, guidelines and directives

Type of protection	IP 30 (EN 60529)
Protection class	I (EN 60730-1)
Environmental class	3K3 (IEC 60721)
CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-2
	EN 61000-6-3
	EN 61000-6-4

Additional information

Fitting instructions for electronics	P100001574
Fitting instructions for baseplate	P100001575
Material declaration	MD 92.061
Dimension drawing	M11416
Wiring diagram	A10595

Accessories

Type	Description
	Local override/indicating units (LOI)
EY-LO630F001	16 LED indicators, bi-colour
EY-LO670F001	4 setpoint transmitters (A-0…100%), 8 LEDs for override/indication
	Components
0920360003	24 V I/O module baseplate (pack of three)
0929360572	Module electronics modu572 8 UI, 4 AO 24 V, 3 DI

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modu625...670: Local override and indicating units

How energy efficiency is improved

SAUTER EY-modulo 5 technology: modular, fast and universal

Areas of application

Digital input display (alarm/status), direct control of digital/analogue outputs of the automation station and I/O module.

Features

- Pluggable elements for direct operation /indicating of the modu525 automation station and I/O modules
- Direct operation via switches/slide switches (as per EN ISO 16484-2:2004 'Local priority override/indicating units')
- Bi-colour LED indicators
- Separate display for manual operation
- Ready for use without configuration
- Power supply via modu525 automation station or I/O modules
- Part of the SAUTER EY-modulo system family

Technical description

- modu625, 6 switches (A-0-I), 4 LEDs (bi-colour), 4 slide switches (A-0...100%), 8 LEDs (bi-colour)
- modu630, 16 LEDs (bi-colour)
- modu650 (F001), 6 switches (A-0-I), 4 LEDs (bi-colour)
- modu650 (F002), 3 switches (A-0-I-II), 4 LEDs (bi-colour)
- modu670, 4 slide switches (A-...100%), 8 LEDs (bi-colour)

Products

Type	Description	Use
EY-LO625F001	Override/indicating unit with LEDs (6x A-0-I; 4x LED) (4x A-0...100%; 8x LED)	AS modu525
EY-LO630F001	Indicating unit (16 LEDs)	AS modu525, IO modu530...570
EY-LO650F001	Override/indicating unit with LED (6x A-0-I; 4x LED)	AS modu525, IO modu550, 551
EY-LO650F002	Override/indicating unit with LED (3x A-0-I-II; 4x LED)	AS modu525, IO modu550, 551
EY-LO670F001	Override/indicating unit with LED (4x A-0...100%; 8x LED)	AS modu525, IO modu570

Technical data

Electrical supply

Power supply	from AS modu525 or
	I/O module modu5 . .
Power consumption [1]	up to 1 VA/0.35 W
Dissipated power	up to 0.35 W
Current consumption [2]	up to 20 mA

Version

EY-LO625F001	6 switches (A-0-I) digital outputs
	4 LEDs alarm/status
	8 slide switches (A-0… 100%)
	analogue outputs
	8 LEDs alarm/status
EY-LO630F001	16 LEDs (alarm/status)
EY-LO650F001	6 switches (A-0-I) digital outputs
	4 LED display alarm/status
EY-LO650F002	3 switches (A-0-I-II) digital outputs
	4 LED display alarm/status
EY-LO670F001	8 slide switches (A-0… 100%)
	analogue outputs
	8 LED display alarm/status
Factory settings	All switches set to 'A' (Auto)

Interfaces

Connection, AS/I/O module	Plug, 6-pole, integrated

1) On the primary side of base station modu525 (230 V~)

2) Supply via base station modu525

Permitted ambient conditions

Operating temperature	0…45 °C
Storage and transport temperature	-25…70 °C
Humidity	10…85% rh
	no condensation

Installation

Dimensions W x H x D (mm)	
EY-LO625F001	84 x 92 x 13
EY-LO630…670	42 x 92 x 13
Weight (kg)	
EY-LO625F001	0.07
EY-LO630…670	0.03

Standards, guidelines and directives

Type of protection	IP 30 (EN 60529)
Protection class	III (EN 60730-1) PELV
Environmental class	3K3 (IEC 60721)
CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-2
	EN 61000-6-3
	EN 61000-6-4

Additional information

Fitting instructions	MV 506057
Fitting instructions for accessories	
4-fold front frame	MV P100003733
Adaptor	MV P100003732
Material declaration	MD 92.081

For accessories, see next page >>>

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Accessories

Type	Description
0930240511	Front frame for 4 override/indicating units
0930240540	RJ-45 connection adaptor for front frame override/indicating units
0930240541	RJ-45 connection adaptor for front frame operating panel

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modu840: Local operating unit

Areas of application

Direct local display, navigation and operation of automation stations

Features

- Pluggable element for extending the modu525 automation station
- Local operating and display unit for direct local and manual operation of AS modu525
- Intuitive single-button operation with turn-and-press functionality
- Graphic display with various font sets and types
- Menu-driven navigation with user login for operation authorisation
- Visualisation of information with structured plant display
- Two LEDs for plant alarm and function status
- Displays objects, alarms and other information
- Part of the SAUTER EY-modulo 5 system family

Technical description

- Power supply direct from AS
- LCD resolution: 160 x 100 pixels
- In any one of four languages
- Directly pluggable into EY-modulo 5 automation stations
- Can be removed for installation with accessories in MCC

Products

Type	Description
EY-OP840F001	Local operating unit for EY-modulo 5 AS

Technical data

Electrical supply

Power supply	from AS
Power consumption	up to 50 mA
Dissipated power	up to 0.1 W

Display

LCD	160 x 100 pixels monochrome
Operation	'turn & press'
Rotary knob	+/-, down/up
with confirmation	OK (short), Start (long > 3 s)

Interfaces, communication

Internal connection	5-pole spring pin for feed and data communication

Permitted ambient conditions

Operating temperature	0…45 °C
Storage and transport temperature	-25…70 °C
Humidity	10…85% rh
	no condensation

Installation

Dimensions W x H x D (mm)	186 x 120 x 73
Weight (kg)	0.11

Standards, guidelines and directives

Type of protection	IP 20 (EN 60529)
Protection class	III (EN 60730-1)
Environmental class	3K3 (IEC 60721)
CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-2
	EN 61000-6-3
	EN 61000-6-4
	EN 55024

Additional information

Fitting instructions	P100002318
Fitting instructions for accessories	
4-fold front frame	P100003733
Adaptor	P100003732
Material declaration	MD 93.015

Accessories

Type	Description
701003500x	modu840 operating instructions (language: x=1 (De), x=2 (Fr), x=3 (En))
0930240511	Front frame for 4 operating / signalling units
0930240540	RJ-45 connection adaptor for front frame operating / signalling units
0930240541	RJ-45 connection adaptor for front frame operating panel

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modu720: Communication module with EIA-485 interface

Areas of application

Automation-level integration of non-Sauter systems and third-party products on the basis of field bus protocols with EIA-485 such as Modbus/RTU and others. Integration of third-party products with the AS modu525 for integrated control and optimised regulation and optional BACnet/IP communication with the management level.

Features

- Communication module with EIA-485 interface
- Pluggable element for extending the modu525 automation station
- Connectable to non-Sauter systems (SPS, refrigerators, compact controllers…)
- Connection for field bus protocols based on EIA-485
- Direct inscription on front
- Part of the SAUTER EY-modulo system family

Technical description

- Power supply from modu525 automation station
- 1 COM module per AS modu525
- up to 512 non-Sauter system data points
- 0.3 to 57.6 kBit/s
- Two-wire EIA-485 (half-duplex)
- Electrical separation up to 300 V maximum
- Four-pin plug for (D+, D-, GND, NC)
- Jumper for EIA-485 bus voltage and bus termination
- Supported protocols: Modbus/RTU (Master), others on request

Products

Type	Description
EY-CM720F010	Communication module for Modbus/RTU (Master)

Technical data

Electrical supply

Power supply	from modu525
per AS on position 1	up to 1 COM module
Power consumption	up to 80 mA
Dissipated power	up to 1.12 W

Interfaces, communication

COM interface (EIA-485)	4-pin plug (NC, C, D+, D-)
Baud rate	0.3…57.6 kBit/s
Data bits	5, 6, 7, 8
Stop bits	1, 1.5, 2
Parity	non, even, odd
Connection, I/O bus	12-pole, integrated in plinth
Protocol	Modbus/RTU (Master)

Architecture

Protocol processor	FPGA
COM processor	UART
Memory	Flash memory (user and protocol data)
Number of data points	up to 512

Permitted ambient conditions

Operating temperature	0…45 °C
Storage and transport temperature	-25…70 °C
Humidity	10…85% rh
	no condensation

Installation

Fitting	on top-hat rail
Dimensions W x H x D (mm)	42 x 170 x 115
Weight (kg)	0.8

Standards, guidelines and directives

Type of protection	IP 20 (EN 60529)
Protection class	III (EN 60730-1)
Environmental class	3K3 (IEC 60721)
CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1: 2007 [1)]
	EN 61000-6-2: 2005 [1)]
	EN 61000-6-3: 2007
	EN 61000-6-4: 2007
Software class A	EN 60730-1 Annexe H

Additional information

Fitting instructions	P100002328
Product documentation	7010037
Material declaration	MD 97.011
Dimension drawing	M11417
Wiring diagram	A10579

1) EIA-485: screened cable 2*2 cores twisted in pairs -> see fitting instructions P100002328 (Fig. 5)

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modu721: Communication module with EIA-232 and EIA-485 interfaces

How energy efficiency is improved

SAUTER EY-modulo 5 technology: modular, fast and universal

Areas of application

Integration of alien systems and products from other manufacturers at automation level, based on field-bus protocols with EIA-232 or EIA-485, such as Modbus/RTU, M-Bus and other integration of alien products with the AS modu525 for integrated control and optimised regulation and the possibility of BACnet/IP communication to the management level.

Features

- Communication module with EIA-232 and EIA-485 interface
- Pluggable element for extending the modu525 automation station
- Modular design (baseplate/electronics)
- Connection to alien systems (SPS, chillers, meters, etc.)
- Connection for point-to-point protocols with EIA-232 interface
- Connection for field-bus protocols based on EIA-485
- Direct labelling on the front
- Part of the SAUTER EY-modulo family of systems

Technical description

- Power supply from modu525 automation station
- One or two COM modules per AS modu525
- Up to 512 data points for the alien system
- 0.3 to 57.6 kBit/s
- Two-wire EIA-485 (half-duplex)
- Galvanic isolation up to 300 V
- 6 screw terminals (each 2 x Common, D+, D-)
- Jumper for EIA-485 bus voltage and bus termination
- D-Sub plug (9-pin, male, DTE)
- Supported protocols: Modbus/RTU (Master) – F010; M-Bus (Master) – F020; others on request

Products

Type	Description
EY-CM721F010	Communication module for Modbus/RTU (Master, EIA-232 or EIA-485)
EY-CM721F020	Communication module for M-Bus (Master, EIA-232 or EIA-485)

Technical data

Electrical supply

Power supply	from modu525
per AS at Slot 1 or 2	one or two COM modules
Power consumption	up to 150 mA
Dissipated power	up to 1.7 W

Interfaces, communication

COM interface – EIA-232 (DTE)	D-Sub plug (9-pin, male)
COM interface – EIA-485	Screw terminals (each 2 x C, D+, D-)
Baud rate	0.3 to 57.6 kBit/s
Data bits	5, 6, 7, 8
Stop bits	1, 1.5, 2
Parity	none, even, uneven
Connection, I/O bus	12-pin, integrated in baseplate
Protocol	
EY-CM721F010	Modbus/RTU (Master)
EY-CM721F020	M-Bus (Master)

Architecture

Protocol processor	FPGA
COM processor	UART
Memory	Flash
	(user and protocol data)
Number of data points	up to 512

Permitted ambient conditions

Operating temperature	0…45 °C
Storage and transport temperature	-25…70 °C
Humidity	10…85% rh
	no condensation

Installation

Fitting	on top-hat rail
Dimensions W x H x D (mm)	42 x 170 x 115
Weight (kg)	0.8

Standards and directives

Protection type	IP 20 (EN 60529)
Protection class	III (EN 60730-1)
Environmental class	3K3 (IEC 60721)
CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1: 2007 [1)]
	EN 61000-6-2: 2005 [1)]
	EN 61000-6-3: 2007
	EN 61000-6-4: 2007
Software Class A	EN 60730-1 Appendix H

Additional information

Fitting instructions	P100004729
Manual	7010037
Material declaration	MD 97.012
Dimension drawing	M11435
Wiring diagram	A10607

1) EIA-232 cable can be up to 15 m long. EIA-485: screened cable 2 x 2 cores, twisted pairs, see fitting instructions P100004729

For accessories, see next page >>>

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Accessories

Type	Description
0386301001	Connection cable COM DB9(f)-DB9(f) 3 m (null modem)

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modu710: Communication module with EIA-232 interface

Areas of application

Automation-level integration of non-Sauter systems and products of other manufacturers on the basis of field bus protocols with EIA-232 such as Modbus/RTU and M-Bus; further integration of non-Sauter products with the AS modu525 for integrated control and optimised regulation; option to implement BACnet/IP communication at management level.

Features

- Communication module with EIA-232 interface
- Pluggable element for extending the modu525 automation station
- Connectable to non-Sauter systems (SPS, refrigerators, counters…)
- For point-to-point protocols
- Connection for field bus protocols with optional level converter (EIA-232 <> M-Bus, EIA-232 <> EIA-485)
- Direct inscription on front
- Part of the SAUTER EY-modulo system family

Technical description

- Power supply from modu525 automation station
- 1 COM module per AS modu525
- up to 512 non-Sauter system data points
- 0.3 to 57.6 kBit/s
- D-Sub plug (9-pole, male, DTE)
- Supported protocols: Modbus/RTU (Master) - F010; M-Bus (EIA-232) - F020; others on request

Products

Type	Description
EY-CM710F010	Communication module for Modbus/RTU (Master)
EY-CM710F020	Communication module for M-Bus (Master, EIA-232)

Technical data

Electrical supply

Power supply	from modu525
per AS on position 1	up to 1 COM module
Power consumption	up to 60 mA
Dissipated power	up to 0.84 W

Interfaces, communication

COM interface (DTE)	D-Sub plug (9-pole, male)
Baud rate	0.3…57.6 kBit/s
Data bits	5, 6, 7, 8
Stop bits	1, 1.5, 2
Parity	non, even, odd
Connection, I/O bus	12-pole, integrated in plinth
Protocols	
EY-CM710F010	Modbus/RTU (Master)
EY-CM710F020	M-Bus (EIA-232)

Architecture

Protocol processor	FPGA
COM processor	UART
Memory	Flash memory (user and protocol data)
Number of data points	up to 512

Permitted ambient conditions

Operating temperature	0…45 °C
Storage and transport temperature	-25…70 °C
Humidity	10…85% rh
	no condensation

1) EIA-232 Maximum cable length 15 metres

Installation

Fitting	on top-hat rail
Dimensions W x H x D (mm)	42 x 170 x 115
Weight (kg)	0.8

Standards, guidelines and directives

Type of protection	IP 20 (EN 60529)
Protection class	III (EN 60730-1)
Environmental class	3K3 (IEC 60721)
CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1: 2007 1)
	EN 61000-6-2: 2005 1)
	EN 61000-6-3: 2007
	EN 61000-6-4: 2007
Software class A	EN 60730-1 Annexe H

Additional information

Fitting instructions	P100002327
Product documentation	7010037
Material declaration	MD 97.016
Dimension drawing	M11418
Wiring diagram	A10578

Accessories

Type	Description
0386301001	Connection cable COM DB9(f)-DB9(f) 3 m (zero modem)

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modu731: Communication module with M-Bus and EIA-232 interface

How energy efficiency is improved

SAUTER EY-modulo 5 technology: modular, fast and universal

Areas of application

Integration, at the automation level, of an M-Bus network and M-Bus meters, based on the M-Bus protocol and the integrated M-Bus interface (EN 1434-3) or an external M-Bus level converter via EIA-232. The recording of counter values at automation level enables the optimised control and regulation of installations and offers the possibility of BACnet/IP communication to the management level.

Features

- Communication module with M-Bus and EIA-232 interface
- Pluggable element for extending the modu525 automation station
- Modular design (baseplate/electronics)
- Connection to M-Bus meter networks for up to 250 meters (heat, electrics, etc.)
- EIA-232 interface for point-to-point connection with an M-Bus level converter
- Direct labelling on the front
- Part of the SAUTER EY-modulo family of systems

Technical description

- Power supply from modu525 automation station
- One or two COM modules per modu525 automation station
- Up to 512 data points from the M-Bus network
- 0.3 to 9.6 kBit/s (theoretically, in fact, up to 38.4 kBit/s)
- Two-wire M-Bus network (as per EN 1434-3)
- Without external power supply: up to ten M-Bus meters
- With external power supply: up to 50 M-Bus meters
- Six screw terminals (M-Bus: each 2 x M+, M-. External power supply: MM, LS)
- D-Sub plug (9-pin, male, DTE) for connecting to an external M-Bus level converter
- Supported protocol: M-Bus (Master) – F020

Products

Type	Description
EY-CM731F020	Communication module for M-Bus (Master, M-Bus or EIA-232 interface)

Technical data

Electrical supply

Power supply	from modu525
per AS at Slot 1 or 2	one or two COM modules
External power supply for M-Bus	24 V~ (±10%) / 24 V= (± 15%)
	(for 11…50 m on M-Bus network)
Power consumption	up to 200 mA
Dissipated power	up to 2.5 W

Interfaces, communication

COM interface – EIA-232 (DTE)	D-Sub plug (9-pin, male)
COM interface – M-Bus (EN 1434-3)	Screw terminals (each 2 x M+, M-)
Baud rate	0.3...9.6 (38.4) kBit/s
Connection, I/O bus	12-pin, integrated in baseplate
Protocol	
EY-CM731F020	M-Bus (Master)

Architecture

Protocol processor	FPGA
COM processor	UART
Memory	Flash (user and protocol data)
Number of data points	up to 512

Permitted ambient conditions

Operating temperature	0…45 °C
Storage and transport temperature	-25…70 °C
Humidity	10…85% rh
	no condensation

Installation

Fitted to	top-hat rail
Dimensions W x H x D (mm)	42 x 170 x 115
Weight (kg)	0.8

Standards and directives

Type of protection	IP 20 (EN 60529)
Protection class	III (EN 60730-1)
Environmental class	3K3 (IEC 60721)
CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1: 2007 [1)]
	EN 61000-6-2: 2005 [1)]
	EN 61000-6-3: 2007
	EN 61000-6-4: 2007
Software Class A	EN 60730-1 appendix H

Additional information

Fitting instructions	MV P100004730
Manual	HB 7010037
Material declaration	MD 97.021
Dimension drawing	M11435
Wiring diagram	A10578

1) EIA-232 cable: maximum 15 m long. M-Bus cable: with two cores, twisted pairs

Accessories

Type	Description
0386301001	Connection cable COM DB9(f)-DB9(f) 3 m (null modem)

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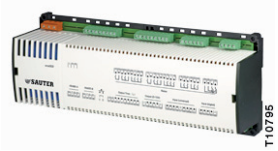
ecos500, 502: Room automation station



How energy efficiency is improved

High-performance function modules in the ecos allow energy-optimised room regulation with control of lighting and window blinds in order to ensure minimal energy consumption.

Areas of application

Room automation for temperature regulation, control of lighting and window blinds etc.. Integration of non-Sauter installations via BACnet IP

Features

- Part of the SAUTER EY-modulo 5 system family
- Communication: BACnet/IP (EN ISO 16484-5)
- Room automation station for 2 rooms or 2 functional axes
- Individual setting of room conditions using ecoUnit 3 (EY-RU3..) and ecoUnit 1 (EY-RU1..) room control units
- Optimisation of energy consumption thanks to occupancy function, window contact monitoring, demand-led switching of the fan speed, control of lighting and window blinds, and time-dependent setpoint specification.
- Time and calendar function
- Integration into the building management system via Ethernet / BACnet IP data interface
- Programming/parameterisation via PC with CASE Suite (based on IEC 61131-3)
- Control engineering libraries

Technical description

- Power supply 230 V~ ± 10% (transformer with 30 VA)
- Ethernet system bus, BACnet IP protocol

Products

Type	Description
EY-RC500F001	Room automation station, 16 relays
EY-RC502F001	Room automation station, 18 relays

Technical data

Electrical supply

Power supply	230 V~, ± 10%, 50...60 Hz
Power consumption	up to 24 VA (incl. 12 VA external)
Dissipated power	up to 7.6 W
Battery (buffer: RTC/SRAM)	Lithium button cell CR2032, plug-in

Interfaces, communication

Ethernet network	2x RJ-45 socket (switch)
10/100 BASE-T(X)	10/100 MBit/s
Communication protocol	BACnet/IP
Operating devices	2 (4) x EY-RU3..
	via integrated SLC interface
Extension unit	1x EY-EM502F001
	via integrated SLC interface

Inputs/outputs

Universal inputs	8 (Ni1000, Pt1000, U (0-10V), DI)
Digital inputs	4
Analogue outputs	4 (0-10V)
TRIAC outputs	8 (24 V~)
Relay outputs EY-RC500/502	16 (250 V~)[1] terminals 1 to 24
Relay outputs EY-RC502	2 (24 V=) terminals 25 to 28

Architecture

Processor	32 Bit, 200 MHz
SDRAM (operational memory)	32 MB
SRAM (static memory)	128 kB
Flash	16 MB
Operating system	Linux
User data	via CASE Engine

Function

BACnet data point objects incl. HW	256
Dynamic objects	
Time programs	32 (Schedule)
Calendar	8 (Calendar)
Alerting	16 (Notification Class)
Historical data	16 (Trend Log)
	up to 2,000 entries
Control	32 (Loop)
COV Notifications	500
Structured view	64 (Structured View)
BACnet client links	200 (peer to peer)
BBMD in BDT	32
FD in FDT	32

Permitted ambient conditions

Operating temperature	0…45 °C
Storage and transport temperature	-25…70 °C
Humidity	10…85% rh
	no condensation

Installation

Fitting	top-hat rail / wall mounting
Dimensions W x H x D (mm)	299 x 120 x 73
Weight (kg)	2.5

Standards, guidelines and directives

Type of protection	IP 00 (EN 60529) [2]
Protection class	I (EN 60730-1)
Environmental class	3K3 (IEC 60721)

For accessories, see next page >>>

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Technical data (continuation)

Standards, guidelines and directives (continuation)

CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1 to -6-4
Electrical safety	EN 60730-1
2006/95/EC	EN 60730-2-9
Software class A	EN 60730-1 annexe H

Additional information

Fitting instructions	P100002325
Material declaration	MD 94.110
Dimension drawing	K10479
Wiring diagram	A10577

1) Different phases can be routed to the switch contact blocks. The voltage between any phase and the neutral conductor must not exceed 250 V~.

2) Type of protection IP10 with terminal cover (accessory 090024002); Type of protection IP20 with wiring box (accessory 090024011)

Accessories

Type	Description
090024002	Terminal covers, 295 mm (2 pcs.)
090024011	Wiring box, 295 mm (2 pcs.)

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ecoUnit310...316: Room operating unit for ecos

How energy efficiency is improved

Individual setting of occupancy and absence, plus room setpoint correction, control of lighting and window blinds in order to optimise energy use in the room.

Areas of application

Operating unit to control and ensure maximum indoor comfort. Temperature measurement and control for rooms with various types of equipment thanks to the EY-modulo 5 ecos intelligent unitary controller with communication capability.

Features

- Part of the SAUTER EY-modulo 5 system family
- Extensible with the EY-SU306 push-button unit
- Room operating unit with a wide range of different functions, designs and colours
- Device insert with transparent front, fits into frame with 55 x 55 mm cut-out
- The frames must be ordered as accessories
- Indoor climate can be adapted individually
- Operating mode is set for room occupancy and control of a three-speed fan
- Lamp control, on/off, dimming
- Control of window blinds
- Window control

Technical description

- Power supply from ecos5
- Sub-bus EIA-485, SLC protocol
- Cable entry at rear, pluggable connection terminals for 0.12 to 0.5 mm^2 wires (0.4 to 0.8 mm in diameter)

Products

Type	Description
EY-RU310F001	Operating unit, NTC sensor
EY-RU311F001	Operating unit NTC, dXs setpoint correction (rotary knob)
EY-RU314F001	Operating unit NTC, dXs and 2 push-buttons
EY-RU316F001	Operating unit NTC, dXs and 4 push-buttons

Technical data

Electrical supply

Power supply	from ecos5

Version

Sensors	
Measuring range	0..0.40 °C
Resolution	0.1 K
Time constant	approx. 7 min
Functionality	
Setpoint correction	Adjustable
Room occupancy	3 modes, LED display
Ventilator position	5 functions, LED display
Position LED	green
Port	
Cable	4-core, twisted
	(screening advisable)
Length	up to 30 m

Permitted ambient conditions

Operating temperature	0…45 °C
Storage and transport temperature	-25…70 °C
Humidity	10…85% rh
	no condensation

Installation

Fitting	in single or double frame
Dimensions W x H x D (mm)	59.5 x 59.5 x 25
Weight (kg)	0.1

Standards, guidelines and directives

Type of protection	IP 30 (EN 60529)
Protection class	III (EN 60730-1)
Environmental class	3K3 (IEC 60721)
CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-2
	EN 61000-6-3
	EN 61000-6-4

Additional information

Fitting instructions	P100001965
Material declaration	MD 94.051
Dimension drawing	
EY-RU310	M10487
EY-RU311...316	M10488
Wiring diagram	A10523

For accessories, see next page >>>

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Accessories

Type	Description
	Operation
EY-SU306F001	Push-button unit, without frame
	Fitting
0940240101	Frame, single, including fixing plate (for recessed junction box, 10 x)
0940240201	Frame, double, including fixing plate (for recessed junction box, 10 x)
0940240301	Base, single (for wall mounting, 10 x)
0940240401	Base, double (for wall mounting, 10 x)
0940240501	Cable plate, single (for surface cable feed, 10 x)
0940240601	Cable plate, double (for surface cable feed, 10 x)
0940240701	Fixing plate, single (for non-Sauter frame, 10 x)
0940240801	Fixing plate, double
0949241301	Cover, transparent, single (10 x)

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ecoUnit341...346: Room operating unit for room automation station

How energy efficiency is improved

Individual setting of occupancy and absence, plus room setpoint correction, control of lighting and window blinds in order to optimise energy use in the room.

Areas of application

Operating unit to control and ensure maximum indoor comfort. Temperature measurement and control for rooms with various types of equipment thanks to the EY-modulo 5 ecos communicative intelligent unitary controller.

Features

- Part of the SAUTER EY-modulo 5 system family
- Extensible with the EY-SU306 push-button unit
- Room operating unit with a wide range of different functions, designs and colours
- Device insert with transparent front, fits into frame with 55 x 55 mm cut-out
- The frames must be ordered as accessories
- Indoor climate can be adapted individually
- Operating mode is set for room occupancy and control of a three-speed fan
- Lamp control, on/off, dimming
- Control of window blinds
- Window control
- Display with extensive status information on room conditions

Technical description

- Power supply from ecos 5
- Sub-bus EIA-485, SLC protocol
- Cable entry at rear, pluggable connection terminals for 0.12 to 0.5 mm^2 wires (0.4 to 0.8 mm in diameter)

Products

Type	Description
EY-RU341F001	Operating unit, NTC sensor, dXs setpoint adjuster, 2 buttons
EY-RU344F001	Operating unit, NTC, dXs, fan, occupancy, 4 buttons
EY-RU346F001	Operating unit, NTC, dXs, fan, occupancy, lighting & window blinds, 6 buttons

Technical data

Electrical supply

Power supply	from ecos 5

Version

Sensors	
Measuring range	0..0.40 °C
Resolution	0.1 K
Time constant	approx. 7 min
Functionality	
Setpoint correction	Adjustable
Room occupancy	3 modes, LCD display
Ventilator position	5 functions, LCD display
Position LED	green
Port	
Cable	4-core, twisted
	(screening advisable)
Length	up to 30 m

Permitted ambient conditions

Operating temperature	0…45 °C
Storage and transport temperature	-25…70 °C
Humidity	10…85% rh
	no condensation

Installation

Fitting	in single or double frame
Dimensions W x H x D (mm)	59.5 x 59.5 x 25
Weight (kg)	0.1

Standards, guidelines and directives

Type of protection	IP 30 (EN 60529)
Protection class	III (EN 60730-1)
Environmental class	IEC 60721 3K3
CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-2
	EN 61000-6-3
	EN 61000-6-4

Additional information

Fitting instructions	P100001966
Material declaration	MD 94.040
Dimension drawing	M10501
Wiring diagram	A10523

For accessories, see next page >>>

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Accessories

Type	Description
	Operation
EY-SU306F001	Push-button unit, without frame
	Fitting
0940240101	Frame, single, including fixing plate (for recessed junction box, 10 x)
0940240201	Frame, double, including fixing plate (for recessed junction box, 10 x)
0940240301	Base, single (for wall mounting, 10 x)
0940240401	Base, double (for wall mounting, 10 x)
0940240501	Cable plate, single (for surface cable feed, 10 x)
0940240601	Cable plate, double (for surface cable feed, 10 x)
0940240701	Fixing plate, single (for non-Sauter frame, 10 x)
0940240801	Fixing plate, double
0949241301	Cover, transparent, single (10 x)

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ecoUnit306: Push-button unit for room control unit

Areas of application

Push-button unit used in conjunction with ecoUnit 216…246 and ecoUnit310…346 to control lights, blinds, etc. via a SAUTER EY-modulo 2 ecos / EY-modulo 5 ecos intelligent unitary controller.

Features

- Part of the SAUTER EY-modulo 5 system family
- Push-button unit as a supplement to ecoUnit310…346 / ecoUnit216…246
- Many design and colour variations
- Lamp control, on/off, dimming
- Control of window blinds

Technical description

- Power supply from ecoUnit 3 or ecoUnit2
- 2-wire connection
- 6 button functions

Products

Type	Description
EY-SU306F001	Push-button unit for 6 button functions

Technical data

Electrical supply

Power supply	From room control unit ecoUnit 3 or ecoUnit 2

Version

Port	2-wire
Length (to EY-RU)	up to 30 m [1)]
Position LED	green

Permitted ambient conditions

Operating temperature	0…45 °C
Storage and transport temperature	-25…70 °C
Humidity	10…85% rh
	no condensation

Installation

Fitting	in single or double frame
Dimensions W x H x D (mm)	59.5 x 59.5 x 25
Weight (kg)	0.1

1) See wiring diagram

Standards, guidelines and directives

Type of protection	IP 30 (EN 60529)
Protection class	III (EN 60730-1)
Environmental class	IEC 60721 3K3
CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-2
	EN 61000-6-3
	EN 61000-6-4

Additional information

Fitting instructions	P100001963
Material declaration	MD 94.035
Dimension drawing	M10487
Wiring diagram	
EY-modulo 2 ecos	A10528
	A10529
EY-modulo 5 ecos	A10523

Accessories

Type	Description
	Fitting
0940240101	Frame, single, including fixing plate (for recessed junction box, 10 x)
0940240201	Frame, double, including fixing plate (for recessed junction box, 10 x)
0940240301	Base, single (for wall mounting, 10 x)
0940240401	Base, double (for wall mounting, 10 x)
0940240501	Cable plate, single (for surface cable feed, 10 x)
0940240601	Cable plate, double (for surface cable feed, 10 x)
0940240701	Fixing plate, single (for non-Sauter frame, 10 x)
0940240801	Fixing plate, double (10 x)
0949241301	Cover, transparent, single (10 x)

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ecoUnit110...146: Room operating unit with wireless technology

How energy efficiency is improved

Individual setting of presence and absence, plus room setpoint adjustment and control of lighting and window blinds in order to optimise the energy usage in the rooms.

Areas of application

Operating unit for controlling and maintaining a high degree of room comfort. Temperature measurement and control of variously-furnished rooms by an ecos unitary controller with communication capability.

Features

- Part of the SAUTER EY-modulo 5 family of systems
- EY-SU106 key unit can be added
- Room operating unit with a wide range of functions, designs and colours
- Room climate can be set as the occupants wish
- Setting for the operating mode for room occupancy and activation of a three-speed fan
- Lighting control, on/off, dimming
- Control of window blinds
- Display

Technical description

- Power supply from integrated solar cell
- Battery optional
- EnOcean® wireless protocol
- Range, depending on the type of building: approx. 30 metres

Products

Type	Description
EY-RU110F001	Operating unit, NTC sensor
EY-RU141F001	Operating unit with LCD, NTC, dXs setpoint adjuster, 2 keys
EY-RU144F001	Operating unit with LCD, NTC, dXs, fan, presence, 4 keys
EY-RU146F001	Operating unit with LCD, NTC, dXs, fan, presence, lighting/window blinds, 6 keys

Technical data

Electrical supply

Power supply	Solar cell, maintenance-free

Features

Wireless technology	EnOcean®, STM300
Transmission frequency	868.3 MHz
Range (reach)	approx. 30 metres indoors
Measurements taken	every 100 s
Transmission	every 100 s if change is > 0.8 K

Permitted ambient conditions

Operating temperature	0…45 °C
Storage and transport temperature	-25…70 °C
Humidity	10…85% rh
	no condensation

Installation

Fitting	in single or double frame
Dimensions W x H x D (mm)	59.5 x 59.5 x 25
Weight (kg)	0.1

Standards and directives

Protection type	IP 30 (EN 60529)
Protection class	III (EN 60730-1)
Environmental class	3K3 (IEC 60721)

Additional information

Fitting instructions	P100002468
Material declaration	MD 94.010
Dimension drawing	M10501
Wiring diagram	A10606

For accessories, see next page >>>

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Accessories

Type	Description
	Operation
EY-SU106F001	Key unit, without frame
	Fitting
0940240101	Frame, single, including fixing plate (for recessed junction box, 10 pcs)
0940240201	Frame, double, including fixing plate (for recessed junction box, 10 pcs)
0940240301	Baseplate, single, (for wall mounting, 10 pcs)
0940240401	Baseplate, double, (for wall mounting, 10 pcs)
0940240501	Cable guide, single, (for surface cable feed, 10 pcs)
0940240601	Cable guide, double, (for surface cable feed, 10 pcs)
0940240701	Fixing plate, single (for non-Sauter frames, 10 pcs)
0940240801	Fixing plate, double (for non-Sauter frames, 10 pcs)
0949241301	Cover, transparent, single (10 pcs)

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ecoUnit106: Key unit for room operating unit with wireless technology

How energy efficiency is improved

Control of lighting and window blinds for optimising energy usage in rooms.

Areas of application

Used with ecoUnit1 switching unit for controlling the lighting, window blinds etc. by an ecos unitary controller with communication capability.

Features

- Part of the SAUTER EY-modulo 5 family of systems
- Key unit for use with the ecoUnit1 (EY-RU1)
- Switching unit with a wide range of functions, designs and colours
- Lighting control, on/off, dimming
- Control of window blinds

Technical description

- Power supply from ecos ecoUnit1 (EY-RU1)
- Six key functions

Products

Type	Description
EY-SU106F001	Key unit for six key functions

Technical data

Electrical supply

Power supply	from EY-RU1

Features

Wireless technology	n/a
Transmission frequency	n/a
Range (reach)	n/a
Measurements taken	n/a
Transmission	by pressing a key

Permitted ambient conditions

Operating temperature	0…45 °C
Storage and transport temperature	-25…70 °C
Humidity	10…85% rh
	no condensation

Installation

Fitting	in single or double frame
Dimensions W x H x D (mm)	59.5 x 59.5 x 25
Weight (kg)	0.1

Standards and directives

Protection type	IP 30 (EN 60529)
Protection class	III (EN 60730-1)
Environmental class	3K3 (IEC 60721)

Additional information

Fitting instructions	P100002472
Material declaration	MD 94.025
Dimension drawing	M10487
Wiring diagram	A10606

Accessories

Type	Description
	Fitting
0940240101	Frame, single, including fixing plate (for recessed junction box, 10 pcs)
0940240201	Frame, double, including fixing plate (for recessed junction box, 10 pcs)
0940240301	Baseplate, single, (for wall mounting, 10 pcs)
0940240401	Baseplate, double, (for wall mounting, 10 pcs))
0940240501	Cable guide, single, (for surface cable feed, 10 pcs)
0940240601	Cable guide, double, (for surface cable feed, 10 pcs)
0940240701	Fixing plate, single (for non-Sauter frames, 10 pcs)
0940240801	Fixing plate, double (for non-Sauter frames, 10 pcs)
0949241301	Cover, transparent, single (10 pcs)

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ecoMod580: Wireless interface

How energy efficiency is improved

Integration of energy-harvesting sensors with EnOcean® wireless standard

Areas of application

EY-modulo ecos 5 wireless interface for connecting wireless-based operating units and sensors on the basis of EnOcean® wireless protocol, for energy-efficient control of the room

Features

- Part of the SAUTER EY-modulo family of systems
- Connects SAUTER's ecoUnit110…146 wireless room operating units
- Operating keys with display for manual addition of further EnOcean® sensors
- Wireless interface in various design and colour versions

Technical description

- Power supply from ecos 5
- EIA-485 sub-bus, SLC protocol
- Cable inlet at rear; insertable terminals for wire of 0.12 to 0.5 mm^2 (0.4 to 0.8 mm diameter)

Products

Type	Description
EY-EM580F001	Wireless interface with EnOcean wireless standard

Technical data

Electrical supply

Power supply	from ecos 5

Version

Wireless technology	EnOcean, TCM300
Transmission frequency	868.3 MHz
Range (reach)	approx. 30 m indoors
Connection:	
Wires	4-wire, twisted
	(shielding recommended)
Length	up to 30 m

Permitted ambient conditions

Operating temperature	0…45 °C
Storage and transport temperature	-25…70 °C
Humidity	10…85% rh
	no condensation

Installation

Fitting	in single or double frame
Dimensions W x H x D (mm)	59.5 x 59.5 x 25
Weight (kg)	0.1

Standards, guidelines and directives

Type of protection	IP 30 (EN 60529)
Protection class	III (EN 60730-1)
Environmental class	3K3 (IEC 60721)

Additional information

Fitting instructions	P100004688
Material declaration	MD 94.015
Dimension drawing	M11434
Wiring diagram	A10605

Accessories

Type	Description
	Fitting
0940240101	Frame, single, including fixing plate (for recessed junction box, 10 pcs)
0940240201	Frame, double, including fixing plate (for recessed junction box, 10 pcs)
0940240301	Baseplate, single (for wall mounting, 10 pcs)
0940240401	Baseplate, double (for wall mounting, 10 pcs)
0940240501	Cable guide, single (for surface cable feed, 10 pcs)
0940240601	Cable guide, double (for surface cable feed, 10 pcs)
0940240701	Fixing plate, single (for non-Sauter frames, 10 pcs)
0940240801	Fixing plate, double
0949241301	Cover, transparent, single (10 pcs)

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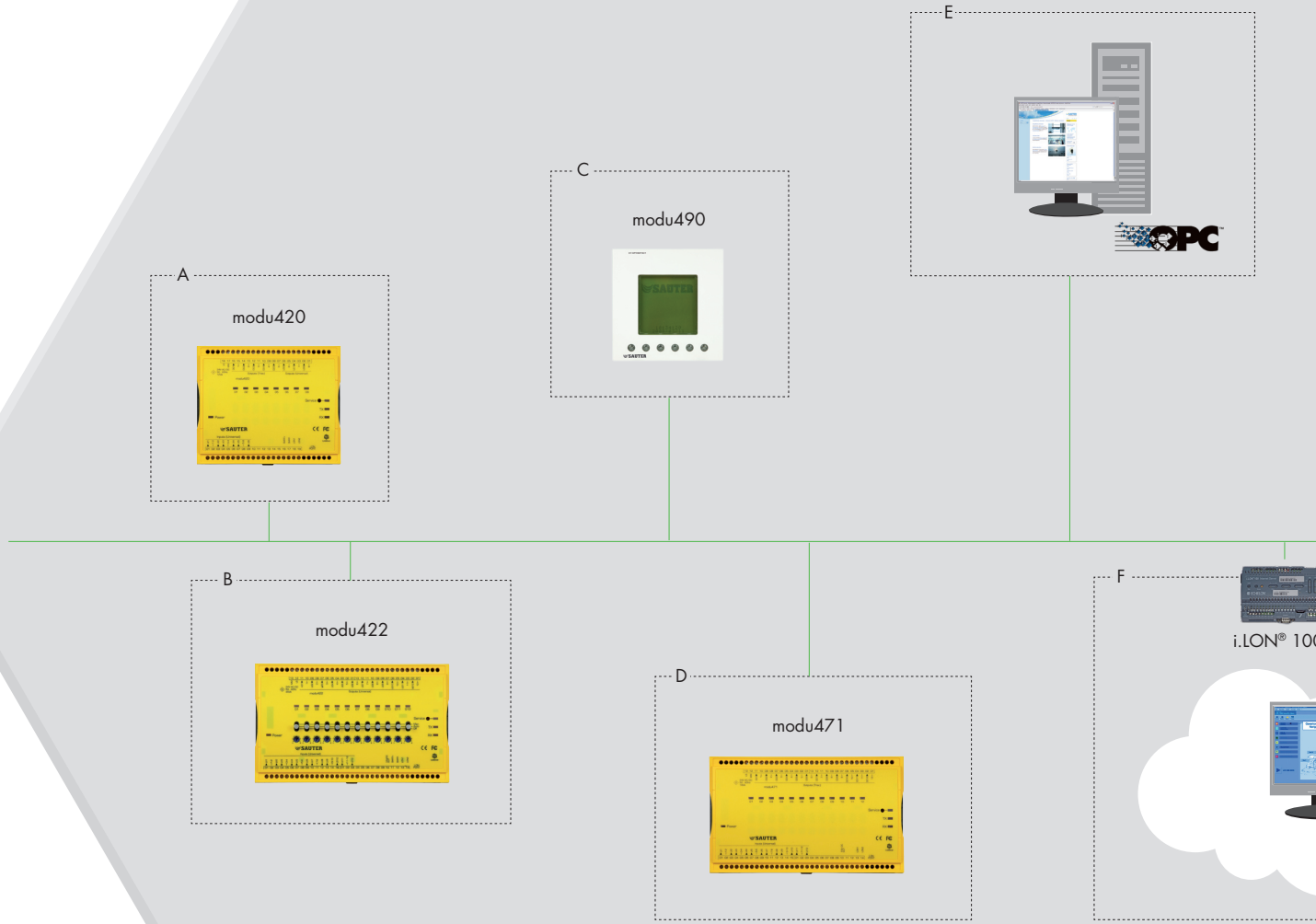
Management level

SAUTER EY-modulo 5



SAUTER EY3600

4

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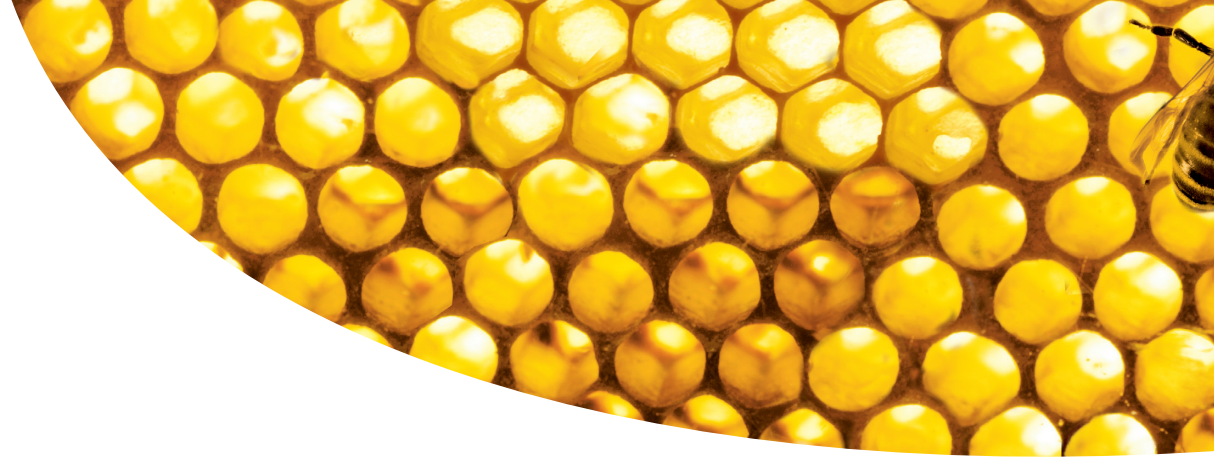
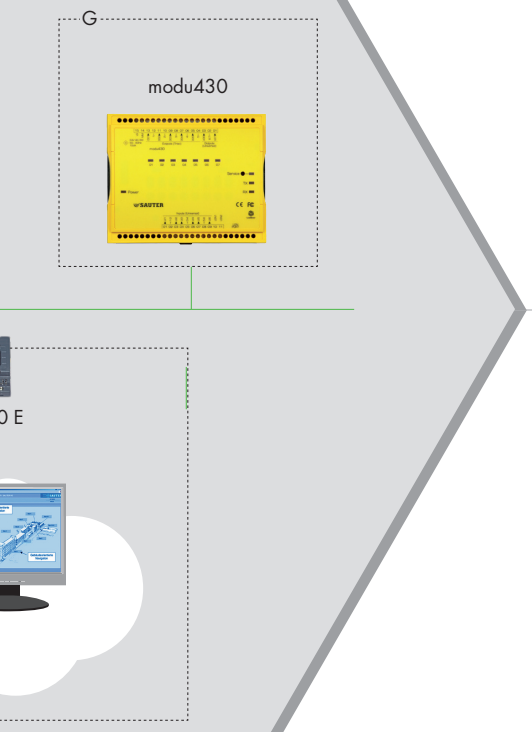


Room management



LON and SAUTER EY-modulo 4: an **efficient** combination for active energy savings.

A Freely-programmable controller for heating and ventilation

B Automation station with local operation

C Operation

D I/O modules

E Connection to the management level via OPC

F Web server

G Application-specific controller for roof tops, heating pumps and ventilation systems

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Content EY-modulo 4

EY-AS422	modu422	PDS92.275
EY-AS421	modu421	PDS92.280
EY-AS420	modu420	PDS92.285
EY-AC430	modu430	PDS92.286
EY-IO471	modu471	PDS92.288
EY-OP490	modu490	PDS93.025
EY-RU483	ecoUnit483	PDS94.090
EY-RU482	ecoUnit482	PDS94.095
EY-RU481	ecoUnit481	PDS94.100
EY-RC416	ecos416	PDS94.115
EY-RC415	ecos415	PDS94.120
EY-RC402, 403	ecos402, 403	PDS94.135
EY-RC401	ecos401	PDS94.147

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modu422: Automation station

How energy efficiency is improved

Integrated pulse counter to measure and optimise energy consumption. Integrated calendar function enables operation of plants to be adapted to usage with minimal energy consumption.

Areas of application

Can be used for a wide variety of applications such as fan-coil, control of chilled beams, heating pumps, multi-speed ventilation plants, energy measurement, cooling and heating systems, or roof-top units.

Features

- Compact, freely programmable LON automation station
- Supports LonMark® object types #0, #1, #3, #20020, #3300 and #20100
- LonMark®-certified as per Interoperability Guideline, Version 3.4
- Lower housing can be separated so that terminals and electronics can be installed separately.
- Audio jack plug for rapid access to the LON network.
- LNS plug-in for rapid programming of the automation station
- EY-AS422F002 with manual operating level to switch over between manual and automatic modes

Technical description

- 24 V~/= power supply
- Universal inputs and outputs can be configured via software
- 12 universal inputs
- 12 fuse-protected universal outputs
- 2 scheduler objects
- Real-time clock (RTC)
- TP/FT 10, 78 kbps
- Neuron® 3150® processor

Products

Type	Description
EY-AS422F001	Compact automation station
EY-AS422F002	Compact automation station with manual operation

Technical data

Electrical supply

Power supply	24 V~ (50/60Hz) ± 15%
	24 V= (20.4…27.6 V)
Power consumption	17 VA / 43 VA with field modules

Inputs, outputs

Universal inputs	12
Resolution	16 bit analogue / digital
Can be used as:	
Counters	Potential-free contact (max. 1 Hz)
Analogue input	U/I/R
Temperature measurement	NI1000, NTC, PT100, PT1000
Potentiometer	R
Universal outputs	12
Resolution	10 bit digital / analogue
Can be used as:	
Analogue output	U/I
Digital output	0-I
PWM	max. 60 mA at 12 V=

Permitted ambient conditions

Operating temperature	0…70 °C
Storage and transport temperature	-20…70 °C
Humidity	0…90% rh
	no condensation

Standards, guidelines and directives

Type of protection	IP 10 (EN 60529)
Protection class	III (EN 60730-1)
Environmental class	3K3 (IEC 60721)
CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-3

Installation

Dimensions W x H x D (mm)	196 x 120 x 51
Weight (kg)	0.39
Housing	ABS PA-765A

Additional information

Fitting instructions	P100002459
Material declaration	MD 92.275
Dimension drawing	M11385
	M11397
Wiring diagram	A10582

For accessories, see next page >>>

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Accessories

Type	Description
	Manual operating panel
EY-RU482F001	ecos4 sensor FCU, display
EY-RU481F001	ecos4 sensor
EY-RU481F002	ecos4 sensor, occupancy
EY-RU481F003	ecos4 sensor, occupancy, setpoint
0940240010	Terminal cover and cable fixture

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modu421: Automation station

How energy efficiency is improved

Integrated pulse counter to measure and optimise energy consumption. Integrated calendar function enables operation of the plant to be adapted to usage with minimal energy consumption.

Areas of application

Can be used for a wide variety of applications such as fan-coil, control of chilled beams, heating pumps, multi-speed ventilation plants, energy measurement, cooling and heating systems, or roof-top units.

Features

- Compact, freely programmable LON® automation station
- Supports LonMark® object types #0, #1, #3, #20020, #3300 and #20100
- LonMark®-certified as per Interoperability Guideline, Version 3.4
- Lower housing can be separated so that terminals and electronics can be installed separately.
- Audio jack plug for rapid access to the LON® network.
- LNS plug-in for rapid programming of the automation station

Technical description

- 24 V~/= power supply
- Universal inputs and outputs can be configured via software
- 10 universal inputs
- 8 fuse-protected universal outputs
- 2 scheduler objects
- Real-time clock
- TP/FT 10, 78 kbps
- Neuron® 3150® processor

Products

Type	Description
EY-AS421F001	Compact automation station

Technical data

Electrical supply

Power supply	24 V~ (50/60 Hz) ± 15%
	24 V= (20.4…27.6 V)
Power consumption	18 VA V_{max}

Inputs, outputs

Universal inputs	10
Resolution	16 bit analogue / digital
Can be used as:	
Counters	Potential-free contact (max. 1 Hz)
Analogue input	U/I/R
Temperature measurement	NI1000, NTC, PT100, PT1000
Potentiometer	R
Universal outputs	8
Resolution	10 bit digital / analogue
Can be used as:	
Analogue output	U/I
Digital output	0-I
PWM	max. 60 mA at 12 V=

Permitted ambient conditions

Operating temperature	0…70 °C
Storage and transport temperature	-20…70 °C
Humidity	0…90% rh
	no condensation

Standards, guidelines and directives

Type of protection	IP 10 (EN 60529)
Protection class	III (EN 60730-1)
Environmental class	3K3 (IEC 60721)
CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-3

Installation

Dimensions W x H x D (mm)	145 x 120 x 51
Weight (kg)	0.35
Housing	ABS PA-765A

Additional information

Fitting instructions	P100002459
Material declaration	MD 92.280
Dimension drawing	M11426
	M11427
Wiring diagram	A10590

Accessories

Type	Description
	Manual operating panel
EY-RU482F001	ecos4 sensor FCU, display
EY-RU481F001	ecos4 sensor
EY-RU481F002	ecos4 sensor, occupancy
EY-RU481F003	ecos4 sensor, occupancy, setpoint

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modu420: Automation station

How energy efficiency is improved

Integrated pulse counter to measure and optimise energy consumption. Integrated calendar function enables operation of the plant to be adapted to usage with minimal energy consumption.

Areas of application

Can be used for a wide variety of applications such as fan-coil, control of chilled beams, lighting control, heating pumps, multi-speed ventilation plants, energy measurement, cooling and heating systems, or roof-top units.

Features

- Compact, freely programmable LON® automation station
- Supports LonMark® object types #0, #1, #3, #20020, #3300 and #20100
- LonMark®-certified as per Interoperability Guideline, Version 3.4
- Lower housing can be separated so that terminals and electronics can be installed separately.
- Audio jack plug for rapid access to the LON® network.
- LNS plug-in for rapid programming of the automation station

Technical description

- 24 V~/= power supply
- Universal inputs and outputs can be configured via software
- 6 universal inputs
- 3 fuse-protected universal outputs
- 5 Triac outputs
- 2 scheduler objects
- TP/FT 10, 78 kbps
- Neuron® 3150® processor

Products

Type	Description
EY-AS420F001	Compact automation station

Technical data

Electrical supply

Power supply	24 V~ (50/60 Hz) ± 15%
	24 V= (20.4…27.6 V)
Power consumption	12 VA max.

Inputs, outputs

Universal inputs	6
Resolution	16 bit digital/analogue
Can be used as:	
Counters	Potential-free contact
Analogue input	U/I/R
Temperature measurement	NI1000, NTC, PT100, PT1000
Potentiometer	R
Universal outputs	3
Resolution	10 bit digital/analogue
Can be used as:	
Analogue output	U/I
Digital output	0-I
PWM	max. 60 mA at 12 V=
Triac outputs	5
	max. 1 A

Permitted ambient conditions

Operating temperature	0…70 °C
Transport and storage temperature	-20…70 °C
Humidity	0…90% rh,
	no condensation

Standards, guidelines and directives

Type of protection	IP 10 (EN 60529)
Protection class	III (EN 60730-1)
Environmental class	3K3 (IEC 60721)
CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-3

Installation

Dimensions W x H x D (mm)	145 x 120 x 51
Weight (kg)	0.35
Housing	ABS PA-765A

Additional information

Fitting instructions	P100002459
Material declaration	MD 92.285
Dimension drawing	M11424
	M11425
Wiring diagram	A10589

Accessories

Type	Description
	Manual operating panel
EY-RU482F001	ecos4 sensor FCU, display
EY-RU481F001	ecos4 sensor
EY-RU481F002	ecos4 sensor, occupancy
EY-RU481F003	ecos4 sensor, occupancy, setpoint

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modu430: Application Controller

How energy efficiency is improved

Innovative control algorithms support optimised starting, better load spread and CO_2-dependent control systems for maximum energy efficiency.

Areas of application

The application-specific control unit utilises various plug-ins to support roof-top units, heat pumps and ventilation systems.

Properties

- Compact application-specific LON automation station
- Supports the LonMark functional profiles #8030 Roof Top Units, #8051 Heat Pump and #8080 Unit Ventilation
- LonMark certified pursuant to Interoperability Directive Version 3.3
- Separable lower housing for separate installation of terminals and electronic components
- Audio jacks for fast access to the LON network
- LNS plug in for simple function configuration

Technical description

- 24 V~/= Voltage supply
- Universal inputs and outputs configurable with software
- 6 universal inputs
- 2 universal outputs
- 5 Triac outputs
- TP/FT 10, 78 kbps
- Neuron 3150 processor

Products

Type	Description
EY-AC430F001	Application controller

Technical data

Electrical supply

Power supply	24 V~/= ± 15%, (50/60 Hz)
Power consumption	6 VA (up to 15 VA)

Inputs, Outputs

Inputs universal	6
	0…10 V=
	4…20 mA
	potential free contact
	Ni1000
	Thermistor Type 2, 3 10 kΩ
	Potentiometer
Outputs universal	2
	0…10 V=
	0…12 V= (on/off)
	PWM (adjustable cycle duration)
Outputs digital	5
Triac	1,0 A, 24 V~ external supply

Interfaces, communication

Protocol	LonTalk®
Processor	Neuron 3150, 8bits, 10 Mhz
Memory	Non-volatile 64K application and
	configuration
Network	TP/FT-10, 78 kbps
Connection	LON Audio Jack mono 1/8“

Installation

Dimensions W x H x D (mm)	145 x 120 x 51
Weight (kg)	0,35

Permitted ambient conditions

Operating temperature	0…70 °C
Storage and transport temperature	-20…70 °C
Humidity	0…85% rh
	no condensation

Standard, guidelines and directives

Type of protection	IP 10 (EN 60529)
Protection class	III (EN 60730-1)
Environmental class	3K3 (IEC 60721)
CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-3
FCC	Device complies with FCC rules
	part 15, subpart B, Class B

Additional information

Fitting instructions	P100002460
Material declaration	MD 92.286
Dimension drawing	M11424
	M11425
Wiring diagram	A10601

For accessories, see next page >>>

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Accessories

Type	Description
EY-RU481F001	ecos 4 sensor
EY-RU481F002	ecos 4 sensor, presence
EY-RU481F003	ecos 4 sensor, presence, setpoint

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modu471: Remote I/O-Module

How energy efficiency is improved

Accurate capture of plant data and issuance of control signals provides energy-efficient control of installations.

Areas of application

Extends the LON network by the stated number of inputs and outputs. The module does not have any inherent capacity as regards control algorithms, trend memory or scheduler objects.

Properties

- Compact remote I/O module
- Supports the LonMark objects #0, #1 and #3
- LonMark certified pursuant to Interoperability Directive Version 3.4
- Separable lower housing for separate installation of terminals and electronic components
- Audio jacks for fast access to the LON network
- LNS plug-in for simple input and output configuration

Technical description

- 24 V~ Voltage supply
- Universal inputs and outputs configurable with software
- 12 universal inputs
- 12 digital outputs
- TP/FT 10, 78 kbps
- Neuron 3150 processor

Products

Type	Description
EY-IO471F002	Remote I/O-Module

Technical data

Electrical supply

Power supply	24 V~
Power consuption	6 VA (up to 15 VA)

Inputs, Outputs

Inputs universal	12
	0…10 V=
	4…20 mA
	potential free contact
	Ni1000
	Thermistor Type 2, 3 10kΩ
	Potentiometer
Outputs digital	12
Triac	1,0 A, 24 V= external supply
	PMW (adjustable cycle duration)

Interfaces, communication

Protocol	LonTalk®
Processor	Neuron 3150, 8bits, 10 Mhz
Memory	Non-volatile 64 K application and
	configuration
Network	TP/FT-10, 78 kbps
Connection	LON Audio Jack mono 1/8“

Permitted ambient conditions

Operating temperature	0…70 °C
Storage and transport temperature	-20…70 °C
Humidity	0…85% rh
	no condensation

Installation

Dimensions W x H x D (mm)	195 x 120 x 51
Weight (kg)	0,39

Standards, guidelilnes and directives

CE Emission	EN 55022: 1998 class B
CE Immunity	EN 61000-4-2: 1995, level 3 in air
	EN 61000-4-2: 1995,
	level 2 by contact
	EN 61000-4-3: 1996, level 2
	EN 61000-4-4: 1995, level 2
	EN 61000-4-6: 1996, level 2
	ENV 50204: 1995, level 2
FCC	Device complies with FCC rules
	Part 15, subpart B, Class B

Additional information

Fitting instructions	P100002473
Material declaration	MD 92.288
Dimension drawing	M11385
	M11397
Wiring diagram	A10611

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modu490: Operating Unit

How energy efficiency is improved

Calendar functions for optimised operation of LON installations with no additional management level Real-Time Clock enables daylight-dependent control of lighting in buildings for greater energy savings.

Areas of application

Operation and control of up to 250 data points in LON networks with no management level. Convenient on-site access to calendar functions. Management of up to 16 different calendars.

Properties

- Compact display with calendar functionality for wall surface mounting or recessed mounting
- Supports LonMark objects #0, 16 scheduler object types #20020, real time clock #3300 and display #20010
- Data access can be password-protected
- Audio jack plugs for fast access to the LON network
- LNS plug in for simple function configuration

Technical description

- Backlit LCD display with 128 x 128 pixels
- 6 keys for navigation and data input
- Battery-buffered real-time clock with a 15-year lifetime
- TP/FT 10, 78 kbps
- Neuron 3150 Processor
- Housing for surface mounting

Products

Typ	Description
EY-OP490F001	Operating unit with display and calendar, surface mounting
EY-OP490F002	Operating unit with display and calendar, recessed mounting

Technical data

Electrical supply

Power supply	24 V~/= ±15%; 50/60 Hz
Power consumption	8 VA

Display

Type	Backlight
Pixels	128 x 128
Image size (mm)	55 x 55

Interfaces, communication

Protocol	LonTalk®
Transceiver	FT-X1
Network	TP/FT-10, 78 kbps
Connection	LON Audio Jack mono 1/8“

Permitted ambient conditions

Operating temperature	0…70 °C
Storage and transport temperature	-20…70 °C
Humidity	0…85% rh
	no condensation

Installation

Dimensions W x H x D (mm)	116 x 116 x 38
Weight (kg)	0,40

Standards, guidelines and directives

CE Emission	EN 55022: 1998 Class B
CE Immunity	EN 61000-4-2: 1995, level 3 in air
	EN 61000-4-2: 1995,
	level 2 by contact
	EN 61000-4-3: 1996, level 2
	EN 61000-4-4: 1995, level 2
	EN 61000-4-6: 1996, level 2
	ENV 50204: 1995, level 2
FCC	Device complies with FCC rules
	Part 15, subpart B, Class B

Additional information

Fitting instructions	P100002333
Material declaration	MD 93.025
Dimension drawing	M11407, M11408, M11409
	M11404, M11405
Wiring diagram	A10615

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ecoUnit483: VAV Room Operating Unit

How energy efficiency is improved

Local presence button for targeted energy saving when the room is not occupied.

Areas of application

Room temperature detection for on-demand control of VAV applications in individual rooms. Can be used for VAV controllers EY-RC415 and EY-RC416.

Properties

- Room operating unit for wall surface mounting
- Display unit shows room temperature, setpoint, fan stage, presence status, outside temp.
- Keys for adjusting temperature setpoint, presence change-over and menu access
- Usable as a manually operated device for starting up the volume flow loop control
- Audio jack plugs for fast access to the LON network

Technical description

- Temperature sensor in NTC technology
- Two-line LCD text display
- Plastic housing, pure white

Products

Type	Description
EY-RU483F001	VAV room operation unit with display

Technical data

Display

Range	2 rows, 8 characters

Interfaces, communication

Communication	2400 baud serial
Interface	2-core
Protocol	EIA-232
Cable	
Lenght	up to 15 m
Type	22 AWG twisted pair strand
Screening	None
LON Bus	Audio Jack mono 1/8“

Functionality

Sensor	10K NTC Thermistor
Range	0…70 °C
Accuracy	± 0,2 °C
Resolution	0,1 °C

Installation

Dimensions W x H x D (mm)	124 x 85 x 28
Weight (kg)	0,18

Permitted ambient conditions

Operating temperature	0…70 °C
Storage and transport temperature	-20…70 °C
Humidity	0…85% rh
	no condensation

Standards, guidelines and directives

CE Immunity	EN 61000-4-2: 1995
	EN 61000-4-3: 1995
	EN 61000-4-4: 1995
	EN 61000-4-6: 1996
FCC	Device complies with FCC rules
	part 15, subpart B, Class B

Additional information

Fitting instructions	P100002476
Material decleration	MD 94.090
Dimension drawing	M11438
	M11439
Wiring diagram	A10613

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ecoUnit482: Fan Coil Room Operating Unit

How energy efficiency is improved

Local presence button for targeted energy saving when the room is not occupied.

Areas of application

Room temperature detection for on-demand control of individual rooms. Usable in conjunction with fan coil controllers EY-RC402 and EY-RC403.

Properties

- Room operating unit for wall surface mounting
- Display unit shows room temperature, setpoint, fan stage, presence status
- Keys for adjusting fan stages and temperature setpoint
- Audio jack plugs for fast access to the LON network

Technical description

- Temperature sensor in NTC technology
- Two-line LCD text display
- Plastic housing, pure white

Products

Type	Description
EY-RU482F001	Fan coil room operating with display

Technical data

Display

Range	2 rows, 8 characters

Interfaces, communication

LON Bus	Audio Jack mono 1/8“
Communication	2400 baud serial
Interface	2-Draht
Protocol	EIA-232
Cable	
Length	Up to 15 m
Type	22 AWG twisted pair strand
Screening	None

Functionality

Sensor	10K NTC Thermistor
Range	0…70 °C
Accuracy	± 0,2 °C
Resolution	0,1 K

Installation

Dimensions W x H x D (mm)	124 x 85 x 28
Weight (kg)	0,28

Permitted ambient conditions

Operating temperature	0...50 °C
Transport and storage temperature	-30...50 °C
Humidity	0...85% rh
	no condensation

Standards, guidelines and directives

CE Immunity	EN 61000-4-2: 1995
	EN 61000-4-3: 1995
	EN 61000-4-4: 1995
	EN 61000-4-6: 1996
FCC	Device complies with FCC rules
	part 15, subpart B, Class B
UL Listed	UL-873
Material	UL94-VO

Additional information

Fitting instructions	P100002477
Material declaration	MD 94.095
Dimension drawing	M11436
	M11437
Wiring diagramm	A10612

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ecoUnit481: Room Operating Unit

How energy efficiency is improved

Local presence button for targeted energy saving when the room is not occupied.

Areas of application

Room temperature detection for on-demand control of individual rooms. Usable for fan coils, chill beams, radiators or VAV applications.

Properties

- Room operating unit for wall surface mounting
- Audio jack plugs for fast access to the LON network

Technical description

- Temperature sensor in NTC technology
- Setpoint adjuster ±6 °C
- Plastic housing, pure white

Products

Type	Description
EY-RU481F001	Room sensor
EY-RU481F002	Room sensor with LED, presence, warmer/colder
EY-RU481F003	Room sensor with LED, presence, temperature adjustment

Technical data

Electrical supply

Power supply (for status LED)	
F002, F003	24 V~/=

Interfaces, communication

Connection	LON Audio Jack stereo/ mono 1/8“

Permitted ambient conditions

Operating temperature	0…70 °C
Transport and storage temperature	-20…70 °C
Humidity	0…85% rh
	no condensation

Installation

Dimensions W x H x D (mm)	124 x 85 x 32,5
Weight (kg)	0,18

Additional information

Fitting instructions	P100002478
Material declaration	MD 94.100
Dimension drawing	M11440
	M11441
Wiring diagram	A10614

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ecos416: DCC volume flow controller

How energy efficiency is improved

Demand-led control for air volume flows using efficient control strategies. CO_2-dependent control to optimise room conditioning with minimal energy costs. Battery-free EnOcean® radio technology is used.

Areas of application

Can be used for variable volume flow control in single rooms.
Supports additional functions such as: fan control, 2-pipe and 4-pipe plants, heating/cooling, frost protection function, switching of room lighting.

Features

- Compact LON volume flow controller
- Supports LonMark® functional profile #8502
- LonMark®-certified as per Interoperability Guideline, Version 3.3
- LNS plug-in for simple configuration of the functions

Technical description

- 24 V~ power supply
- Universal inputs and outputs can be configured via software
- 4 universal inputs
- 2 universal outputs
- 4 digital outputs
- TP/FT10, 78 kbps
- Neuron® 3150® processor

Products

Type	Description
EY-RC416F001	DDC volume flow controller
EY-RC416F002	DDC volume flow controller with EnOcean® radio technology

Technical data

Electrical supply

Power supply	24 V~ (50/60 Hz) ± 15%
Power consumption	Approx. 5 VA (up to 10…50 VA for
	internal power supply for Triac)

Inputs, outputs

Universal inputs	4
Resolution	16 bit digital/analogue
Can be used as:	
Digital input	Potential-free contact
Analogue input	U/I/R
Temperature measurement	NTC, PT100, PT1000
Potentiometer	R
Universal outputs	2
Can be used as:	
Analogue output	U
Digital output	0…12 V= digital
	PWM max. 20 mA for 600 Ω
Digital outputs	4
Digital output	Triac 0.75 A with 24 V~

Interfaces, communication

Protocol	LonTalk®
Transceiver	FT-X1
Network	TP/FT-10, 78 kbps
Connection	LON audio jack mono 1/8"
EnOcean® F002	6 available channels
Radio frequency	868.3 MHz

Differential pressure sensor

Pressure range	2…250 Pa
Accuracy	± 3% full scale

Damper drive

Running time	120 s
Torque	4 Nm
Rotation angle	95°, adjustable
Damper shaft	□ 8.5…18.2 mm

Permitted ambient conditions

Operating temperature	0…70 °C
Storage and transport temperature	-20…70 °C
Humidity	0…90% rh,
	no condensation

Standards, guidelines and directives

Type of protection	IP 30 (EN 60529)
Protection class	I
Environmental class	3K3 (IEC 60721)
CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-2
	EN 61000-6-3
	EN 61000-6-4

Installation

Dimensions W x H (mm)	214 x 123
Weight (kg)	1.05

Additional information

Fitting instructions	P100002459
Material declaration	MD 94.115
Dimension drawing	M11393
Wiring diagram	A10585

For accessories, see next page >>>

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Accessories

Type	Description
	Manual operating panel
EY-RU481F001	Sensor
EY-RU483F001	Sensor-VAV, display
EY-RU481F002	Sensor, occupancy
EY-RU481F003	Sensor, occupancy, setpoint

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ecos415: DCC volume flow controller

How energy efficiency is improved

Demand-led control for air volume flows using efficient control strategies.
Battery-free EnOcean® radio technology is used.

Areas of application

Can be used for variable volume flow control in single rooms.
Supports additional functions such as: fan control, 2-pipe and 4-pipe plants, heating/cooling, frost protection function, switching of room lighting.

Features

- Compact LON® volume flow controller
- Supports LonMark® functional profile #8502
- LonMark®-certified as per Interoperability Guideline, Version 3.4
- LNS plug-in for simple configuration of the functions

Technical description

- 24 V~ power supply
- Universal inputs and outputs can be configured via software
- 2 universal inputs
- 1 output to operate the LED on EY-RU481
- 2 digital outputs
- TP/FT 10, 78 kbps
- Neuron® 3150® processor

Products

Type	Description
EY-RC415F003	DDC volume flow controller
EY-RC415F004	DDC volume flow controller with EnOcean® radio technology

Technical data

Electrical supply

Power supply	24 V~ (50/60 Hz) ± 15%
Power consumption	Approx. 5 VA (up to 10…50 VA for
	internal power supply for Triac)

Inputs, outputs

Universal inputs	2
Resolution	16 bit digital/analogue
Can be used as:	
Digital input	Potential-free contact
Analogue input	U/I/R
Temperature measurement	NTC, PT100, PT1000
Potentiometer	R
Universal outputs	2
Can be used as:	
Analogue output	U
Digital output	0…12 V= digital
	PWM max. 20 mA for 600 Ω
Digital outputs	4
Digital output	Triac 0.75 A with 24 V~

Interfaces, communication

Protocol	LonTalk®
Transceiver	FT-X1
Network	TP/FT-10, 78 kbps
Connection	LON ® audio jack, mono, 1/8"
EnOcean® F002	6 available channels
Radio frequency	868.3 MHz

Differential pressure sensor

Pressure range	2…250 Pa
Accuracy	± 3% full scale

Damper drive

Running time	120 s
Torque	4 Nm
Rotation angle	95°, adjustable
Damper shaft	□ 8.5…18.2 mm

Permitted ambient conditions

Operating temperature	0…70 °C
Transport and storage temperature	-20…70 °C
Humidity	0…90% rh
	no condensation

Standards, guidelines and directives

Type of protection	IP 30 (EN 60529)
Protection class	I
Environmental class	3K3 (IEC 60721)
CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-2
	EN 61000-6-3
	EN 61000-6-4

Installation

Dimensions W x H (mm)	214 x 123
Weight (kg)	1.05

Additional information

Fitting instructions	P100002459
Material declaration	MD 94.120
Dimension drawing	M11430
Wiring diagram	A10602

For accessories, see next page >>>

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Accessories

Type	Description
	Manual operating panel
EY-RU481F001	Sensor
EY-RU482F001	Sensor-FCU, display
EY-RU483F001	Sensor-VAV, display
EY-RU481F002	Sensor, occupancy
EY-RU481F003	Sensor, occupancy, setpoint

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ecos402, 403: Room automation station, fan-coil, 230 V

How energy efficiency is improved

Demand-led control for fan-coil and chilled beams applications using efficient control strategies. Can be used in combination with sensors that support the battery-free EnOcean® radio technology.

Areas of application

Can be used for fan-coil or chilled beams applications.
Supports: 3-speed fan, 1 electrical reheater, 2-pipe and 4-pipe plants, heating/cooling, switching of room lighting (one skylight).

Features

- Compact LON fan-coil controller
- Supports LonMark® functional profile #8501
- LonMark®-certified as per Interoperability Guideline, Version 3.3
- Lower housing can be separated so that terminals and electronics can be installed separately.
- Audio jack plug for rapid access to the LON network.
- LNS plug-in for simple configuration of the functions

Technical description

- 230 V~ power supply
- 6 universal inputs, can be configured via software
- 2 universal outputs (ecos403 only), can be configured via software
- 4 digital outputs
- 4 relay contacts
- TP/FT 10, 78 kbps
- Neuron® 3150® processor

Products

Type	Description
EY-RC402F001	Room automation station
EY-RC402F002	Room automation station, EnOcean® radio technology
EY-RC403F001	Room automation station
EY-RC403F002	Room automation station, 2 AO, EnOcean® radio technology

Technical data

Electrical supply

Power supply	230 V~ (50/60 Hz) ± 20%
Power consumption:	
F001	20 VA
F002	33 VA

Inputs, outputs

Inputs			
universal		6	
Can be used as:			
Digital input		Potential-free contact	
Analogue input		U/I/R	
Temperature measurement		NI1000, NTC, PT100, PT1000	
Potentiometer		R	
Outputs			
Relay contact up to 277 V~, 3 A		3	
Relay contact up to 277 V~ 3 A inductive, 7 A resistive		1	
Digital	Triac 1.0 A	4	
Universal	0…10 V	- (EY-RC402)	2 (EY-RC403)
	0…12 V (on/off)		
	PWM		

Installation

Dimensions W x H x D (mm)	196 x 120 x 51
Weight (kg)	0.49

Interfaces, communication

Protocol	LonTalk®
Transceiver	FT-X1
Network	TP/FT-10, 78 kbps
Connection	LON audio jack mono 1/8"
EnOcean® (F002)	5 available channels
Radio frequency	868.3 MHz

Standards, guidelines and directives

Type of protection	IP 10 (EN 60529)
Protection class	I
Environmental class	3K3 (IEC 60721)
CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-3

Permitted ambient conditions

Operating temperature	0…50 °C
Transport and storage temperature	-20…70 °C
Ambient humidity	0…90% rh,
	no condensation

Additional information

Fitting instructions;	P100002804
Material declaration	MD 94.135
Dimension drawing	M11386
	M11387
Wiring diagram	A10583

For accessories, see next page >>>

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Accessories

Type	Description
EY-RU481F001	Sensor
EY-RU481F002	Sensor, occupancy
EY-RU481F003	Sensor, occupancy, setpoint
EY-RU482F001	Sensor-FCU, display
0940240010	Terminal cover and cable fixture

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ecos401: Fan-coil intelligent unitary controller

How energy efficiency is improved

Demand-led control for fan-coil and chilled beams applications using efficient control strategies.

Areas of application

Can be used for fan-coil or chilled beams applications.
Supports 3-speed fans, 1 electrical re-heater, 2-pipe plants, heating/cooling.

Features

- Compact LON fan-coil controller
- Supports LonMark® functional profile #8020
- LonMark®-certified as per Interoperability Guideline, Version 3.3
- Lower housing can be separated so that terminals and electronics can be installed separately.
- Audio jack plug for rapid access to the LON network.
- LNS plug-in for simple configuration of the functions

Technical description

- 24 V~ power supply
- 6 universal inputs, can be configured via software
- 2 universal outputs, can be configured via software
- 5 digital outputs
- TP/FT 10, 78 kbps
- Neuron® 3150® processor

Products

Type	Description
EY-RC401F001	Fan-coil intelligent unitary controller

Technical data

Electrical supply

Power supply	24 V~ (50/60 Hz) ± 15%
Power consumption:	15 VA max.

Inputs, outputs

Inputs		
Universal		6
Can be used as:		
Digital input		Potential-free contact
Analogue input		U/I/R
Temperature measurement		NTC, PT100, PT1000
Potentiometer		R
Outputs		
Digital	Triac 1.0 A	5
Universal	0…10 V	2
	0…12 V (on/off)	
	PWM	

Interfaces, communication

Protocol	LonTalk®
Transceiver	FT-X1
Network	TP/FT-10, 78 Kbps
Connection	LON audio jack mono 1/8"
EnOcean® (F002)	5 available channels
Radio frequency	868.3 MHz

Standards, guidelines and directives

Type of protection	IP 10 (EN 60529)
Protection class	I
Environmental class	3K3 (IEC 60721)
CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-3

Permitted ambient conditions

Operating temperature	0…50 °C
Transport and storage temperature	-20…70 °C
Ambient humidity	0…90% rh
	no condensation

Installation

Dimensions W x H x D (mm)	145 x 120 x 51
Weight (kg)	0.35

Additional information

Fitting instructions;	P100002802
Material declaration	MD 94.147
Dimension drawing	M11424
	M11425
Wiring diagram	A10601

Accessories

Type	Description
EY-RU481F001	Sensor
EY-RU481F002	Sensor, occupancy
EY-RU481F003	Sensor, occupancy, setpoint

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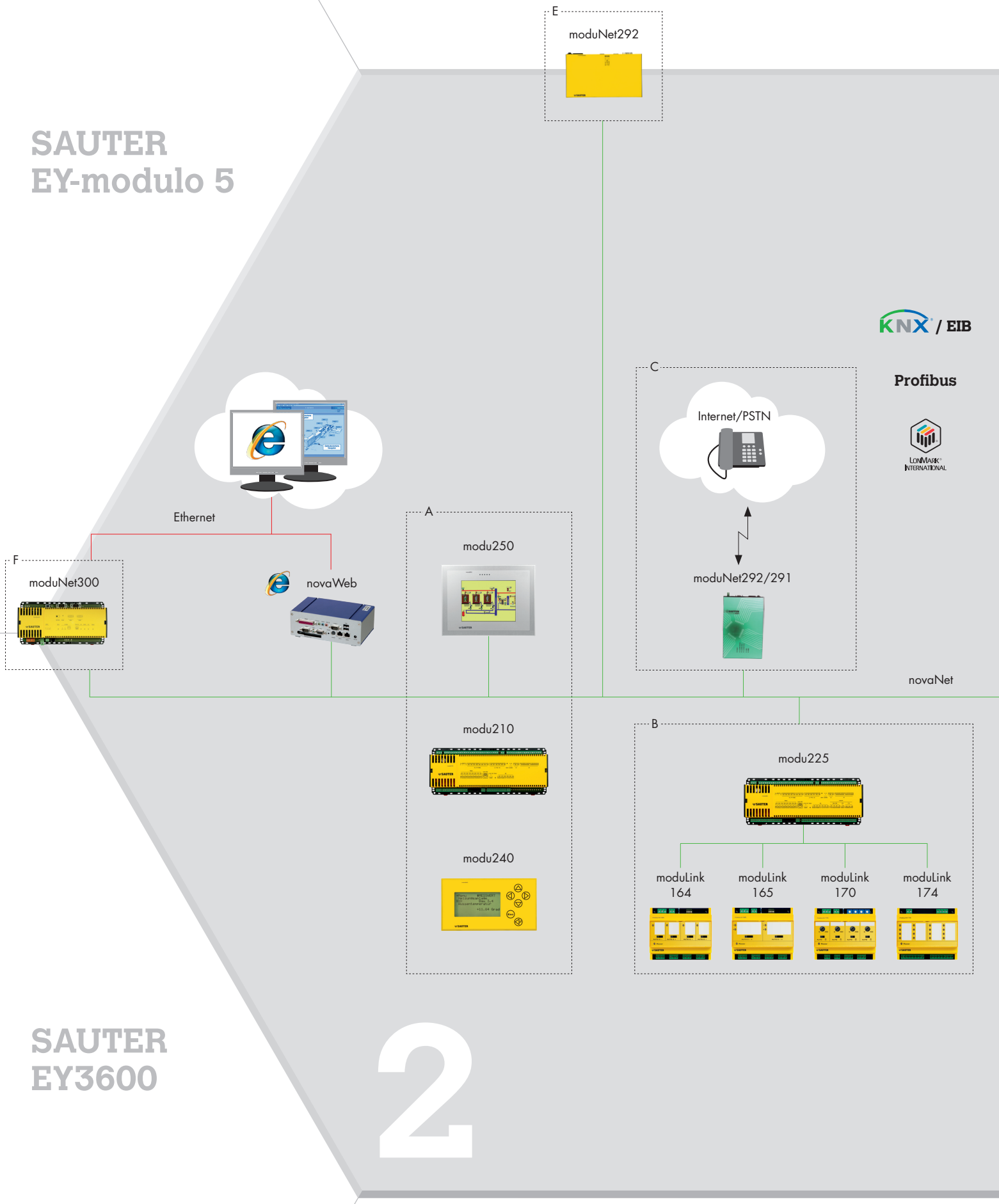
Management level

SAUTER EY-modulo 5



SAUTER EY3600

2

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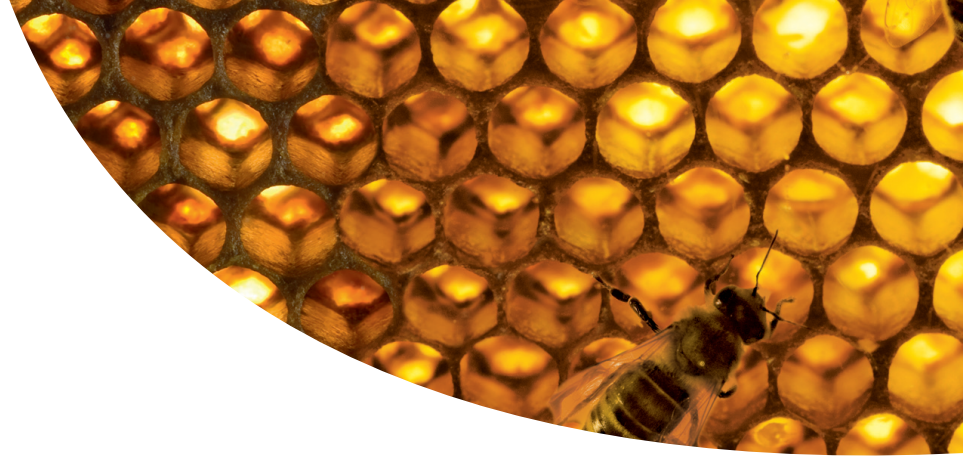


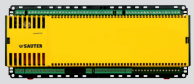
Room management

Modbus-RTU

M-Bus

D

modu230



Networked facility automation – **intelligent** and efficient at every point.

A Operation:
Separate LCD operating unit or Touch Panel

B Separability:
I/O modules can be separated from the station

C Telephone dial-up operation

D Third-party connection:
Integration of third-party systems

E Connection to management level

F Integration in EY-modulo 5
Integration EY3600

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Content EY-modulo 2

EYR203	moduFlex	PDS92.803
EY-AS200	modu200	PDS92.825
EY-AS201	modu201	PDS92.820
EY-AS210	modu210	PDS92.815
EY-AS225	modu225	PDS92.810
EY-FM174	moduLink174	PDS92.830
EY-FM170	moduLink170	PDS92.835
EY-FM165	moduLink165	PDS92.840
EY-FM164	moduLink164	PDS92.845
EY-OP240	modu240	PDS93.075
EY-OP250	modu250	PDS93.070
EYE200	ecos200	PDS94.200
EYE202	ecos202	PDS94.201
EYE205, 206	ecos205, 206	PDS94.205
EY-RC208, 209	ecos209, 209	PDS94.185
EY-RU210…216	ecoUnit210…216	PDS94.175
EY-RU241…246	ecoUnit241…246	PDS94.170
EY-SU306	ecoUnit306	PDS94.035
EY-BU292	moduNet292	PDS96.015
EY-BU180	moduNet180	PDS96.020
EY-AM300	moduNet300	PDS96.010

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moduFlex: Universal controller

How energy efficiency is improved

For accurate control round the clock.

Areas of use

Regulation and control of technical systems, e.g. in the HVAC field.

Features

- Memory structure for several control circuits.
- Can be networked and given communication capability by installing the module for novaNet (accessory no. 374413)
- Direct communication with EY-OP250 touch-panel is possible by using the Pt-to-Pt module (accessory no. 374448).
- Programmable (parameters can be set) using a PC with CASE Suite software (in compliance with IEC 61131-3)

Technical description

- Power supply 24 V~
- 18 inputs (digital/analogue)
- 10 outputs (digital/analogue)

Products

Type	Description
EYR203F001	moduFlex universal controller, with relay

Technical data

Electrical supply

Supply voltage	24 V~, ±20%, 50/60 Hz
Power consumption	10 VA

Version

Digital inputs	8 (2 can be used as pulse counters)
Digital outputs	2× 0-I
	2× 0-I-II
Analogue inputs	5× Ni/Pt1000
	5× 0...10 V
Analogue outputs	4× 0...10 V

Interfaces, communication

AS network/novaNet	With auxiliary module on main pcb
Operating panel EY-OP240F001	1× RJ-45 socket
Languages:	German, English, French
	Italian, Dutch, Spanish
	Swedish, Norwegian, Danish,
	Portuguese, Finnish
	(other languages see accessories)
MFA	128
Time commands	320 entries
HDB entries	
Digital (Block 1)	1792
Analogue (Block 2)	1792

Permitted ambient conditions

Operating temperature	0...45 °C
Storage and transport temp.	-25...70 °C
Humidity	10...85 % rh
	without condensation

Installation

Dimensions W x H x D (mm):	235 x 147.5 x 64.5
Weight (kg)	0.8

Standards, guidelines and directives

Degree of protection	IP 10 (EN 60529)
Protection class	I (EN 60730-1)
Ambient class	IEC 60721 3K3
Complies with:	
Directive 2006/95/EG	EN 60730-1 & EN 60730-2-9
EMC directive 2004/108/EG	EN 61000-6-1
	EN 61000-6-2 [1)]
	EN 61000-6-3
	EN 61000-6-4

Additional information

Fitting instructions	MV505769
Declaration on materials	MD 92.507
Dimension drawing	M09603
Wiring diagram	A10554

1) If the industrial standard (EN 61000-6-2) has to be met, the power cables should be no longer than 30 metres in length.

For accessories, see next page >>>

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Accessories

Type	Description
	Operating unit
EY-OP240F001	modu240 local operating unit
EY-OP250F001	modu250 touch-panel, colour
EY-OP250F002	modu250 touch-panel, monochrome
	Micro-program
0501149 002	for modu240 languages: German, English, French Polish, Slovenian, Hungarian, Rumanian, Russian, Czech, Turkish, Slovakian
	Connecting leads
0367842002	moduFlex – modu240 1.5 m
0367842003	moduFlex – modu240 2.9 m
0367842004	moduFlex – modu240 6.0 m
0367862001	moduFlex – modu250 1.5 m
0367862002	moduFlex – modu250 2.9 m
0367862003	moduFlex – modu250 6.0 m
	Data memory
0367883001	6× empty PROMs 512 KBit (User-PROM)
	Auxiliary module
0374413001	Communication novaNet (MV 505770)
0374448001	Pt-to-pt for direct connection of modu250, max. distance 6 m

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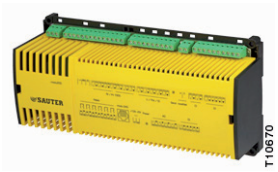
modu200: Automation station



How energy efficiency is improved

SAUTER-EY-modulo2 – thoroughly tried-and-tested technology with a new design.
For accurate control and regulation functions, 24 hours a day.

Areas of application

Regulation, control, monitoring and optimisation of technical operating installations in sectors such as HVAC engineering.

Features

- Compact automation station
- Part of the SAUTER EY-modulo system family
- 26 inputs
- 10 outputs
- Communication: SAUTER novaNet
- Programming/parameterisation via PC with CASE Suite software (based on IEC 61131-3)
- Control engineering libraries
- Time and calendar function
- Data recording (historic data base)

Technical description

- 24 V~/= voltage supply
- 12 digital inputs (alarm/status)
- 7 analogue inputs (Ni/Pt1000)
- 5 analogue inputs (U, Pot)
- 2 pulse counters
- 4 analogue outputs (0...10 V)
- 6 digital outputs (relays)

Products

Type	Description
EY-AS200F001	Compact automation station

Technical data

Electrical supply

Power supply	24 V~ (50/60 Hz) ± 20%
	24 V= (18…30 V)
Power consumption	up to 11.5 VA
Dissipated power	up to 6 W
Battery (buffer: RTC/SRAM)	CR2032, plug-in

Interfaces, communication

AS network/novaNet	1x a/b terminals, plug-in
Operating panel (modu240)	1x RJ-45 socket
Languages:	
German, French, English, Italian, Dutch, Spanish, Swedish, Norwegian, Danish, Portuguese, Finnish, Polish, Slovenian, Hungarian, Romanian, Russian, Czech, Turkish, Slovakian	
MFA	256
Time commands	320 entries
HDB entries	
digital	2x 3584 (Block 1;3)
analogue	2x 3584 (Block 2;4)

Permitted ambient conditions

Operating temperature	0...45 °C
Storage and transport temperature	-25...70 °C
Humidity	10…85% rh
	no condensation

Installation

Dimensions W x H x D (mm)	244x 120x 73
Weight (kg)	0.65

Standards, guidelines and directives

Type of protection	IP 00 (EN 60529) [1]
Protection class	I (EN 60730-1)
Environmental class	3K3 (IEC 60721)
Conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-2 [2]
	EN 61000-6-1
	EN 61000-6-2 [2]
Low Voltage Directive	
2006/95/EC	EN 60730-1
	EN 60730-2-9
Software class A	EN 60730-1 Annexe H

Additional information

Fitting instructions	P100002321
Material declaration	MD 92.825
Dimension drawing	M10496
Wiring diagram	A10534
Factory settings	All switches to 'Off' position

1) Type of protection IP10 with terminal cover (accessory 0900240001).

2) If it is mandatory to comply with the industrial standard (EN 61000-6-2), the connecting cables for the digital inputs (DI), analogue inputs and outputs (AI/AO), the counter inputs (CI) and voltage outputs (5 and 13 V) must not exceed 30 m in length.

For accessories, see next page >>>

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Accessories

Type	Description
	Manual operating panel
EY-OP240F001	Local operating unit, modu240
EY-OP250F001	Touch-panel modu250: colour
EY-OP250F002	Touch-panel modu250: monochrome
	Connecting cables
0367842002	Automation station - modu240 1.5 m
0367842003	Automation station - modu240 2.9 m
0367842004	Automation station - modu240 6.0 m
	Data memory
0367883002	PROM memory, 1 Mb empty (user data), pack of 5
	General
0900240001	Terminal cover (240 mm), pack of 2

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modu201: Automation station

How energy efficiency is improved

SAUTER EY-modulo 2: proven technology with new design for accurate control functions around the clock

Areas of application

Regulation, control, monitoring and optimisation of technical systems, e.g. in the HVAC field.

Features

- Compact automation station
- Part of the SAUTER EY-modulo family of systems
- 28 inputs
- 10 outputs
- SAUTER novaNet communication
- Programming/parameterising via PC using CASE Suite software (as per IEC 61131-3)
- Control libraries
- Time and calendar function
- Historical database

Technical description

- Power supply 24 V~/=
- 24 digital inputs (alarm/status)
- 2 analogue inputs (U, Pot)
- 2 pulse counters
- 2 analogue outputs (0...10 V)
- 8 digital outputs (relays)

Products

Type	Description	Weight (kg)
EY-AS201F001	Compact automation station	0.61

Technical data

Electrical supply

Power supply	24 V~ (50/60 Hz) ± 20%
	24 V= (18…30 V)
Power consumption	up to 13.5 VA
Dissipated power	up to 7 W
Battery (back-up RTC/SRAM)	CR2032

Version

Factory setting	All switches at pos. 'off'

Interfaces & communication

AS network/novaNet	1x a/b terminals, pluggable
Operating panel (modu240)	1x RJ-45 socket
Languages:	
German, French, English, Italian, Dutch, Spanish, Swedish, Norwegian, Danish, Portuguese, Finnish, Polish, Slovenian, Hungarian, Rumanian, Russian, Czech, Turkish Slovakian	
MFA	256
Time commands	320 entries
HDB entries	
Digital	2x 3584 (block 1;3)
Analogue	2x 3584 (block 2;4)

Permitted ambient conditions

Operating temperature	0...45 °C
Storage and transport temperature	-25...70 °C
Humidity	10…85% rh
	no condensation

Installation

Dimensions W x H x D (mm)	244 x 120 x 73
Weight (kg)	0.61

Standards, guidelines and directives

Type of protection	IP 00 (EN 60529) [1]
Protection class	I (EN 60730-1)
Environmental class	3K3 (IEC 60721)
CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-2 [2]
	EN 61000-6-3
	EN 61000-6-4
Low-voltage directive	EN 60730-1
2006/95/EC	EN 60730-2-9
Software Class A	EN 60730-1 Appendix H

Additional information

Fitting instructions	P100004016
Material declaration	MD 92.820
Dimension drawing	M10496
Wiring diagram	A10598

1) Type of protection IP10 with terminal cover (accessory 0900240001)

2) If it is necessary to comply with the industrial standard (EN 61000-6-2), the power cables for the digital inputs (DI), analogue inputs and outputs (AI/AO), the counter inputs (CI) and the voltage outputs (5 and 13 V) must not exceed 30 m in length.

For accessories, see next page >>>

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Accessories

Type	Description
	Manual operating unit
EY-OP240F001	modu240 local operating unit
EY-OP250F001	modu250 touch-panel, colour
EY-OP250F002	modu250 touch-panel, monochrome
	Connecting leads
0367842002	Automation station - modu240: 1.5 m
0367842003	Automation station - modu240: 2.9 m
0367842004	Automation station - modu240: 6.0 m
	Data memory
0367883002	PROM 1 MB empty (user data), pack of five
	General information
0900240001	Terminal covers (240 mm) pack of two

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modu210: Automation station

How energy efficiency is improved

SAUTER-EY-modulo2 – thoroughly tried-and-tested technology with a new design.
For accurate control and regulation functions, 24 hours a day.

Areas of application

Regulation, control, monitoring and optimisation of technical operating installations in sectors such as HVAC engineering.

Features

- Compact automation station
- Part of the SAUTER EY-modulo system family
- 28 inputs
- 14 outputs
- Communication: SAUTER novaNet
- Programming/parameterisation via PC with CASE Suite software (based on IEC 61131-3)
- Control engineering libraries
- Time and calendar function
- Data recording (historic data base)

Technical description

- 24 V~/= voltage supply
- 12 digital inputs (alarm/status)
- 8 analogue inputs (Ni/Pt1000)
- 6 analogue inputs (U, Pot)
- 2 pulse counters
- 6 analogue outputs (0...10 V) (2x 0...20 mA)
- 8 digital outputs (relays)

Products

Type	Description
EY-AS210F001	Compact automation station

Technical data

Electrical supply

Power supply	24 V~ (50/60 Hz) ± 20%
	24 V= (18…30 V)
Power consumption	up to 14.5 VA
Dissipated power	up to 7.5 W
Battery (buffer: RTC/SRAM)	CR2032, plug-in

Interfaces, communication

AS network / novaNet	1x a/b terminals, plug-in
Operating Panel (modu240)	1x RJ-45 socket
Languages:	
German, French, English, Italian, Dutch, Spanish, Swedish, Norwegian, Danish, Portuguese, Finnish, Polish, Slovene, Hungarian, Romanian, Russian, Czech, Turkish, Slovak	
MFA	256
Time commands	320 entries
HDB entries	
digital	2x 3584 (Block 1;3)
analogue	2x 3584 (Block 2;4)

Permitted ambient conditions

Operating temperature	0...45 °C
Storage and transport temperature	-25...70 °C
Humidity	10...85% rh
	no condensation

Installation

Dimensions W x H x D (mm)	300 x 120 x 73
Weight (kg)	0.75

Standards, guidelines and directives

Type of protection	IP 00 (EN 60529) [1]
Protection class	I (EN 60730-1)
Environmental class	3K3 (IEC 60721)
CE Conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-2 [2]
	EN 61000-6-3
	EN 61000-6-4
Low Voltage Directive	
2006/95/EC	EN 60730-1
	EN 60730-2-9
Software class A	EN 60730-1 Annexe H

Additional information

Fitting instructions	P100002322
Material declaration	MD 92.815
Dimension drawing	M11388
Wiring diagram	A10536
Factory settings	All switches to 'Off' position

1) Type of protection IP10 with terminal cover (accessory 0900240001).

2) If it is mandatory to comply with the industrial standard (EN 61000-6-2), the connecting cables for the digital inputs (DI), analogue inputs and outputs (AI/AO), the counter inputs (CI) and voltage outputs (5 and 13 V) must not exceed 30 m in length.

For accessories, see next page >>>

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Accessories

Type	Description
	Manual operating panel
EY-OP240F001	Local operating unit modu240
	Touch-panel
EY-OP250F001	Touch-panel modu250: colour
EY-OP250F002	Touch-panel modu250: monochrome
	Connecting cables
0367842002	Automation station - modu240 1.5 m
0367842003	Automation station - modu240 2.9 m
0367842004	Automation station - modu240 6.0 m
	Data memory
0367883002	PROM memory, 1 Mb empty (User Data), pack of 5
	General
0900240002	Terminal cover (295 mm), pack of 2

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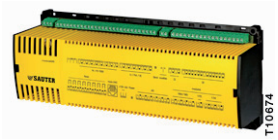
modu225: Automation station



How energy efficiency is improved

SAUTER-EY-modulo2 – thoroughly tried-and-tested technology with a new design.
For accurate control and regulation functions, 24 hours a day.

Areas of application

Regulation, control, monitoring and optimisation of technical operating installations in sectors such as HVAC engineering.

Features

- Compact automation station
- Part of the SAUTER EY-modulo system family
- 28 inputs
- 14 outputs
- Can be extended to 102 I/O by using moduLink field modules
- Communication: SAUTER novaNet
- Programming/parameterisation via PC with CASE Suite software (based on IEC 61131-3)
- Control engineering libraries
- Time and calendar function
- Data recording (historic data base)

Technical description

- 24 V~/= voltage supply
- 12 digital inputs (alarm/status)
- 8 analogue inputs (Ni/Pt1000)
- 6 analogue inputs (U, Pot)
- 2 pulse counters
- 6 analogue outputs (0...10 V) (2x 0...20 mA)
- 8 digital outputs (relays 0-I)
- Can be extended by 48 digital inputs with moduLink174
- Can be extended by 8 digital outputs with moduLink164, 165
- Can be extended by 4 analogue outputs with moduLink170

Products

Type	Description
EY-AS225F001	Compact automation station

Technical data

Electrical supply

Power supply	24 V~/= (50/60 Hz) ± 20%
Power consumption	17 VA / 43 VA with field modules
Dissipated power	8.7 W / 23 W with field modules
Battery (buffer: RTC/SRAM)	Lithium button-cell (CR2032, pluggable)

Interfaces, communication

AS network / novaNet	1x a/b terminals
Operating Panel (modu240)	1x RJ-45 socket
Languages:	
German, French, English, Italian, Dutch, Spanish, Swedish, Norwegian, Danish, Portuguese, Finnish, Polish, Slovenian, Hungarian, Romanian, Russian, Czech, Turkish, Slovakian	
MFA	256
Time commands	320 entries
HDB entries	
digital	2x 3584 (Block 1;3)
analogue	2x 3584 (Block 2;4)

Permitted ambient conditions

Operating temperature	0…45 °C
Storage and transport temperature	-25…70 °C
Humidity	10…85% rh, no condensation

Installation

Dimensions W x H x D (mm)	300 x 120 x 73
Weight (kg)	0.8

Standards, guidelines and directives

Type of protection	IP 00 (EN 60529) 1)
Protection class	I (EN 60730-1)
Environmental class	3K3 (IEC 60721)
CE Conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-2 2)
	EN 61000-6-3
	EN 61000-6-4
Low Voltage Directive	
2006/95/EC	EN 60730-1
	EN 60730-2-9
Software class A	EN 60730-1 Annexe H

Additional information

Fitting instructions	P100002323
Material declaration	MD 92.810
Dimension drawing	M11388
Wiring diagram	A10535
Factory settings	All switches to 'Off' position

1) Type of protection IP10 with terminal cover (accessory 0900240001).

2) If it is mandatory to comply with the industrial standard (EN 61000-6-2), the connecting cables for the digital inputs (DI), analogue inputs and outputs (AI/AO), the counter inputs (CI) and voltage outputs (5 and 13 V) must not exceed 30 m in length.

For accessories, see next page >>>

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Accessories

Type	Description
	Manual operating panel
EY-OP240F001	Local operating unit modu240
EY-OP250F001	Touch-panel modu250: colour
EY-OP250F002	Touch-panel modu250: monochrome
	Field modules
EY-FM164F001	moduLink164 digital output 4x 0-I (change-over relay)
EY-FM165F001	moduLink164 digital output 2x 0-I-II (change-over relay)
EY-FM170F001	moduLink170 analogue output 4x 0...10 V (2x 0...20 mA)
EY-FM174F001	moduLink174 digital input 16x
	Connecting cables
0367842002	Automation station - modu240 1.5 m
0367842003	Automation station - modu240 2.9 m
0367842004	Automation station - modu240 6.0 m
	Data memory
0367883002	PROM memory, 1 Mb empty (User Data), pack of 5
	General
090024002	Terminal cover (295 mm), pack of 2

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moduLink174: Field module, digital inputs

How energy efficiency is improved

SAUTER-EY-modulo2 – thoroughly tried-and-tested technology with a new design

Areas of application

To record digital inputs (alarm/status) in technical operating installations, e.g. in HVAC engineering

Features

- Remote unit for modu225
- Part of the SAUTER EY-modulo system family
- 16 digital inputs
- Front insert for direct labelling/inscription
- Can be located up to 100 m from the automation station
- Bi-colour LED signalling (red/green)

Technical description

- Communication / power supply via novaLink bus (2-wire) from AS
- 16 digital inputs

Product

Type	Description
EY-FM174F001	Field module, digital inputs with LED

Technical data

Electrical supply

Power supply (via novaLink)	from modu225, nova225,
	nova106 (EYX176)
Power consumption	up to 120 mA
Dissipated power	up to 1 W

Inputs

Digital inputs	16 potential-free contacts
	connected to earth
Input resistance	up to 1kΩ (including line)
Recording time	30 ms
Polling cycle	150 ms

Interfaces, communication

Control	per modu225, nova225,
	nova106 (EYX176)
Connection to AS	up to 100 m
	(cable screened, twisted and to earth
	on both sides, < 5 nF / < 7.5 Ω)

Permitted ambient conditions

Operating temperature	0...45 °C
Storage and transport temperature	-25..0.70 °C
Humidity	10...85 % rh
	no condensation

Installation

Dimensions W x H x D (mm)	115 x 90 x 60
Weight (kg)	0.24

Standards, guidelines and directives

Type of protection	IP 00 (EN60529)
Protection class	II (EN60730-1)
Environmental class	3K3 (IEC 60721)
CE Conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-2 [1]
	EN 61000-6-3
	EN 61000-6-4

Additional information

Fitting instructions	P100003215
Material declaration	MD 92.830
Dimension drawing	M11401
Wiring diagram	A10550

1) If it is mandatory to comply with the industrial standard (EN 61000-6-2), the connecting cables for the inputs must not exceed 30 m in length.

Accessories

Type	Description
	Inserts, labels
0920000174	Front insert, printable, yellow, 1 sheet A4 with 6 inserts each, perforated
	Covers
0368962 001	Terminal cover

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moduLink170: Field module, analogue outputs 0…10 V (0…20 mA)

How energy efficiency is improved

SAUTER-EY-modulo2 – thoroughly tried-and-tested technology with a new design

Areas of application

Regulation, control, monitoring and optimisation of technical operating installations in sectors such as HVAC engineering

Features

- Remote unit for modu225
- Part of the SAUTER EY-modulo system family
- 4 analogue outputs
- Front insert for direct labelling/inscription
- Can be located up to 100 m from the automation station
- Defined power statuses can be preselected for the priority or watchdog function
- Can be used for local preferential/back-up operation with manual control of outputs

Technical description

- Communication / power supply via novaLink connection (2-wire) from AS
- Back-up power supply 24 V~/=
- 2 analogue outputs, 0...10 V
- 2 analogue outputs, 0...10 V/0...20 mA
- 1 output to monitor the novaLink connection

Products

Type	Description
EY-FM170F001	Field module, analogue outputs, 0...10 V/(2x 0...20 mA) with manual operation

Technical data

Electrical supply

Power supply (via novaLink)	from modu225, nova225,
	nova106 (EYX172)
External supply (back-up power)	24 V~/=
Power consumption	up to 100 mA
Dissipated power	up to 1 W

Outputs

Analogue signals	2x 0…10 V
	2x 0…10 V / 0…20 mA

Interfaces, communications

Control	per modu225, nova225,
	nova106 (EYX172)
Connection to AS	up to 100 m
	(cable screened, twisted and to earth
	on both sides, < 5 nF / < 7.5 Ω)

Permitted ambient conditions

Operating temperature	0...45 °C
Storage and transport temperature	-25...0.70 °C
Humidity	10...85 % rh
	no condensation

Installation

Dimensions W x H x D (mm)	115 x 90 x 60
Weight (kg)	0.24

Standards, guidelines and directives

Type of protection	IP 00 (EN 60529)
Protection class	II (EN 60730-1)
Environmental class	3K3 (IEC 60721)
CE Conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-2 [1)]
	EN 61000-6-3
	EN 61000-6-4

Additional information

Fitting instructions	P100002346
Material declaration	MD 92.835
Dimension drawing	M11401
Wiring diagram	A10552

1) If it is mandatory to comply with the industrial standard (EN 61000-6-2), the connecting cables for the outputs must not exceed 30 m in length.

Accessories

Type	Description
	Inserts, labels
0920000170	Front insert, printable, yellow, 1 sheet A4 with 6 inserts each, perforated
	Covers
0368962 001	Terminal cover

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moduLink165: Field module for 0-I-II digital outputs

How energy efficiency is improved

SAUTER-EY-modulo2 – thoroughly tried-and-tested technology with a new design

Areas of application

Regulation, control, monitoring and optimisation of technical operating installations in sectors such as HVAC engineering.

Features

- Remote unit for modu225
- Part of the SAUTER EY-modulo system family
- 2 digital outputs/ 2-stage
- Front insert for direct labelling/inscription
- Can be located up to 100 m from the automation station
- Defined relay statuses can be preselected for priority or watchdog function
- Can be used for local preferential/back-up operation with manual control of outputs

Technical description

- Communication / power supply via novaLink connection (2-wire) from AS
- Back-up power supply 24 V~/=
- 2 digital outputs, relays 0-I-II (changeover)
- 1 output to monitor the novaLink connection

Products

Type	Description
EY-FM165F001	Field module, digital outputs 0-I-II with LEDs and manual operation

Technical data

Electrical supply

Power supply (via novaLink)	from modu225, nova225,
	nova106 (EYX168)
External supply (back-up power)	24 V~/=
Power consumption	up to 150 mA
Dissipated power	up to 1 W

Outputs

Digital outputs	2x 0-I-II Relay, change-over contacts
Load	250 V~/ 2 A resistive load
Switching frequency	> 5x 10^6 cycles

Interfaces, communication

Control	per modu225, nova225,
	nova106 (EYX168)
Connection to AS	up to 100 m
	(cable screened, twisted an to earth
	on both sides, < 5 nF / < 7.5 Ω)

Permitted ambient conditions

Operating temperature	0...45 °C
Storage and transport temperature	-25...70 °C
Humidity	10...85 % rh
	no condensation

Installation

Dimensions W x H x D (mm)	115 x 90 x 60
Weight (kg)	0.24

Standards, guidelines and directives

Type of protection	IP 00 (EN60529)
Protection class	II (EN60730-1)
Environmental class	3K3 (IEC 60721)
CE Conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-2 [1)]
	EN 61000-6-3
	EN 61000-6-4
Directive 2006/95/EC	EN 60730-1

Additional information

Fitting instructions	P100002346
Material declaration	MD 92.840
Dimension drawing	M11401
Wiring diagram	A10553

1) If it is mandatory to comply with the industrial standard (EN 61000-6-2), the connecting cables for the outputs must not exceed 30 m in length.

Accessories

Type	Description
	Inserts, labels
0920000165	Front insert, printable, yellow, 1 sheet A4 with 6 inserts each, perforated
	Covers
0368962 001	Terminal cover

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moduLink164: Field module for 0-I digital outputs

How energy efficiency is improved

SAUTER-EY-modulo2 – thoroughly tried-and-tested technology with a new design

Areas of application

Regulation, control, monitoring and optimisation of technical operating installations in sectors such as HVAC engineering.

Features

- Remote unit for modu225
- Part of the SAUTER EY-modulo system family
- 4 digital outputs
- Front insert for direct labelling/inscription
- Can be located up to 100 m from the automation station
- Defined relay statuses can be preselected for the priority or watchdog functions
- Can be used for local preferential/back-up operation with manual control of outputs

Technical description

- Communication / power supply via novaLink connection (2-wire) from AS
- Back-up power supply 24 V~/=
- 4 digital outputs, relays 0-I (changeover)
- 1 output to monitor the novaLink connection

Product

Type	Description
EY-FM164F001	Field module, digital outputs 0-I with LED displays and manual operation

Technical data

Electrical supply

Power supply (via novaLink)	from modu225, nova225,
	nova106 (EYX168)
External supply	24 V~/=
Power consumption	up to 150 mA
Dissipated power	up to 1 W

Outputs

Digital outputs	4x 0-I Relays, change-over contacts
Load	250 V~/ 2 A resistive load
Switching frequency	> 5x 10^6 cycles

Interfaces, communication

Control	per modu225, nova225,
	nova106 (EYX168)
Connection to AS	up to 100 m
	(cable screened, twisted and to earth
	on both sides, < 5 nF / < 7.5 Ω)

Permitted ambient conditions

Operating temperature	0...45 °C
Storage and transport temperature	-25...70 °C
Humidity	10...85 % rh
	no condensation

Installation

Dimensions W x H x D (mm)	115 x 90 x 60
Weight (kg)	0.24

Standards, guidelines and directives

Type of protection	IP 00 (EN 60529)
Protection class	II (EN 60730-1)
Environmental class	3K3 (ICE 60721)
CE Conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-2 [1)]
	EN 61000-6-3
	EN 61000-6-4
Directive 2006/95/EC	EN 60730-1

Additional information

Fitting instructions	P100002346
Material declaration	MD 92.845
Dimension drawing	M11401
Wiring diagram	A10551

1) If it is mandatory to comply with the industrial standard (EN 61000-6-2), the connecting cables for the outputs must not exceed 30 m in length.

Accessories

Type	Description
	Inserts, labels
0920000164	Front insert, printable, yellow, 1 sheet A4 with 6 inserts each, perforated
	Covers
0368962 001	Terminal cover

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modu240: Local operating unit

How energy efficiency is improved

SAUTER-EY-modulo 2 – thoroughly tried-and-tested technology with a new design

Areas of application

Direct local display, navigation and operation for automation stations and their installations

Features

- Local operating and display unit for direct local and manual operation of EY-modulo 2 automation stations
- Menu-guided user interface to visualise the data points for an automation station
- Display of measured values, alarms and status reports
- Input of setpoint parameters and digital positioning commands
- Operation using 6 membrane keys
- Processing of time programmes
- Part of the SAUTER EY-modulo 2 system family

Technical description

- Power supply direct from AS
- LCD resolution: 128 x 64 pixels
- Display: 8 lines of 21 characters
- Multilingual character set direct from AS
- RJ-45 interface for point-to-point connection with AS
- Can be removed for installation in front of MCC

Products

Type	Description	Weight (kg)
EY-OP240F001	Local operating unit	0.3

Technical data

Electrical supply

Power supply	from automation station
Power consumption	100 mA
Dissipated power	1.5 W

Interfaces, communication

Automation station	1x RJ-45 socket
	up to 20 m, screened

Display

Languages
German, French, English, Italian, Dutch, Spanish, Swedish, Norwegian, Danish, Portuguese, Finnish, Polish, Slovenian, Hungarian, Russian, Czech, Turkish, Slovakian

Permitted ambient conditions

Operating temperature	0…45 °C
Storage and transport temperature	-25…65 °C
Humidity	10…85% rh
	no condensation

Installation

Dimensions W x H x D (mm)	80x 144x 36
Weight (kg)	0.3

Standards, guidelines and directives

Type of protection	IP 40/20 (EN 60529)
Protection class	III (EN 60730-1)
Environmental class	3K3 (IEC 60721)
CE Conformity as per	
EMC directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-2
	EN 61000-6-4
	EN 55022 Class A

Additional information

Fitting instructions	P100002331
Material declaration	MD 93.075
Dimension drawing	M05974

Accessories

Type	Description
	Connecting cables
0367842001	Automation station - modu240 0.35 m
0367842002	Automation station - modu240 1.5 m
0367842003	Automation station - modu240 2.9 m
0367842004	Automation station - modu240 6.0 m
	Installation
0367829001*	Fixing bracket for front installation
0367878001	Holder for wall or top-hat rail
0367880001*	Desktop stand

*) Dimension drawing or wiring diagram available under same number.

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modu250: Touch-panel

How energy efficiency is improved

SAUTER-EY-modulo2 – thoroughly tried-and-tested technology with a new design.

Areas of application

Local graphic display, navigation and operation for automation stations and their installations.

Features

- Graphic, pressure-sensitive operating and display unit for network-wide operation of EY-modulo 2 automation stations
- Menu-guided user interface to visualise automation stations and plants
- Alarm lists, data point lists, time switching programmes and calendars, also trend data
- Changing of specified setpoint and positioning values, also digital positioning commands
- Processing time switching programmes and calendars
- Freely programmable graphic plant displays with dynamic data points
- Access rights with individual entry of users
- Part of the SAUTER EY-modulo 2 system family

Technical description

- Power supply: 85…250 V~/ 48…62 Hz
- Graphic display: 320 x 240 pixels (QVGA)
- Active area: 140 x 105 mm
- Versions: Colour with 256 colours (F001), monochrome b/w (F002)
- Can be parameterised via CASE Suite (languages, applications)
- RJ-45, DB-9 interfaces for parameterisation and updating
- RJ-11 interface for novaNet system bus

Products

Type	Description
EY-OP250F001	Touch-panel display: colour
EY-OP250F002	Touch-panel display: monochrome

Technical data

Electrical supply

Power supply	85…250 V~ (48…62 Hz)
Power consumption	up to 7 W

Version

Display	5.7 inches
colour / monochrome	4-wire resistive touch
Resolution	320 x 240 (QVGA)
Colour display	256 colours
Backlight	Time-controlled switch-off
Active area W x H	140 x 105 mm
Memory	8 MB flash, 8 MB RAM

Interfaces, communication

novaNet	1x RJ-11 socket
Ethernet 10BaseT	1x RJ-45 socket
EIA-232	1x DB9 plug

Permitted ambient conditions

Operating temperature	0…45 °C
Storage and transport temperature	-25…70 °C
Humidity	10…80% rh
	no condensation

Installation

Dimensions W x H x D (mm)	240 x 156 x 46
Weight (kg)	1.0

Standards, guidelines and directives

Type of protection	IP 20 (EN 60529)
with accessory 0374515 001	IP 65 (front)
Protection class	I (EN 60950-1)
Environmental class	3K3 (IEC 60721)
CE Conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-2
	EN 61000-6-4
	EN 55022 Class A
Low Voltage Directive	
2006/95/EC	EN 60950-1

Additional information

Fitting instructions	P100002332
Material declaration	MD 93.070
Dimension drawing	M10023
Wiring diagram	A09966

For accessories, see next page >>>

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Accessories

Type	Description
	Software
GZS100F599	ASE Tools CD, latest version (CASE TPC, CASE HWC, CASE Sun, novaNet292 SW, ...)
7001064001	Operating instructions, German
	Connecting cables
0367862001	Automation station - modu250 1.5 m
0367862002	Automation station - modu250 2.9 m
0367862003	Automation station - modu250 6.0 m
	General
0374494001	Stylus set for modu250
0374509001	Power supply connector, 3-pin, packaged
0374515001	Set to extend degree of protection, IP 65 (incl. seal, 0374680001)
0374680001	Individual seal (for set 0374515001)

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ecos200: DDC intelligent unitary controller

How energy efficiency is improved

High-performance function modules in the ecos enable energy-optimised room control, guaranteeing that energy consumption is minimised.

Areas of application

Intelligent unitary control, fan-coil units, control of chilled beams, etc.

Features

- Part of the SAUTER EY-modulo 2 system family
- Individual adaptation of the indoor climate by means of room operating units in series EY-RU2.. and EYB2..
- Optimisation of energy consumption thanks to occupancy function, window contact monitoring, demand-led fan speed switching and time-dependent setpoint specification.
- Time and calendar function
- Recording of historical data
- Integration into the building management system via novaNet data interface
- Programming/parameterisation via PC with CASE Suite software (based on IEC 61131-3)

Technical description

- Voltage supply 230 V~
- System bus: novaNet (2-wire)

Products

Type	Description
EYE200F001	DDC intelligent unitary controller, 3 relays
EYE200F002	DDC intelligent unitary controller, 4 relays

Technical data

Electrical supply

Power supply	230 V~ ± 10%, 50/60 Hz
Power consumption	up to 14 VA, incl. 6 VA external
Dissipated power	up to 14 W

Permitted ambient conditions

Operating temperature	0...45 °C
Humidity	up to 85% rh
	no condensation

Installation

Weight (kg)	0.7
Dimensions (W x H x D)	178 x 103 x 53

Standards, guidelines and directives

Type of protection	IP 10 (EN 60529)
Protection class	I (EN 60730-1)
Environmental class	3K3 (IEC 60721)
CE Conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-2 [1]
	EN 61000-6-3
	EN 61000-6-4
Software class	EN 60730-1 Annexe A
Low Voltage Directive	
2006/95/EC	EN 60730

Additional information

Fitting instructions	MV505907
Material declaration	MD 94.200
Dimension drawing	M10361
Wiring diagram	A10360

Inputs	EYE200F001	EYE200F002
for operating unit	1	1
for temperature sensor	1	1
for control contact	2	2

Outputs	EYE200F001	EYE200F002
Triac switching outputs	2	2
Relay switching outputs	3	3
Relay switching outputs	0	1
Analogue	2	2

1) If it is mandatory to comply with the industrial standard (EN 61000-6-2), the connecting cables for the digital inputs (DI), analogue inputs and outputs (AI/AO) and the counter inputs (CI) must not exceed 30 m in length.

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ecos202: DDC intelligent unitary controller

How energy efficiency is improved

High-performance function modules in the ecos enable energy-optimised room control, guaranteeing that energy consumption is minimised.

Areas of application

Intelligent unitary control, fan-coil units, control of chilled beams, etc.

Features

- Part of the SAUTER EY-modulo 2 system family
- Individual adaptation of the indoor climate by means of room operating units in series EY-RU2 . and EYB2. .
- Optimisation of energy consumption thanks to occupancy function, window contact monitoring, demand-led fan speed switching and time-dependent setpoint specification.
- Time and calendar function
- Recording of historical data
- Integration into the building management system via novaNet data interface
- Programming/parameterisation via PC with CASE Suite software (based on IEC 61131-3)

Technical description

- Voltage supply 24 V~
- System bus: novaNet (2-wire)

Products

Type	Description
EYE201F001	DDC intelligent unitary controller, 1 relay
EYE202F001	DDC intelligent unitary controller, 3 relays

Technical data

Electrical supply	
Power supply	24 V~ ± 20%, 50/60 Hz
Power consumption	10 VA [1]

Permitted ambient conditions	
Operating temperature	0...45 °C
Humidity	< 85% rh
	no condensation

Installation	
Weight (kg)	0.37
Dimensions (W x H x D)	178 x 103 x 42

Standards, guidelines and directives	
Type of protection	IP 10 (EN 60529)
Protection class	II (EN 60730-1)
CE Conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-2 [2]
	EN 61000-6-4
	EN 55022 Class A
Software class A	EN 60730-1 Annexe H
Low Voltage Directive	
2006/95/EC	EN 60730-1
	EN 60730-2-9

Additional information	
Fitting instructions	MV505444
Material declaration	MD 94.201
Dimension drawing	M02181
Wiring diagram	A06142, A06143

Inputs	EYE201	EYE202
for operating unit	1	1
for temperature sensor	1	2
for command variable	1	1
for control contact	2	3

Outputs	EYE201	EYE202
Triac switching outputs	1	2
Relay switching outputs	1	3
Analogue	0	2

1) Transformer sizing - see page 2

2) If it is mandatory to comply with the industrial standard (EN 61000-6-2), the connecting cables must not exceed 30 m in length.

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ecos205, 206: DDC controllers for air volume

How energy efficiency is improved

Demand-led control for air volume using efficient control strategies.
CO_2-dependent control to optimise room conditioning with minimal energy costs.

Areas of application

Can be used for variable air volume control in single rooms. Supports additional functions such as:

- Fan control
- Electric reheater
- 2- and 4-pipe plants, heating/cooling
- Frost protection function
- Room lighting control

Features

- Compact DDC volume flow controller
- Location-independent static differential pressure pick-up
- Battery-buffered RAM for parameters, clock and calendar functions

Technical description

- 24 V~ voltage supply
- 8 inputs
- 6 outputs

Products

Type	Description
EYE205F002	DDC air volume controller
EYE206F002	DDC air volume controller

Technical data

Electrical supply

Power supply	24 V~ ± 20%, 50/60 Hz
Power consumption	10 VA [1]

Permitted ambient conditions

Operating temperature	0...45 °C
Humidity	< 85% rh
	no condensation
Operating pressure p_{stat} [3]	± 3 kPa

Installation

Weight (kg)	0.4
Dimensions	178 x 103 x 42

Standards, guidelines and directives

Type of protection	IP 10 (EN 60529)
Protection class	II (EN 60730-1)
CE Conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1, EN 61000-6-2 [4]
	EN 61000-6-4 [5]
	EN 55022 Class A
Software class A	EN 60730-1 Annexe H
Low Voltage Directive	
2006/95/EC	EN 60730-1, EN 60730-2-9

Additional information

Fitting instructions	MV 505467
Material declaration	MD 94.205
Dimension drawing	M11383
Wiring diagram	A06470, A06471

Inputs		EYE205	EYE206
for operating unit	EYB2.., EY-RU2..	1	1
for temperature sensor	Ni1000	1	2
for command variable	0…10 V (Rj = 10 kΩ)	1	1
for control contact	On/off	2	3
Static pressure difference [2]		1	1
Pressure range	0…250 Pa	-	-
Linearity	Typ. 2% FS	-	-
Reproducibility	Typ. 0.2% FS	-	-
Membranes	Silicone rubber LSR	-	-
Positional requirements	± 0.51% FS	-	-
Zero point stability	< 0.2% FS	-	-

Outputs		EYE205	EYE206
Triac switching outputs	0-I-II (24 V~, 1 A)	2	3
Relay switching outputs	Make contact (250 V~, 2 A)	-	1
Analogue	0…10 V (load ≥ 1 kΩ)	1	2

1) Transformer size: see page 2.

2) Due to technical plant considerations, the minimum pressure difference for V_{min} should not exceed 2 Pa.

3) The zero point should be recalibrated if the permissible operating pressure is exceeded.

4) If it is mandatory to comply with the industrial standard (EN 61000-6-2), the connecting cables for the digital inputs (DI), analogue inputs and outputs (AI/AO) and the and the counter inputs (CI) must not be longer than 30 m.

5) Equipment with radio interference Class A.

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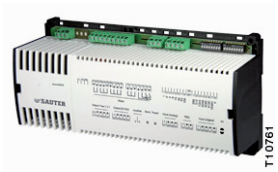
ecos208, 209: Room automation station



How energy efficiency is improved

High-performance function modules in the ecos allow energy-optimised room regulation, with control of the lighting and the window blinds, to ensure minimal energy consumption.

Areas of application

Room automation for temperature regulation, control of the lighting and the window blinds.

Features

- Part of the SAUTER EY-modulo 2 system family
- Individual adaptation of the indoor climate by means of room operating units in series EY-RU2… and EYB2…
- Optimisation of energy consumption thanks to occupancy function, window contact monitoring, demand-led fan speed switching, control of the lighting and the window blinds, and time-dependent setpoint specification.
- Time and calendar function
- Recording of historical data
- Integration into the building management system via novaNet data interface
- Programming/parameterisation via PC with CASE Suite software (based on IEC 61131-3)

Technical description

- Voltage supply 230 V~
- System bus: novaNet (2-wire)

Products

Type	Description
EY-RC208F001	Room automation station, 6 relays
EY-RC209F001	Room automation station, 10 relays

Technical data

Electrical supply

Power supply	230 V~ ± 10%
Power consumption /	
dissipated power (idling)	up to 24 VA / 8 W
Power consumption /	
dissipated power (ext. load 20 VA)	up to 40 VA / 32 W
Battery	
(buffer: RTC/SRAM)	CR2032, plug-in
	(lithium)

Permitted ambient conditions

Operating temperature	0...45 °C
Humidity	up to 85% rh
	No condensation

Installation

Weight	
EY-RC208	1.35 kg
EY-RC209	1.40 kg
Dimensions (W x H x D)	244 x 120 x 72.5

Standards, guidelines and directives

Degree of protection	IP 00 (EN 60529) 1)
(with terminal cover / wiring box)	
Protection class	I (EN 60730-1)
Environmental class	IEC 60721 3K3
Conformity to:	
EMC Directive 2004/108/EC	EN61000-6-1
	EN 61000-6-2 2)
	EN 61000-6-4
Low Voltage Directive	
2006/95/EC	EN 60730

Additional information

Fitting instructions	
EY-RC208	P100002324
EY-RC209	P100002326
Material declaration	MD 94.185
Dimension drawing	M10496
Wiring diagram	
EY-RC208/EY-RC209	A10532/A10533

Inputs		EY-RC208F001	EY-RC209F001
Operating unit	EYB2 . . /EY-RU2 . .	1	1
Temperature sensor	Ni1000	2	2
U/Pot/(I)	0…10 V=	1	1
Control contact	On/off	4	4

Outputs		EY-RC208F001	EY-RC209F001
Triac switching outputs	0-I-II (24 V~, 1 A)	2	2
Relay switching outputs	Change-over contact (250 V~,10 A)	1	1
(Start-up current 80 A)	Make contact (250 V~,1 A)	2	2
Relay switching outputs	Make contact (250 V~,1 A)	3	6
	Change-over contact (250 V~,1 A)	-	1
Analogue	0...10 V (load = 1 kΩ)	4	4

1) Degree of protection IP10 with terminal cover (accessory 0900240001).
Degree of protection IP20 with wiring box (accessory 0900240010)

2) If it is mandatory to comply with the industrial standard (EN 61000-6-2), the connecting cables for the digital inputs (DI), analogue inputs and outputs (AI/AO) and the counter inputs (CI) must not be longer than 30 m.

For accessories, see next page >>>

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Accessories

Type	Description
	Installation
0900240001	Terminal cover, 240 mm (2 x)
0900240010	Wiring box, 240 mm (2 x)
	Data memory
0367883002	5 empty PROMs, 1MBit (User PROM)

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ecoUnit210…216: Room operating unit for EY-modulo 2 ecos

How energy efficiency is improved

Individual setting of occupancy and absence, as well as room setpoint correction, control of the lighting and the window blinds in order to optimise energy use in the room.

Areas of application

Operating unit to control and ensure maximum indoor comfort. Temperature measurement and control for rooms with various types of equipment thanks to the EY-modulo 2 ecos communicative intelligent unitary controller.

Features

- Part of the SAUTER EY-modulo 2 system family
- Room operating unit with a wide range of different functions, designs and colours
- Device insert with transparent front, fits into frame with 55 x 55 mm cut-out
- The frames must be ordered as accessories
- Indoor climate can be adapted individually
- Operating mode is set for room occupancy and control of a three-speed fan

Technical description

- Power supply from ecos 2
- 3-wire connection

Products

Type	Description
EY-RU210F001	ecos 2 operating unit, NTC sensor
EY-RU211F001	ecos2 operating unit, NTC, setpoint adjuster (dXs)
EY-RU214F001	ecos2 operating unit, NTC, dXs, 2 buttons
EY-RU216F001	ecos 2 operating unit, NTC, dXs, 4 buttons

Technical data

Electrical supply

Power supply	from ecos 2

Version

Sensor	
Measuring range	0...40 °C
Resolution	0.1 K
Time constant (in calm air)	10 min
Functionality	
Setpoint correction	adjustable
Room occupancy LED	3 modes, LED display
Fan speed LED	4 modes, LED display
Connection	
Cable	3-wire
Length	up to 100 m

Permitted ambient conditions

Operating temperature	0...45 °C
Humidity	up to 85 % rh
	no condensation

Installation

Weight (kg)	0.1

Standards, guidelines and directives

Type of protection	IP 30 (EN 60529)
Protection class	III (EN 60730-1)
Environmental class	3K3 (IEC 60721)
CE Conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-2 [1]
	EN 61000-6-3
	EN 61000-6-4

Additional information

Fitting instructions	P100002467
Material declaration	MD 94.175
Dimension drawing	M10487, M11381
Wiring diagram	A10529

1) If it is mandatory to comply with the industrial standard (EN 61000-6-2), the connecting cables must not exceed 30 m in length.

For accessories, see next page >>>

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Accessories

Type	Description
	Installation
0940240101	Frame, single, including fixing plate (for recessed junction box, 10 pcs.)
0940240201	Frame, double, including fixing plate (for recessed junction box, 10 pcs.)
0940240301	Base, single (for wall mounting, 10 pcs.)
0940240401	Base, double (for wall mounting, 10 pcs.)
0940240501	Cable plate, single (for surface cable feed, 10 pcs.)
0940240601	Cable plate, double (for surface cable feed, 10 pcs.)
0940240701	Fixing plate, single (for non-Sauter frame, 10 pcs.)
0940240801	Fixing plate, double (10 pcs.)
0949241301	Cover, transparent (10 pcs.)

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ecoUnit241…246: Room operating units for room automation stations

How energy efficiency is improved

Individual setting of occupancy and absence, plus room setpoint correction and control of lighting and window blinds in order to optimise energy use in the room.

Areas of application

Operating unit to control and ensure maximum indoor comfort. Temperature measurement and control for rooms with various types of equipment thanks to the EY-modulo 2 ecos intelligent unitary controller with communication capability.

Features

- Part of the SAUTER EY-modulo 2 family of systems
- Room operating unit with a wide range of different functions, designs and colours
- Displays various function symbols
- Device insert with transparent front, fits into frame with 55 x 55 mm aperture
- The frames must be ordered as accessories
- Indoor climate can be adapted individually
- Operating mode is set for room occupancy and control of a three-speed fan

Technical description

- Power supply from ecos 2
- Connection with 3 (4) wires, cable entry at rear, pluggable connection terminals for 0.12 to 0.5 mm² wires (diameter 0.4 to 0.8 mm)

Products

Type	Description
EY-RU241F001	ecos2 operating unit, LCD, NTC sensor, setpoint adjuster dXs, no frame, 2 buttons
EY-RU244F001	ecos2 operating unit, LCD, NTC sensor, setpoint adjuster dXs, 4 buttons
EY-RU246F001	ecos2 operating unit, LCD, NTC sensor, setpoint adjuster dXs, 6 buttons

Technical data

Electrical supply

Power supply	from ecos 2

Version

Sensors	
Measuring range	0…40 °C
Resolution	0.1 K
Time constant	12 min
Functionality	
Setpoint display (LCD)	0…10 V = 16…25.5 °C
	(via terminal 4)
Resolution	0.1 K
Setpoint correction	adjustable
Presence (room occupancy)	3 modes, LCD display
Fan speed	5 functions, LCD display
Port	
Cable	3 (4) –wire, twisted
Length	≤ 100 m

Permitted ambient conditions

Operating temperature	0…45 °C
Storage and transport temperature	-25…70 °C
Humidity	10…85% rh
	no condensation

Installation

Fitting	in single or double frame
Dimensions W x H x D (mm)	59.5 x 59.5 x 25
Weight (kg)	0.1

Standards, guidelines and directives

Type of protection	IP 30 (EN 60529)
Protection class	III (EN 60730-1)
Environmental class	3K3 (IEC 60721)
CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-2 [1]
	EN 61000-6-3
	EN 61000-6-4

Additional information

Fitting instructions	P100002722
Material declaration	MD 94.170
Dimension drawing	M10501
Wiring diagram	A10528

1) If it is mandatory to comply with the industrial standard (EN 61000-6-2), the connecting cables must not exceed 30 m in length.

For accessories, see next page >>>

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Accessories

Type	Description
	Fitting
0940240101	Frame, single, including fixing plate (for recessed junction box, 10 pcs)
0940240201	Frame, double, including fixing plate (for recessed junction box, 10 pcs)
0940240301	Base, single (for wall mounting, 10 pcs)
0940240401	Base, double (for wall mounting, 10 pcs)
0940240501	Cable plate, single (for surface cable feed, 10 pcs)
0940240601	Cable plate, double (for surface cable feed, 10 pcs)
0940240701	Fixing plate, single (for single, double or multiple non-Sauter frames, 10 pcs)
0940240801	Fixing plate, double (10 pcs)
0949241301	Cover, transparent, single (10 pcs)

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ecoUnit306: Push-button unit for room control unit

Areas of application

Push-button unit used in conjunction with ecoUnit 216…246 and ecoUnit310…346 to control lights, blinds, etc. via a SAUTER EY-modulo 2 ecos / EY-modulo 5 ecos intelligent unitary controller.

Features

- Part of the SAUTER EY-modulo 5 system family
- Push-button unit as a supplement to ecoUnit310…346 / ecoUnit216…246
- Many design and colour variations
- Lamp control, on/off, dimming
- Control of window blinds

Technical description

- Power supply from ecoUnit 3 or ecoUnit2
- 2-wire connection
- 6 button functions

Products

Type	Description
EY-SU306F001	Push-button unit for 6 button functions

Technical data

Electrical supply

Power supply	From room control unit ecoUnit 3 or ecoUnit 2

Version

Port	2-wire
Length (to EY-RU)	up to 30 m [1)]
Position LED	green

Permitted ambient conditions

Operating temperature	0…45 °C
Storage and transport temperature	-25…70 °C
Humidity	10…85% rh
	no condensation

Installation

Fitting	in single or double frame
Dimensions W x H x D (mm)	59.5 x 59.5 x 25
Weight (kg)	0.1

1) See wiring diagram

Standards, guidelines and directives

Type of protection	IP 30 (EN 60529)
Protection class	III (EN 60730-1)
Environmental class	IEC 60721 3K3
CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-2
	EN 61000-6-3
	EN 61000-6-4

Additional information

Fitting instructions	P100001963
Material declaration	MD 94.035
Dimension drawing	M10487
Wiring diagram	
EY-modulo 2 ecos	A10528
	A10529
EY-modulo 5 ecos	A10523

Accessories

Type	Description
	Fitting
0940240101	Frame, single, including fixing plate (for recessed junction box, 10 x)
0940240201	Frame, double, including fixing plate (for recessed junction box, 10 x)
0940240301	Base, single (for wall mounting, 10 x)
0940240401	Base, double (for wall mounting, 10 x)
0940240501	Cable plate, single (for surface cable feed, 10 x)
0940240601	Cable plate, double (for surface cable feed, 10 x)
0940240701	Fixing plate, single (for non-Sauter frame, 10 x)
0940240801	Fixing plate, double (10 x)
0949241301	Cover, transparent, single (10 x)

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moduNet292: novaNet-Ethernet interface

How energy efficiency is improved

SAUTER EY-modulo 2 integrated into familiar IP technology

Areas of application

Parameterisation of EY-modulo 2 and EY3600 stations via Ethernet-based internet protocol. Access device for management-level software and all SAUTER novaPro visualisations and novaNet OPC servers.

Features

- Bus access device for novaNet system bus with Ethernet interface
- To integrate novaNet stations (EY3600, EY-modulo 2) in IP networks based on Ethernet (LAN/WAN)
- For SAUTER CASE Suite applications
- To download programmes onto the stations
- For SAUTER novaPro visualisations
- For remote monitoring via Internet
- Part of the SAUTER EY-modulo 2 system family
- TCP/IP communication
- Communication with 2-wire novaNet system bus

Technical description

- Power supply: 230 V~, 115 V~
- Mounted on DIN rail (F001), desktop model (F002)
- a/b plug (F001), RJ-11 (F002) for novaNet
- RJ-45 plug for Ethernet 10 Base-T (10 MBit/s)
- Fixed IP addressing
- RS-232 interface for parameterisation and updating
- 5 LEDs for Error, novaNet Send, Power, Activity, Link

Products

Type	Description	Weight (kg)
EY-BU292F001	novaNet-Ethernet interface (MCC model)	0.65
EY-BU292F002	novaNet-Ethernet interface (desktop model)	0.70

Technical data

Electrical supply

Power supply	230 V~ +10%, -15%,
	115 V~ +10%, -15% (50/60 Hz)
Power consumption	6 VA, < 7 W

Interfaces, communication

novaNet	
F001	1× a/b terminals
F002	1× RJ-11 socket
Ethernet	1× RJ-45 socket
10Base-T	10 MBit/s
Serial interface	1× DB-9 (male)
RS-232	to DTE (57k6, 8n1)

Standard settings

TCP/IP address	192.168.10.20
Subnet mask	255.255.255.0
TCP port (App 1)	51806 (nova292-Server)
TCP port (App 2)	51807 (nova291 emulation)

Permitted ambient conditions

Operating temperature	0...45 °C (32...113°F)
Storage and transport temperature	-25...70 °C (-13...158°F)
Humidity	10...85 % rh
	no condensation

Installation

Dimensions W x H x D (mm)	
F001	193 × 131 × 41
F002	228 × 131 × 41
Weight (kg)	
F001	0.65
F002	0.70

Standards, guidelines and directives

Type of protection	IP 00 (EN 60529)
Protection class	I (EN 60730-1)
CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-2
	EN 61000-6-4
Directive 2006/95/EC	EN 60950-1
Software class A	EN 60730-1 annexe H

Additional information

Fitting instructions	P100002338
Material declaration	MD 96.015
Dimension drawing	
F001	M10445
F002	M10448
Wiring diagram	
F001	A10543
F002	A10544

For accessories, see next page >>>

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Accessories

Type	Description
	Software
GZS100F599	novaNet292 driver software, current version on CD (CASE Tools CD) [1)]
	Connecting cable
0367862001	novaNet RJ11 – RJ11, 1.5 m
0367862002	novaNet RJ11 – RJ11, 2.9 m
0367862003	novaNet RJ11 – RJ11, 6.0 m
0367842002	Ethernet RJ45 – RJ45, 1.5 m
0367842003	Ethernet RJ45 – RJ45, 2.9 m
0367842004	Ethernet RJ45 – RJ45, 6.0 m
0386301001	Serial cable for firmware update and software reset (DB 9)
0386507001	Ethernet crossover RJ45 – RJ45, 3 m
	General
0374509001	Power supply connector, 3-pin (supplied with F001)
001024005	Cable housing for 0374509 001, cable tension relief
0374677001	Installation kit for 2-DIN rail mounting (for F001)

1) CD must be ordered separately or can be obtained from the Intranet.

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moduNet180: Repeater, novaNet system bus

How energy efficiency is improved

SAUTER-EY-modulo2 – thoroughly tried-and-tested technology with a new design. For accurate control and regulation functions, 24 hours a day.

Areas of application

Segment extension for long-distance novaNet networks for the EY-modulo 2 family and the EY3600 system.

Features

- Device which physically extends the novaNet system bus
- Transparent repeater with four equal-authorised channels
- Three of the four channels have a connection for RS232 (optical waveguide, OWG)
- Incoming telegrams are amplified and forwarded
- Part of the SAUTER EY-modulo 2 system family

Technical description

- Power supply: 24 V~/= or 230 V~
- Power consumption: 400 mA
- 4 channels with various connection possibilities for copper cables, 3 connections for OWG
- Delay time: ~20 µs for copper, ~25 µs for OWG
- 4 Send and Receive LEDs for each novaNet channel

Products

Type	Description
EY-BU180F001	novaNet repeater, 24 V~/= or 230 V~

Technical data

Electrical supply

Power supply	24 V~/= ± 20% or
	230 V~ ± 10%
Power consumption	up to 11 VA
Dissipated power	up to 5 W

Communication

Delay time	approx. 20 µs for novaNet
	approx. 25 µs for OWG
Bus system	
novaNet	2-core, twisted
	200 nF / 300 Ω
Number of segments	4 for novaNet copper cable
	of which: 3 for OWG
Power supply for	
E/O converter	+13 V= up to 100 mA

Display

LED	
Power	1x green
novaNet (telegram traffic)	4x yellow - Send/Receive

Permitted ambient conditions

Operating temperature	0…45 °C
Storage and transport temperature	-25...70 °C
Humidity	10...85 % rh
	no condensation

Installation

Dimensions W x H x D (mm)	244 x 120 x 73
Weight (kg)	0.9

Standards, guidelines and directives

Type of protection	IP 00 (EN60529) 1)
Protection class	I (EN60730-1)
Environmental class	3K3 (IEC 60721)
Over voltage category	II
CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-2 2)
	EN 61000-6-3
	EN 61000-6-4
Low Voltage Directive	
2006/95/EC	EN 60950-1

Additional information

Fitting instructions	P100002329
Material declaration	MD 96.020
Dimension drawing	M10496
Wiring diagram	A10542

1) Degree of protection IP10 with terminal cover (accessory 0900240001).

2) If it is mandatory to comply with the industrial standard (EN 61000-6-2), the connecting cables for the 13V voltage output must not exceed 30 m in length, and those for the RS232 interfaces must not be longer than 3 m.

Accessories

Type	Description
	General
0900240001	Terminal cover (240 mm), pack of 2

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moduNet300: novaNet-BACnet Application Master

How energy efficiency is improved

Open communication for interoperable mode of the entire optimised plant.

Areas of application

Integration and migration of EY3600 and EY-modulo 2 plants into BACnet/IP systems, and also into the EY-modulo 5 system family at automation level. Extension of BACnet functionality, and persistent trendlog, external scheduling, BBMD and FD.

Features

- BACnet Application Master for novaNet
- To integrate novaNet stations (EY3600, EY-modulo 2) in BACnet/IP systems (EY-modulo 5)
- Automatic generation of BACnet I/O objects from defined stations, based on novaNet
- Special features such as loop objects and intrinsic reporting for I/O objects
- Objects that can be generated dynamically such as schedules and calendars for optimised time-controlled plant operation
- Trendlog objects that can be generated dynamically to analyse the plant
- Event Enrollment objects that can be generated dynamically for individual alerting
- BACnet/IP network integration with BBMD or/and FD functionality
- Part of the SAUTER EY-modulo system family
- Communication: BACnet/IP (EN ISO 16484-5)
- Communication with 2-wire novaNet system bus as novaNet PC

Technical description

- Power supply: 24 V~/= (F001), 230 V~ (F002)
- RJ-45 plug for Ethernet 10/100 Base-Tx (10/100 MBit/s)
- 2 RS-232 interfaces for parameterisation, configuration
- 6 LEDs for status, link, activity, speed, novaNet send, power
- Total of up to 1000 BACnet objects
- Up to 16 Notification Class and 100 Event Enrollment objects
- Up to 100 Schedule and 40 Calendar objects
- Up to 50 Trendlog objects
- Up to 100 BACnet client connections (peer-to-peer links)

Products

Type	Description	Weight (kg)
EY-AM300F001	novaNet-BACnet Application Master 24 V~/=	0.6
EY-AM300F002	novaNet-BACnet Application Master 230 V~	1.0

Technical data

Electrical supply

Power supply	
F001	24 V~ (± 20%), 50/60 Hz
	24 V= (18...30 V=)
F002	230 V~ (± 10%), 50/60 Hz
Power consumption	10 VA
Dissipated power	5 W

Function

Number of BACnet objects	up to 1000 (total)
Number of dynamic objects	maximum
Time programmes	100 (Schedule)
Calendar	40 (Calendar)
Historical data	50 (Trend Log)
Data files log	10.000 (Log buffer)
Event reporting objects	100 (Event Enrollment)
Number of BACnet client links	100
Number of BBMDs in BDT	16
Number of FDs in FDT	16

Interfaces, communication

COM interface (2x)	DB-9 plug (male, DTE)
COM 1	(RS-232) parameterisation
COM 2	(RS-232)
novaNet interface	RJ-11 socket (6/6), 2x a/b terminals
BACnet interface	RJ-45 Ethernet socket
10/100 Base-Tx	Auto-sensing
Communication protocol	BACnet/IP, novaNet

Permitted ambient conditions

Operating temperature	0...45 °C
Storage and transport temperature	-25...70 °C
Humidity	10...85 % rh, no condensation

Installation

Dimensions W x H x D (mm)	244 x 120 x 73
Weight (kg)	
F001	0.6
F002	1.0

Standards, guidelines and directives

Type of protection	IP 00 (EN 60529)
Protection class	I
Environmental class	3K3 (IEC 60721)
Over voltage category	II
CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1, EN 61000-6-2
	EN 61000-6-3, EN 61000-6-4
Directive 2006/95/EC	EN 60950-1

Additional information

Fitting instructions	P100002334
Material declaration	MD96.010
Product documentation	HB7001007
	PICS7010011
Dimension drawing	M10496
Wiring diagram	A10545, A10546

For accessories, see next page >>>

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Accessories

Type	Description
	General
0900240001	Terminal cover (240 mm), pack of 2
	Manual
7001007001	moduNet300 BACnet Manual
7010011003	SAUTER BACnet PICS
	Connecting cable
0367842002	Ethernet RJ45-RJ45 1.5 m
0367842003	Ethernet RJ45-RJ45 2.9 m
0367842004	Ethernet RJ45-RJ45 6 m
0386301001	Serial cable for configuration and Remhost (DB 9)
0367862001	novaNet RJ11-RJ11, 1.5 m
0367862002	novaNet RJ11-RJ11, 2.9 m
0367862003	novaNet RJ11-RJ11, 6 m

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Content EY3600

EYR203, 207	PDS92.507
EYL210	PDS92.510
EYL215	PDS92.515
EYL220	PDS92.520
EYK220	PDS92.450
EYL225	PDS92.525
EYL230	PDS92.530
EYK230	PDS92.460
EYU108, 109	PDS92.600
EYW300	PDS92.720
EYK300	PDS92.700
EYS100	PDS92.602
EYL106	PDS96.606
EYS110	PDS92.610
EYS119	PDS92.619
EYS121	PDS92.621
EYS123	PDS92.623
EYS124	PDS92.624
EYS135	PDS92.635
EYS141	PDS92.641
EYS151	PDS92.651
EYS153	PDS92.653
EYS155	PDS92.655
EYS158	PDS92.658
EYS181	PDS92.659
EYX162	PDS92.660

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EYY160	PDS92.662
EYX168	PDS92.665
EYX172	PDS92.670
EYX176	PDS92.674
EYZ101	PDS92.678
EYZ260	PDS92.680
EYZ264	PDS92.684
EYZ265	PDS92.685
EYZ270	PDS92.690
EYB250...256	PDS94.250
EYB270	PDS94.270
EYB271	PDS94.271
EYR020	PDS94.810
EYB017...020	PDS94.801
EYB021	PDS94.802
EYS290	PDS96.690
EYZ291	PDS96.691
YYO300	PDS96.700
EYS180	PDS96.780
EYZ484	PDS96.200
EYZ485	PDS96.210
EYI280, 287	PDS97.203
EYI103	PDS97.103
EYI280	PDS97.203
EYI288	PDS97.288

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EYR203, 207: novaFlex, Universal controller

novaFlex, a universal controller of the EY3600 family, is used in HVAC control systems. The EYR203 has a total of 18 inputs and 10 outputs, while the EYR207 has 20 inputs and 10 outputs. The cycle time even fast control tasks to be performed. With the novaNet supplementary module, the 203 and the 207 can be networked and have communication capability. Any programming (parameterising) is done with a PC using EY3600 CASE software as per IEC 1131-3 (FBD Editor).

With the novaNet supplementary module (accessory 374413), novaFlex has all assemblies and interfaces needed for operation, for connecting the plant devices and for communication with other stations, with the touch-panel and with the management level.

Using the 'Pt to Pt' supplementary module (accessory 37448), communication with the EY-OP250 touch-panel is possible even without novaNet.

Products

Type	Description	Weight kg
EYR203F002	novaFlex with 1 relay, 5 triacs and 5 AI Ni1000	0.8
EYR207F001	novaFlex with 6 relays, 6 circuis and 7 AI Ni1000	0.8

Technical data

Electrical supply

Power supply	24 V~, ± 20%, 50/60 Hz
Power consumption	10 VA

Inputs / Outputs

Digital inputs	8 (2 counters)
Digital outputs	2x 0-I
	2x 0-I-II
Analogue inputs	7x Ni/Pt1000 (EYR207)
	5x Ni/Pt1000 (EYR203)
	5x 0…10 V
Analogue outputs	4x 0…10 V

Interfaces, communication

Module novaNet	a/b terminals on main pcb
Module Pt. zu Pt.	
Connection to EY-OP250	mit RJ11 socket
Local Operating Panel modu240	
EY-OP240F001	1x RJ45 socket
modu240 languages:	
German, French, English, Italian, Dutch, Spanish, Swedish, Norwegian, Danish, Portuguese, Finnish (for other languages, see 'Accessories')	

Permitted ambient conditions

Operating temperature	0…45 °C
Storage and transport temperature	–25…70 °C
Humidity	10…90 %rh no condensation

Installation

Dimensions W x H x D	235 x 147,5 x 64,5 (mm)

Standards, guidelines and directives

Type of protection	IP 10
Protection class	I
Environmental class	3K3 (IEC 60721)
CE conformity as per	
Directive 2006/95/EC	EN 60730
EMC Directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-3/ EN 61000-6-4

Additional information

Fitting instructions		MV 505769
Declaration of materials used		MD 92.507
Wiring diagrams	EYR203	A09605
	EYR207	A10092
Dimension drawing		M09603

Accessories

Type	Description
EY-OP240	modu240 control panel (see Section 92)
EY-OP250	Touch-panel (see Section 92)
0501149002	novaFlex microprogram for EYR203/207, with modu240 languages: German, French, English, Polish, Slovenian, Hungarian, Romanian, Russian, Czech, Turkish, Slovakian
0367842002	Connecting lead: novaFlex – modu240, 1,5 m (4,9 ft)
0367842003	Connecting lead: novaFlex – modu240, 2,9 m (9,5 ft)
0367842004	Connecting lead: novaFlex – modu240, 6,0 m (19,7 ft)
0367862001	Connecting lead: novaFlex – modu250, 1,5 m (4,9 ft)
0367862002	Connecting lead: novaFlex – modu250, 2,9 m (9,5 ft)
0367862003	Connecting lead: novaFlex – modu250, 6,0 m (19,7 ft)
0367829001*	Panel bracket for modu240
0367883001	6x empty PROMs 512 KBit (USER-PROM for EYR203)
0367883002	5x empty PROMs 1Mbit (USER-PROM for EYR207)
0374413001	novaNet supplementary module (MV 505770)
0374448001	'Pt to Pt' supplementary module (for direct connection to EY-OP250)

*) Dimension drawing or wiring diagram are available under the same number

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EYL210: nova210, Compact automation station

The nova210, which is a compact member of the EY3600 family of systems, is designed primarily for the control and regulation of HVAC systems. It has a total of 28 inputs and 10 outputs. Its short cycle time enables it to perform even very fast control tasks. It has communication capability and can be networked without any further provisions having to be made. The unit is programmed (parameterised) using a PC with the EY3600 CASE software and the CASE Editor as per IEC 1131-3.

The station has all assemblies and interfaces necessary for operation, for the connection of plant devices and for communication with other stations and with the management level.

Products

Type	Description	Power Supply	Weight kg (lb)
EYL210F001	Compact AS	230 V~	2.0 (4.4)
EYL210F101	Compact AS with LED	230 V~	2.1 (4.6)
EYL210F005	Compact AS, UL-certified	24 V~	2.0 (4.4)
EYL210F105	Compact AS with LED, UL-certified	24 V~	2.1 (4.6)

Technical data

Electrical supply

Power supply	
EYL210F001/F101	230 V~, 50/60 Hz
EYL210F005/F105	24 V~, 50/60 Hz
Power consumption	14 VA
Power loss, max.	approx. 16 W

Execution

Factory setting	All switches set to "Off"

Inputs / Outputs

Digital inputs	16
Digital outputs	1x 0-I
	3x 0-I-II
Analogue inputs	6x Ni/Pt1000
	4x U/I/R
Analogue outputs	3x 0…10 V, 20 mA max.
	(1x 0…20 mA)
Counters	2

Interfaces, communication

Station-network novaNet	2x a/b terminals
	1x RJ11 socket
Control Panel modu240	1x RJ45 socket
EY-OP240F001	
modu240 languages:	
German, French, English, Italian, Dutch, Spanish, Swedish, Norwegian, Danish, Portuguese, Finnish (for other languages, see 'Accessories')	

Permitted ambient conditions

Operating temperature	0…45 °C (32…113 °F)
Transport and storage temperature	–25…70 °C (–13…158 °F)
Humidity	10…90% rh no condensation

Installation

Dimensions W x H x D	191 x 266 x 78 (mm)
	7.5" x 10.5" x 3" (inch)

Standards, guidelines and directives

Type of protection	IP 00 (EN 60529)
Protection class	I (EN 60730-1)
Environmental class	3K3 (IEC 60721)
CE conformity as per	
Directive 2006/95/EC	EN 60730
EMC Directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-3/ EN 61000-6-4
Agency USA/Canada	UL listed: UL 916
EYL210F005/F105	CSA certified: CSA C22.2

Additional information

Fitting instructions	MV 505389
Dimension drawing	M04746
Wiring diagrams	A04747

For accessories, see next page >>>

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Accessories

Type	Description
EY-OP240	Local Operating Panel modu240
0501111002	nova210 microprogram with modu240 languages: German, French, English, Polish, Slovenian, Hungarian, Romanian, Russian, Czech, Turkish, Slovakian
0367842002	Connecting cable: nova AS – modu240, 1,5 m (4,9 ft)
0367842003	Connecting cable: nova AS – modu240, 2,9 m (9,5 ft)
0367842004	Connecting cable: nova AS – modu240, 6,0 m (19,7 ft)
0367862001	novaNet connecting cable: novaNet290/291 to AS, 1,50 m (4,9 ft)
0367862002	novaNet connecting cable: novaNet290/291 to AS, 2,90 m (9,5 ft)
0367862003	novaNet connecting cable: novaNet290/291 to AS, 6,0 m (19,7 ft)
0367883001	6x EPROM (empty; USER-EPROM)
0367888001	5x EPROM (4 Mbit; empty)
0367893001	Kit for converting EYL210F001 (without LED) to EYL210F101 (with LED)

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EYL215: nova215, Compact automation station

The nova215 compact automation station can be connected with various outlying units, so-called field modules. In conjunction with the required number of field modules, it forms a unit, as necessary for monitoring, optimising, regulating and controlling HVAC technical systems.

It has a total of 44 inputs and 16 outputs. The short cycle time enables it to perform even very fast control tasks. It has communication capability and can be networked without any further provisions having to be made. The unit is programmed (parameterised) using a PC with EY3600 CASE software and the FBD Editor in accordance with IEC 1131-3.

Products

Type	Description	Power Supply	Weight kg (lb)
EYL215F001	Compact automation station with field modules	230 V~	2,3 (5)
EYL215F005	Automation station, UL-certified	24 V~	2,3 (5)

Technical data

Electrical supply

Power supply	
EYL215F001	230 V~, 50/60 Hz
EYL215F005	24 V~, 50/60 Hz
Power consumption	24 VA
Power loss, max.	approx. 24 W

Execution

Factory setting	All switches set to "Off"

Inputs / Outputs

Analogue inputs	6x Ni/Pt1000
	4x U/I/R
Field modules	
Digital inputs	2 channels
2x moduLink174	32 (8 x 4)
Digital outputs	3 channels
3x moduLink164	12x 0-I
or (combinable)	3 channels
3x moduLink165	6x 0-I-II
Analogue outputs	1 channel
1x moduLink170	4x 0…10 V
Counters	2

Interfaces, communication

AS network novaNet	2x a/b terminals
	1x RJ11 socket (6/6)
Local Operating Panel modu240	
EY-OP240F001	1x RJ45 socket

Interfaces, communication (continuation)

modu240 languages:	
German, French, English, Italian, Dutch, Spanish, Swedish, Norwegian, Danish, Portuguese, Finnish (for other languages, see 'Accessories'	

Permitted ambient conditions

Operating temperature	0…45 °C (32…113 °F)
Storage and transport temperature	–25…70 °C (–13…158 °F)
Humidity	10…90 % rh no condensation

Installation

Dimensions W x H x D	191 x 266 x 78 mm
	7,5" x 10,5" x 3" inch

Standards, guidelines and directives

Type of protection	IP 00 (EN60529)
Protection class	I (EN 60730-1)
Environmental class	3K3 (IEC 60721)
CE conformity as per	
Directive 2006/95/EC	EN 60730
EMC Directive 2004/108/EC	EN 61000-6-1 to EN 61000-6-4
Agency USA/Canada	UL listed: UL 916
EYL220F005/105	CSA certified: CSA C22.2

Additional information

Fitting instructions	MV 505391
Dimension drawing	A07356
Wiring diagrams	M04746

Accessories

Type	Description
EY-OP240	Local Operating Panel modu240
0501113002	nova215 and nova225 microprograms with modu240 languages: German, French, English, Polish, Slovenian, Hungarian, Romanian, Russian, Czech, Turkish
0367842002	Connecting cable: nova AS to modu240, 1,5 m (4,9 ft)
0367842003	Connecting cable: nova AS to modu240, 2,9 m (9,5 ft)
0367842004	Connecting cable: nova AS to modu240, 6,0 m (19,7 ft)
0367862001	novaNet connecting cable: novaNet290/291 to AS, 1,50 m (4,9 ft)
0367862002	novaNet connecting cable: novaNet290/291 to AS, 2,90 m (9,5 ft)
0367862003	novaNet connecting cable: novaNet290/291 to AS, 6,0 m (19,7 ft)
0367883002	5x EPROM (empty; USER-EPROM)
0367888001	5x EPROM (4 Mbit; empty)

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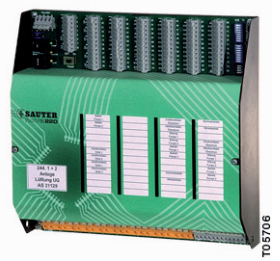
EYL220: nova220, Compact automation station

The nova220, which is the larger of the two compact units in the EY3600 family of systems, is de-signed primarily for the control and regulation of HVAC systems. It has 48 inputs and 18 outputs. The short cycle time enables it to perform even very fast control tasks. It has communication capability and can be networked without any further provisions having to be made. The unit is programmed (parameterised) using a PC with the EY3600 CASE software and the FBD Editor as per IEC 1131-3.

The station has all assemblies and interfaces necessary for operation, for the connection of plant devices and for communication with other stations and with the management level.



Products

Type	Description	Weight kg (lb)
EYL220F001	Compact AS	3,0 (6.6)
EYL220F101	Compact AS with LED	3,1 (6.8)
EYL220F005	Compact AS, UL-certified	3,0 (6.6)
EYL220F105	Compact AS with LED, UL-certified	3,1 (6.6)

Technical data

Electrical supply

Power supply	
EYL220F001/F101	230 V~, 50/60 Hz
EYL220F005/F105	24 V~, 50/60 Hz
Power consumption	24 VA
Power loss, max.	approx. 27 W

Execution

Factory setting	All switches set to "Off"

Inputs / Outputs

Digital inputs	32
Digital outputs	4x 0-I
	4x 0-I-II
Analogue inputs	8x Ni/Pt1000
	6x U/I/R
Analogue outputs	6x 0…10 V
	(2x 0…20 mA)
Counters	2

Interfaces, communication

AS network/data cable	2x a/b terminals
	1x RJ11 socket (6/6)
Control Panel EY-OP240 F001	1x RJ45 socket
modu240 languages:	
German, French, English, Italian, Dutch, Spanish, Swedish, Norwegian, Danish, Portuguese, Finnish (for other languages, see 'Accessories')	

Permitted ambient conditions

Operating temperature	0…45 °C (32…113 °F)
Transport and storage temperature	–25…70 °C (–13…158 °F)
Humidity	10…90 % rh no condensation

Installation

Dimensions W x H x D	280 x 266 x 78 (mm)
	11" x 10.5" x 3" (inch)

Standards, guidelines and directives

Type of protection	IP 00 (EN 60529)
Protection class	I (EN 60730-1)
Environmental class	IEC 60721 3K3
CE conformity as per	
Directive 2006/95/EC	EN 60730
EMC Directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-3/ EN 61000-6-4
Agency USA/Canada	UL listed: UL 916
EYL220F005/F105	CSA certified: CSA C22.2

Additional information

Fitting instructions	MV 505390
Wiring diagrams	A04750
Dimension drawing	M04744

Accessories

Type	Description
EY-OP240	Local Operating Panel modu240
0501112002	nova220 microprogram with modu240 language: German, French, English, Polish, Slovenian, Hungarian, Romanian, Russian, Czech, Turkish, Slovakian
0367842002	Connecting cable: nova AS
0367842003	Connecting cable: nova AS
0367842004	Connecting cable: nova AS
0367862001	novaNet connecting cable: novaNet290/291 to AS, 1,50 m (4.9 ft)
0367862002	novaNet connecting cable: novaNet290/291 to AS, 2,90 m (9.5 ft)
0367862003	novaNet connecting cable: novaNet290/291 to AS, 6,0 m (19.7 ft)
0367883002	5x EPROM (empty; USER-EPROM)
0367888001	5x EPROM (4 Mbit; empty)
0367894001	Kit for converting EYL220F001 (without LED) to EYL220F101 (with LED)
0374504001	Cover, complete with BACnet communication card, MV 505922 (for EYL220F001/F005 only)

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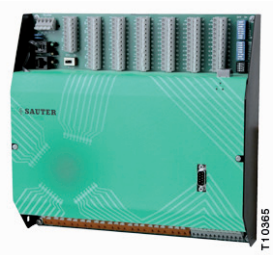
EYK220: nova220, Compact automation station with BACnet interface



This EYK220 is the compact nova220 units of the EY3600 system family equipped with a BACnet communication card (EYK300). This communication card is used to integrate Sauter's nova220 automation station with the standardised communication protocol 'BACnet / IP based on Ethernet' as per EN 13321-1 and ISO 16484 5. This nova220 has communication capability with novaNet and Ethernet and can be networked without any further provisions having to be made. The unit is programmed (parameterised) using a PC with the EY3600 CASE software and the CASE FBD Editor as per IEC 1131-3.

The station has all assemblies and interfaces necessary for operation, for the connection of plant devices and for communication with other stations and with the management level. As a BACnet server, it provides all the objects required for HVAC applications, plus the associated properties with the necessary services. Typical users (BACnet clients) of this information are open management systems, bus-wide operating units, and other automation stations which have BACnet capability etc.. In its function as a BACnet client, the communication card supports peer-to-peer transmission with 'present-value properties' for the specified objects.

Products

Type	Description	Weight (kg)
EYK220F001	Compact AS with BACnet interface	3,2

Technical data

Electrical supply

Power supply	230 V~, 50/60 Hz
Power consumption	28 VA
Power loss, max.	approx. 31 W

Execution

Factory setting	All switches set to "Off"
Number of BACnet objects	max. 1000 (Total)
Number of time programs	max 100 (Schedule)
Number of calendars	max. 40 (Calender)
Number of historical	
data objects	max. 50 (Trend Log)
log data records (Total)	max. 10'000 (Log Buffer)

Inputs / Outputs

Digital inputs	32
Digital outputs	4x 0-I
	4x 0-I-II
Analogue inputs	8x Ni/Pt1000
	6x U/I/R
Analogue outputs	6x 0…10 V
	(2x 0…20 mA)
Counters	2

Interfaces, communication

AS network/novaNet	2x a/b- terminals
	1x RJ11 socket (6/6)
Local Operating Panel EY-OP240	1x RJ45 socket
modu240 languages:	
German, French, English, Italian, Dutch, Spanish, Swedish, Norwegian, Danish, Portuguese, Finnish (for other languages, see 'Accessories')	

COM interface	DB9 plug as per DTE
BACnet interface	RJ45-Ethernet
Transport protocol	BACnet/IP

Permitted ambient conditions

Operating temperature	0…45 °C (32…113 °F)
Transport and storage temperature	–25…70 °C (–13….158 °F)
Humidity	10…90 % rh no condensation

Installation

Dimensions W x H x D	280 x 266 x 78 (mm)
	11" x 10.5 " x 3" (inch)
Weight	3,2 kg

Standards, guidelines and directives

Type of protection	IP 00 (EN 60529)
Protection class	I (IEC 60730)
Environmental class	IEC 60721 3K3
CE conformity as per	
Directive 2006/95/EC	EN 60730
EMC Directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-2
	EN 61000-6-3 [1)]
	EN 61000-6-4
	EN 55024

Additional information

Fitting instructions	MV 505788
Wiring diagrams	A09735
Plug-in-card	A09734
Dimension drawing	M04744

1) This is Class A equipment. It may cause radio interference in the home, in which case the operator may be requested to carry out appropriate measures. (see Fitting instructions)

Accessories

Type	Description
EY-OP240	Local Operating Panel modu240
0501112002	nova220 microprograms with modu240 languages: German, French, English, Polish, Slovenian, Hungarian, Romanian, Russian, Czech, Turkish
0367842002	Connecting cable, nova AS – modu240, 1,5 m (4.9 ft)
0367842003	Connecting cable, nova AS – modu240, 2,9 m (9.5 ft)
0367842004	Connecting cable, nova AS – modu240, 6,0 m (19.7 ft)
0367862001	novaNet connecting cable, novaNet290 or novaNet291 – AS, 1,5 m (4.9 ft)

For more accessories, see next page >>>

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Accessories (continuation)

Type	Description
0367862002	novaNet connecting cable, novaNet290 or novaNet291 – AS, 2,9 m (9.5 ft)
0367862003	novaNet connecting cable, novaNet290 or novaNet291 – AS, 6,0 m (19.7 ft)
0367862004	Connecting cable, novaNet RJ11-RJ11, 0,21 m (supplied)
0367883002	5x EPROMs (empty) (USER-EPROM)
0367888001	5x EPROMS (4 Mbit; empty)
0386301001	Connecting cable, COM DB9-DB9, 3 m

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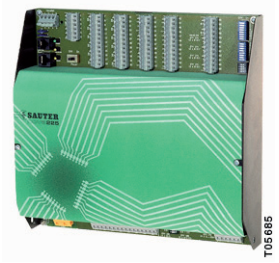
EYL225: nova225, Compact automation station

The nova225 compact automation station can be connected with various outlying units, so-called field modules. In conjunction with the required number of field modules, it forms a unit, as necessary for monitoring, optimising, regulating and controlling HVAC technical systems.

It has a total of 86 inputs and 28 outputs. The short cycle time enables it to perform even very fast control tasks. It has communication capability and can be networked without any further provisions having to be made. The unit is programmed (parameterised) using a PC with EY3600 CASE software and the FBD Editor in accordance with IEC 1131-3.



Products

Type	Description	Power supply	Weight kg (lb)
EYL225F001	Automation station	230 V~	3 (6.6)
EYL225F005	Automation station, UL-certified	24 V~	3 (6.6)

Technical data

Electrical supply

Power supply	
EYL225F001	230 V~, 50/60 Hz
EYL225F005	24 V~, 50/60 Hz
Power consumption	34 VA
Power loss, max.	approx. 34 W

Execution

Factory setting	All switches set to "Off"

Inputs / Outputs

Analogue inputs	12x Ni/Pt1000
	8x U/I/R
Field modules:-	
Digital inputs	4 channels
4x novaLink174	64 (8 x 8)
Digital outputs	4 channels
4x novaLink164	16x 0-I
or (combinable)	8 channels
8x novaLink165	16x 0-I-II
Analogue outputs	3 channels
3x novaLink170	12x 0…10 V
Counters	2

Interfaces, communication

AS network/novaNet	2x a/b terminals
	1x RJ11 socket (6/6)
Control Panel modu240	
EY-OP240F001	1x RJ45 socket

Interfaces, communication (continuation)

modu240 languages:	
German, French, English, Italian, Dutch, Spanish, Swedish, Norwegian, Danish, Portuguese, Finnish (for other languages, see 'Accessories')	

Permitted ambient conditions

Operating temperature	0…45 °C (32…113 °F)
Storage and transport temperature	–25…70 °C (–13…158 °F)
Humidity	10…90 % rh no condensation

Installation

Dimensions W x H x D	280 x 266 x 78 (mm)
	11" x 10.5" x 3" (inch)

Standards, guidelines and directives

Type of protection	IP 00 (EN 60529)
Protection class	I (EN 60730-1)
Environmental class	3K3 (IEC 60721)
CE conformity as per	
Directive 2006/95/EC	EN 60730
EMC Directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-3/ EN 61000-6-4
Agency USA/Canada	UL listed: UL 916
EYL225F005	CSA certified: CSA C22.2

Additional information

Fitting instructions	MV 505391
Wiring diagrams	A04745
Dimension drawing	M04744

Accessories

Type	Description
EY-OP240	Local Operating Panel modu240
0501113002	nova215 and nova225 microprograms with modu240 language: German, French, English, Polish, Slovenian, Hungarian, Romanian, Russian, Czech, Turkish, Slovakian
0367842002	Connecting cable: nova AS to modu240, 1,5 m (4.9 ft)
0367842003	Connecting cable: nova AS to modu240, 2,9 m (9.5 ft)
0367842004	Connecting cable: nova AS to modu240, 6,0 m (19.7 ft)
0367862001	novaNet connecting cable: novaNet290/291 to AS, 1,50 m (4.9 ft)
0367862002	novaNet connecting cable: novaNet290/291 to AS, 2,90 m (9.5 ft)
0367862003	novaNet connecting cable: novaNet290/291 to AS, 6,0 m (19.7 ft)
0367883002	5x EPROM (empty; USER-EPROM)
0367888001	5x EPROM (4 Mbit; empty)

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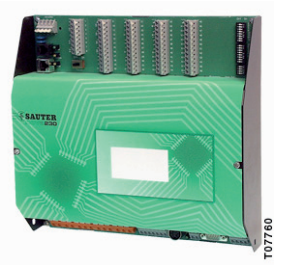
EYL230: nova230, Compact universal automation station

The nova230 automation station, which is a compact AS of the EY3600 family of systems, has a link to non-Sauter systems. It is used for open-loop and closed-loop control in HVAC systems, and has an interface for linking to non-Sauter systems, allowing data to be received from, or sent to, the non-Sauter system. It has a total of 28 hardware inputs and 10 hardware outputs. In total, the AS has 256 MFAs, 192 of which are available for transfer purposes. The parameterisation of the AS and the signal provision to the non-Sauter system are effected via the 'CASE FBD Editor' software in accordance with IEC 1131-3. The configuration of the serial printer interface is done using the 'Hyper Terminal' software (in Windows). The transfer list is parameterised using a parameterisation program with download function.



Products

Type	Description	Tension	Weight kg (lb)
EYL230F010	Compact AS, with M-bus interface	230 V~	2.2 (4.8)
EYL230F020	Data-point router with RS232C interface	230 V~	2.2 (4.8)
EYL230F030	Printer interface with RS232C interface, line printer	230 V~	2.2 (4.8)
EYL230F040	Compact-AS, Modbus RTU	230 V~	2.2 (4.8)
EYL230F060	Compact-AS, Grundfos	230 V~	2.2 (4.8)
EYL230F070	Compact-AS, EIB	230 V~	2.2 (4.8)
EYL230F090	Compact-AS, Wilo	230 V~	2.2 (4.8)
EYL230F110	Compact-AS, LON	230 V~	2.2 (4.8)
EYL230F120	Compact-AS, Siemens 3964R/RK512	230 V~	2.2 (4.8)
EYL230F130	Compact-AS, Danfoss VLT6000	230 V~	2.2 (4.8)
EYL230F140	Compact-AS, Danfoss VLT2800	230 V~	2.2 (4.8)
EYL230F015	Compact-AS, with M-bus, UL-certified	24 V~	2.2 (4.8)
EYL230F025	Data-point router, UL-certified	24 V~	2.2 (4.8)
EYL230F035	Printer Interface, UL-certified	24 V~	2.2 (4.8)
EYL230F045	Compact-AS Modbus RTU, UL-certified	24 V~	2.2 (4.8)
EYL230F065	Compact-AS Grundfos, UL-certified	24 V~	2.2 (4.8)
EYL230F075	Compact-AS EIB, UL-certified	24 V~	2.2 (4.8)
EYL230F095	Compact-AS Wilo, UL-certified	24 V~	2.2 (4.8)
EYL230F115	Compact-AS LON, UL-certified	24 V~	2.2 (4.8)
EYL230F125	Compact-AS Siemens, UL-certified	24 V~	2.2 (4.8)

Technical data

Electrical supply

Power supply	230 V~, 50/60 Hz
	24 V~, 50/60 Hz
Power consumption	36 VA
Power loss, max.	approx. 38 W

Execution

Factory setting	All switches set to "Off"

Inputs / Outputs

Digital inputs	16
Digital outputs	1x 0-I; 3x 0-I-II
Analog inputs	6x Ni/Pt1000; 4x U/I/R
Analog outputs	3x 0…10 V; (1x 0…20 mA)
Counter	2

Interfaces, communication

novaNet	2x a/b terminals
	1x RJ11 socket

Interfaces, communication (continuation)

modu240 Local Operating Panel	EY-OP240
	1x RJ45 socket
Standard languages:	
German, French, English, Italian, Dutch, Spanish, Swedish, Norwegian, Danish, Portuguese, Finnish (for other languages, see 'Accessories')	
Service	RS232 7pol. DIN-socket
Non Sauter link	RS232 from 9
	M-bus from terminal

Permitted ambient conditions

Operating temperature	0…45 °C (32…113 °F)
Humidity	10…90 % rh no condensation

Installation

Dimensions W x H x D	280 x 266 x 78 mm
	11" x 10,5" x 3" inch

For more technical data, documentation and accessories, see next page >>>

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Technical data (continuation)

Standards, guidelines and directives

Type of protection	IP 00 (EN 60529)
Protection class	I (EN 60730-1)
Environmental class	IEC 60721 3K3
CE conformity as per	
Directive 2006/95/EC	EN 60730
EMC Directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-3/ EN 61000-6-4
Agency USA/Canada	UL listed: UL 916
EYL230Fxx5	CSA certified: CSA 22.2

Additional information

Fitting instructions	MV 505556
Wiring diagrams	A07771
Dimension drawing	M04744

Accessories

Type	Description
0501130001	Variant F010, F040…F140 (German, French, English, Italian, Dutch, Spanish, Swedish, Norwegian, Danish, Portuguese, Finnish)
0501130002	Languages: German, French, English, Polish, Slovenian, Hungarian, Romanian, Russian, Czech, Turkish
0501133001	Variant F020
0501136001	Variant F030: (German, French, English, Italian, Dutch, Spanish, Swedish, Norwegian, Danish, Portuguese, Finnish)
0501136002	Languages: German, French, English, Polish, Slovenian, Hungarian, Romanian, Russian, Czech, Turkish
0367862001	Connecting cable, 1,5 m, to novaNet290 or 291(4,9 ft)
0367862002	Connecting cable, 2,9 m, to novaNet290 or 291 (9,5 ft)
0367862003	Connecting cable, 6,0 m, to novaNet290 or 291 (19,7 ft)
0374504001	Protective cover with BACnet communication card, MV 505922

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EYK230: nova230, Compact BACnet universal automation station

The EYK230 is the compact nova230 unit from the EY3600 family of systems with interface functions, equipped with a BACnet communication interface and a third-party interface. The BACnet interface supports the integration of Sauter's nova230 automation station into the open, standardised 'BACnet/IP on Ethernet basis' communication protocol as per EN 13321-1 and ISO 16484 5. This nova230 can be networked as it stands, and can communicate on novaNet and Ethernet. As a BACnet server (B-BC), the necessary 'objects' with the 'properties' and the requisite 'services' for the HVAC are provided. Typical users (BACnet clients) of this information are open management systems, bus-wide operating devices, other automation stations with BACnet capability etc. In its function as a BACnet client, the communication interface supports peer-to-peer transfer with present-value properties of the specified objects.

The station also comprises assemblies and interfaces that are needed for operations, connecting the devices and communicating with other stations and with the management level. Several variants with different combinations of functions are possible. Therefore, a nova230, on the one hand, can be used to control HVAC systems and, on the other, has a third-party interface (RS232 interface), via which the data of an alien system can be received or sent. An example of BACnet system topology with nova230 can be found in Appendix C of the complete PDS.

Products

Type	Description	Weight (kg)
EYK230F010	BACnet universal AS with M-bus interface	3.2
EYK230F040	BACnet universal AS with Modbus RTU	3.2
EYK230F060	BACnet universal AS with Grundfos	3.2
EYK230F070	BACnet universal AS with EIB (ELKA)	3.2
EYK230F090	BACnet universal AS with Wilo	3.2
EYK230F110	BACnet universal AS with LON (Sysmik)	3.2
EYK230F120	BACnet universal AS with Siemens 3964R/RK512	3.2
EYK230F130	BACnet universal AS with Danfoss VLT6000	3.2
EYK230F140	BACnet universal AS with Danfoss VLT2800	3.2

Technical data

Electrical supply

Power consumption	40 VA
Power loss, max.	approx. 42 W

Execution

Factory setting	All switches set to "Off"
Number of BACnet objects	max. 1000 (Total)
Number of time programs	max 100 (Schedule)
Number of calendars	max. 40 (Calender)
Number of historical	
data objects	max. 50 (Trend Log)
log data records (Total)	max. 10'000 (Log Buffer)

Inputs / Outputs

Digital inputs	16
Digital outputs	1x 0-I
	3x 0-I-II
Analogue inputs	6x Ni/Pt1000
	4x U/I/R
Analogue outputs	3x 0…10 V
	(1x 0…20 mA)
Counters	2

Interfaces, communication

AS network/novaNet	2x a/b terminals
	1x RJ11 socket (6/6)
Local Operating Panel EY-OP240	1x RJ45 socket
modu240 languages:	
German, French, English, Italian, Dutch, Spanish, Swedish, Norwegian, Danish, Portuguese, Finnish (for other languages, see 'Accessories')	

Interfaces, communication (continuation)

COM interface	DB9 plug as per DTE
BACnet interface	RJ45-Ethernet
Transport protocol	BACnet/IP
Service	RS232 7-pin DIN socket
Link to other system	RS232 9pin plug
EYK230F010	M-bus from terminal

Permitted ambient conditions

Operating temperature	0…45 °C (32…113 °F)
Transport and storage temperature	–25…70 °C (–13…158 °F)
Humidity	10…90 % rh no condensation

Installation

Dimensions W x H x D	280 x 266 x 78 mm
	11" x 10.5 " x 3" inch

Standards, guidelines and directives

Type of protection	IP 00 (EN 60529)
Protection class	I (IEC 60536)
Environmental class	3K3 (IEC 60721)
CE conformity as per	
Directive 2006/95/EC	EN 60730
EMC Directive 2004/108/EC	EN 61000-6-1
	EN 61000-6-2
	EN 61000-6-3 [1)]
	EN 61000-6-4
	EN 55024

For more technical data, documentation and accessories see next page >>>

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Technical data (continuation)

Additional information

Fitting instructions	MV 505949
Wiring diagrams	A10385
for card	A09734
Dimension drawing	M04744

1) This is Class A equipment. It may cause radio interference in the home, in which case the operator may be requested to carry out appropriate measures. (see Fitting instructions)

Accessories

Type	Description
EY-OP240	Local Operating Panel modu240
0501130002	nova230 microprogram with modu240 languages: German, French, English, Polish, Slovenian, Hungarian, Rumanian, Russian, Czech, Turkish
0367842002	Connecting cable: nova AS – modu240 1,5 m (4,9 ft)
0367842003	Connecting cable: nova AS – modu240 2,9 m (9,5 ft)
0367842004	Connecting cable: nova AS – modu240 6,0 m (19,7 ft)
0367862001	novaNet-Connecting cable: novaNet290 or novaNet291 – AS 1,5 m (4,9 ft)
0367862002	novaNet-Connecting cable: novaNet290 or novaNet291 – AS 2,9 m (9,5 ft)
0367862003	novaNet-Connecting cable: novaNet290 or novaNet291 – AS 6,0 m (19,7 ft)
0367862004	novaNet-Connecting cable: novaNet RJ11-RJ11 0,21 m (supplied)
0367883002	5x EPROM (empty) (USER-EPROM)
0367888001	5x EPROM (4 MBit (empty))
0386301001	COM-Connecting cable: DB9-DB9, 3 m

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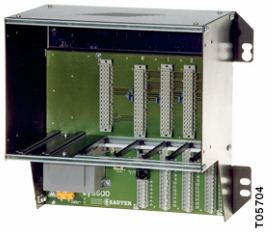
EYU108, 109: nova106, Rack for modular automation station

Together with the appropriate cards, the EYU108F001 or EYU109F001 rack forms a modular automation station, which can be equipped in accordance with the user's and the plant's exact requirements. The rack holds 5 or, respectively, 11 plug-in cards, comprising a UPS card, a processor/power-supply card plus 3 or, respectively, 9 function cards. On the rack's motherboard are the terminals for the network connection of the plant-device and novaNet connections. Also located on this print are the transformer, a fuse, the on/off switches, the RJ 11 (6/4) novaNet connection sockets and the bus. Sixteen terminals are assigned to each slot. The plant devices (potential-free contacts, temperature sensor, motors etc.) are connected to these terminals, providing 24 or, respectively, 60 hardware addresses.



Products

Type	Description	Slots	Weight (kg)
EYU108F001	Rack	5	3
EYU109F001	Rack	11	5

Technical data

Electrical supply

Power supply	230 V AC, 50/60 Hz
Max. Power consumption	40 VA
Max. current consuption	3 A
Power loss, max.	approx.10 W

Installation

Dimensions H × W × D (EYU108)	267 × 282 × 180 (mm)
Dimensions H × W × D (EYU109)	267 × 465 × 180 (mm)
Mounting	Electric cabinet
	Wall mounted

Interfaces, communication

Station Network novaNet	2× a/b terminals
	1× RJ-11 socket

Permitted ambient conditions

Operating temperature	0...45 °C
Transport and storage temperature	–25...70 °C
Humidity	10...90 % rh no condensation

Standards, guidelines and directives

Type of protection	IP 00
Protection class	I (EN 60730)
Environmental class	IEC 60721 3K3
CE conformity as per	
Directive 2006/95/EC	EN 60730
EMC Directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-3/ EN 61000-6-4

Additional information

Fitting instructions	MV 505401
Dimension drawing	M06658 / M06659

Accessories

Type	Description
0367854001	Front plate (EYU108F001)
0367846001	Front plate (EYU109F001)

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EYW300: novaWeb, embedded web-server on automation level

How energy efficiency is improved

Proactive servicing and system monitoring by remote access and optimisation
Recording option and export for historical data and optimisation of the control parameters

Areas of application

Easy access to the automation stations of a SAUTER novaNet (SAUTER EY3600 and SAUTER EY-modulo 2), e.g. for small and medium-sized outlying properties without management level

Features

- Depiction of up to 32 automation stations in a SAUTER novaNet
- Operated without proprietary software, using a standard web client
- (PC, notebook, touch-panels) and standard web browser
- Complete graphical HMI user interface
- Self-generating user surfaces if structure of SAUTER novaNet house addresses is suitable
- Password-protected access with pre-defined roles
- Portrayal of data points, alarms, time programmes and historical data
- Graphic portrayal of the installation
- Cyclical transmission of system-related data via e-mail
- Customisable user surfaces

Technical description

- Independent web server hardware
- Two Ethernet connections (LAN/WAN) plus integrated modem functionality
- Communication via http using Ethernet or serial modem with web browser or serial using no-vaNet291 router with SAUTER novaNet
- Automated scanning of the novaNet network
- Saving of historical data on removable CF cards
- Integrated and configurable firewall
- Implemented cyclical page updates

Products

Type	Description	Power supply	Weight (kg)
EYW300F001B	novaNet web server on AS level	9-36 V=	1.3

Technical data

Electrical supply

Power supply	
Separate power supply unit	
not included	100 - 240 V~, 50/60 Hz
Power consumption	
With external power supply unit	
(supplied)	approx. 20 VA

Version

Desktop model with separate power	
supply unit, with access. (see below)	
Can be fitted in panel onto DIN rail	

Interfaces

2x Ethernet	WAN, LAN
2x RS232	1x for modem connection
	1x novaNet291

Permitted ambient conditions

Operating temperature	0…60 °C
Storage and transport temperature	–25…70 °C (–13…158°F)
Humidity	5…95 % rh no condensation

Installation

Dimensions W x H x D (mm)	223.6 x 110.7 x 61.8

Standards, guidelines and directives

Type of protection	IP 00 (EN 60529)
Protection class	I (IEC 60536)
Environmental class	3K3 (IEC 60721)
CE conformity as per	
EMC Directive 89/336/EC	EN 55024
	EN 55022, Class A

Additional information

Fitting instructions	MV 505910
User manual	7001049
Programming manual	7001050
Configuration manual	7001056
Manual for quick start	7001057
Wiring diagram	A10374
Dimension drawing	M10396

Accessories

Type	Description
0920570010	External power supply unit (100 - 230V, 1.5 A, 50-60 Hz) for EYW300F001B
0920240010	Kit for fitting into the panel of the EYW300F001B, MV 505911
0386301001	Connecting cable: novaWeb <--> novaNet291

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EYK300: nova106, BACnet communication card

This communication card is used for the integration of Sauter's modular nova106 automation station with the standardised 'BACnet / IP based on Ethernet' communication protocol as per EN 13321-1 and ISO 16484-5.

As a BACnet server, it provides all the objects required for HVAC applications, plus the associated properties with the necessary services. Typical users (BACnet clients) of this information are open management systems, bus-wide operating units, and other automation stations which have BACnet capability etc. In its function as a BACnet client, the communication card supports peer-to-peer trans-mission with 'present-value properties' for the specified objects.

Products

Type	Description	Weight (kg)
EYK300F001	BACnet communication card	0.23

Technical Data

Electrical supply

Power supply	from AS-Rack
Max. current	0,4 A

Execution

Number of BACnet objects	max. 1000 (Total)
Number of time programs	max. 100 (Schedule)
Number of calenders	max. 40 (Calendar)
Number of historical	
Data objects	max. 50 (Trend Log)
log data records (Total)	max. 10'000 (Log Buffer)

Interfaces, communication

COM-interface	DB9 plug as per DTE
novaNet interface	RJ11 socket (6/6)
BACnet interface	RJ45 Ethernet
Transport protocol	BACnet/IP

Permitted ambient conditions

Operating temperature	0…45 °C
Transport and storage temperature	–25…70 °C
Humidity	10…90 %rh no condensation

Standards, guidelines and directives

Type of protection	IP 00 (EN60529)
Environment class	3K3 (IEC 60721)
CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-3 [1)]
	EN 61000-6-4
	EN 50024

Additional information

Fitting instructions	MV 505791
Wiring diagram	A09734

1) This is Class A equipment. It may cause radio interference in the home, in which case the operator may be requested to carry out appropriate measures. (see Fitting instructions)

Accessories

Type	Description
0367842002	Connecting cable, Ethernet RJ45-RJ45, 1,5 m
0367842003	Connecting cable, Ethernet RJ45-RJ45, 2,9 m
0367842004	Connecting cable, Ethernet RJ45-RJ45, 6 m
0367862004	Connecting cable, novaNet RJ11-RJ11, 0,21 m (supplied)
0386301001	Connecting cable, COM DB9-DB9, 3 m

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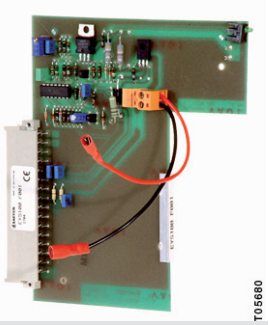
EYS100: nova106, UPS card

In the event of a mains power failure, this card guarantees an uninterrupted power supply (UPS) to the rack by changing over to the battery-driven back-up system. During mains operation, it controls the charging of the emergency accumulators (12 V, 6,0 Ah).

The period of emergency power depends on the function cards in the rack and the parameterisation.
By parameterising accordingly, it is possible to set via the software which functions should continue to be supplied with power in UPS mode. The yellow LED shows the status of the battery unit. Application: for uninterruptible power supply of the nova106 racks.



Products

Type	Description	Weight (kg)
EYS100F001	UPS card	0,1

Technical data

Electrical supply

Power supply	from rack
Max. charging current	150 mA
Power consumption	7 VA
Power loss, max.	approx. 7 W
Power supply	165 mA
Battery specifications	12 V / 6,0 Ah lead-acid battery

Permitted ambient conditions

Operating temperature	0…45 °C
Transport and storage temperature	–25…70 °C
Humidity	10…90 % rh no condensation

Standards, guidelines and directives

CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-3/ EN 61000-6-4

Additional information

Fitting instructions	MV 505383
Dimension drawings (Battery cable)	M06763
Included in delivery of plug-in card	Battery fixing bracket
	Battery power cable

Accessories

Type	Description
0367887001*	12 V / 6 Ah lead-acid battery

*) Dimension drawing or wiring diagram are available under the **same** number

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EYL106: nova106, Processor and power-supply card

As the central processing unit, the processor and power-supply card is the heart of the automation station nova106. It performs the communication with other automation stations and with the visualisa-tion and management level, and provides all the different power levels for the various function cards. The short cycle time enables even fast control tasks to be solved. It can be networked and has com-munication capability – without additional provisions having to be made. The unit is programmed (parameterised) using a PC with the EY3600-CASE software as per IEC 1131-3 (FBD editor). On the card are the EPROM, a buffer battery, the switch blocks for addressing the station and the connectors for the control panel modu240.

Products

Type	Description	Weight (kg)
EYL106F001	Processor card	0,235

Technical data

Electrical supply

Power supply	from transformer 230 V~/ 40 VA
Max. current	3 A from 12 V supply
Current consumption	250 mA
Power loss, max.	approx. 3 W
AS address range	0…28671

Interfaces, communication

Local Operating Panel modu240	1x RJ45 socket
modu240 languages:	
German, French, English, Italian, Dutch, Spanish, Swedish, Norwegian, Danish, Portuguese, Finnish (other languages, see Accessories)	

Permitted ambient conditions

Operating temperature	0…45 °C
Transport and storage temperature	–25…70 °C
Humidity	10…90 % rh no condensation

Standards, guidelines and directives

CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-4
	EN 55022 class A

Additional information

Fitting instructions	MV 505386
Wiring diagramm	A04724

Accessories

Type	Description
EY-OP240	Local Operating Panel modu240
0501101002	nova106 microprogram with modu240 languages: German, French, English, Polish, Slovenian, Hungarian, Romanian, Russian, Czech, Turkish
0367842001	Connecting cable: nova AS – modu240 0,35 m
0367842002	Connecting cable: nova AS – modu240 1,5 m
0367842003	Connecting cable: nova AS – modu240 2,9 m
0367842004	Connecting cable: nova AS – modu240 6,0 m
0367883002	5x EPROM (empty) (USER-EPROM)
0367888001	5x EPROM (4 MBit (empty))

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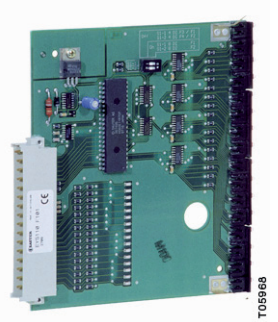
EYS110: nova106, Function card DI

This function card enables 16 digital inputs to be monitored and (with the F101 version) their status to be indicated via LEDs.

The sensing voltage is provided by the processor and power-supply card in the AS rack and conforms to the regulations concerning protective low voltage. Potential-free contacts, opto-couplers or transis-tors can be wired to the inputs. The 16 inputs can be split into groups of eight (2x8 bits) or four (4x4 bits), or combinations thereof (8 bits +2x4 bits). The colour reaction (red/green) of the LEDs can be chosen for each input and be indicated for closed or open contacts.

Application: for monitoring contacts (alarm/status) or feedback signals from switching commands.



Products

Type	Description	Weight (kg)
EYS110F001	Digital input card	0,23
EYS110F101	Digital input card with LED	0,24

Technical data

Electrical supply

Power supply	from AS rack
Max. output current of the input	1,3 mA with respect to earth
Max. input resistance	1 kΩ (incl. cable)
Protection against extraneous voltage	up to 24 V AC/DC
Max. current	
EYS110F001	17 mA
EYS110F101	160 mA (all LEDs "on")
Power loss. Max.	approx. 2 W

Inputs / Outputs

Number of inputs	16
Type of inputs	potential-free contacts
	(with respect to earth)
	optocoupler
	transistor (open collector)

Permitted ambient conditions

Operating temperature	0…45 °C
Transport and storage temperature	–25…70 °C
Humidity	10…90 % rh no condensation

Standards, guidelines and directives

CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-3/ EN 61000-6-4

Additional information

Fitting instructions	MV 505535
Wiring diagram	A05964

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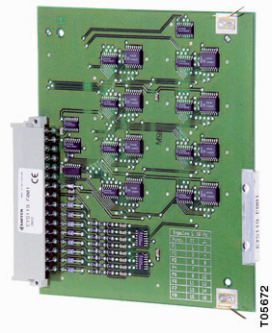
EYS119: nova106, Function card for pulse metering

This function card, which has eight inputs, counts the pulses that are emitted by potential-free con-tacts, opto-couplers or transistors. The interrogation voltage is provided by the rack's processor and power-supply card and fulfils the regulations on extra-low voltages. The maximum permissible frequency is 15 pulses per second (15 Hz). The counter reading is updated approx. every 25 seconds in the automation station's memory. The pulse inputs can be stepped down (in the form of a ratio) via the software.

Application: for counting pulses (energy and flow measurements, continuity checks, quantity counting etc.).



Products

Type	Description	Weight (kg)
EYS119F001	Function card for pulse metering	0,12

Technical data

Electrical supply

Power supply	from rack
Input frequency	< 20 Hz
Max. output current of the input	1,2 mA with respect to earth
De-bounce time	20 ms
Max. permissible cable resistance	1 kΩ (incl. cable)
Protection against externeal voltage	up to 24 V ~/=
Max. current	10 mA
Power loss max.	approx. 0,1 W

Inputs / Outputs

Number of inputs	8
Type of inputs	potential-free contacts
	optocoupler
	transistor (open collector)

Permitted ambient conditions

Operating temperature	0…45 °C
Transport and storage temperature	–25…70 °C
Humidity	10…90 % rh no condensation

Standards, guidelines and directives

CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-3/ EN 61000-6-4

Additional information

Fitting instructions	MV 505535
Wiring diagram	A04583

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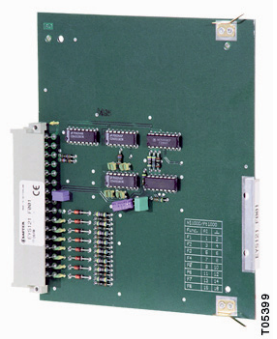
EYS121: nova106, Function card for Ni1000/Pt1000 temperature measurement

The function card measures eight temperature values using Ni1000 (DIN 43760) or Pt1000 (DIN 751) sensors. The null balancing and the curve linearisation are done in the software as standard.

Application for measuring temperature in the ranges:
- –50 to +150 °C (Ni1000)
- –100 to +500 °C (Pt1000)



Products

Type	Description	Weight (kg)
EYS121F001	Function card for temperature measurement (Ni1000/Pt1000)	0,12

Technical data

Electrical supply

Power supply	from rack
Max. current	12 mA
Power loss, max.	approx. 0,1 W

Inputs / Outputs

Number of inputs	8
Type of inputs	Ni1000 (DIN 43760) or
	Pt1000 (DIN 751)
Range	
Ni1000	–50…150 °C
Pt1000	–100…500 °C
Accuracy	
Ni1000 (linearity)	± 0.06 °C
Pt1000	see table
Max. output current of the inputs	1 mA with respect to earth pulset

Permitted ambient conditions

Operating temperature	0…45 °C
Transport and storage temperature	–25…70 °C
Humidity	10…90 % rh no condensation

Standards, guidelines and directives

CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-3/ EN 61000-6-4

Additional information

Fitting instructions	MV 505536
Wiring diagram	A04585

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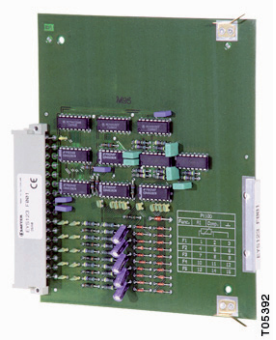
EYS123: nova106, Function card for Pt100 temperature measurement

This function card can take five temperature values using Pt100 sensors (DIN 751). The null balancing and the curve linearisation are included in the software as standard. The card is connected using three-wire technology.

Application for measuring temperature in the range –100 to +500 °C.



Products

Type	Description	Weight (kg)
EYS123F001	Function card for Pt100 temperature measurement	0,12

Technical data

Electrical supply

Power supply	from rack
Max. current	20 mA
Power loss, max.	approx. 0,2 W

Inputs / Outputs

Number of inputs	5
Type of inputs	Pt100 with DIN7 51
Range	–100…500 °C
Accuracy	
Linearity	0°C in range 0 to +100°C
	whole range see table
Max. output current of inputs	10 mA with respect to earth, pulsed

Permitted ambient conditions

Operating temperature	0…45 °C
Transport and storage temperature	–25…70 °C
Humidity	10…90 %rh no condensation

Standards, guidelines and directives

CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-3/ EN 61000-6-4

Additional information

Fitting instructions	MV 505536
Wiring diagram	A04587

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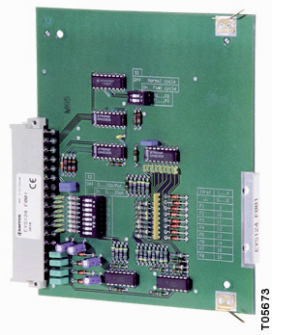
EYS124: nova106, Function card U/I/R measurement for pot.-free signals

This measurement card enables eight voltage measurements of 0...10 V, eight current measurements of 0...20 mA or four/eight potentiometer values of 2 kΩ(min. 0,5 kΩ) to be taken.

Application: for transmitting current and voltage signals; for setting setpoints



Products

Type	Description	Weight (kg)
EYS124F001	Function card for U/I/R measurement	0,13

Technical data

Electrical supply

Power supply	from rack
Max. current	20 mA
Power loss, max.	approx. 0,2 W

Inputs / Outputs

Number of inputs	8
Type of inputs	
Voltage	0 (2)…10 V
	0 (0.2)…1 V
Current	0 (4)…20 mA
Potentiometer	2 kΩ (min. 0.5 kΩ)
Input limits	
Voltage measurement	< 50 V
	< 50 mA
Loading of reference outputs	< 10 mA

Permitted ambient conditions

Operating temperature	0…45 °C
Transport and storage temperature	–25…70 °C
Humidity	10…90 % rh no condensation

Standards, guidelines and directives

CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-3/ EN 61000-6-4

Additional information

Fitting instructions	MV 505536
Wiring diagram	A04589

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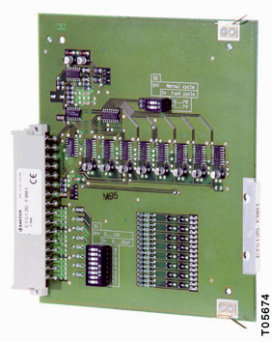
EYS135: nova106, Funktionskarte-U/I Messung für potentialbehaftete Signale

This measurement card enables eight voltage measurements of 0...10 V or eight current measurements of 0...20 mA to be taken. The signals can be potential-loaded. The measurement inputs allow a common mode of 80 V and a tension of max. 55 V a.c. For fast control tasks, the interrogation (scanning) rate can be set to a fast cycle of 1 sec.

Application: for transmitting current and voltage signals; for setting setpoints



Products

Type	Description	Weight (kg)
EYS135F001	Function card for U/I measurement	0,135

Technical data

Electrical supply

Power supply	from rack
Max. current	1 mA
Power loss, max.	0.5 W

Inputs / Outputs

Number of inputs	8
Type of inputs	
Voltage	0 (2)…10 V
	0 (0.2)…1 V
Current	0 (4)…20 mA
Input limits	
Voltage measurement	< 50 V
Current measurement	< 50 mA
Common-mode voltage	< 80 V ≅, 55 V~

Permitted ambient conditions

Operating temperature	0…45 °C
Transport and storage temperature	–25…70 °C
Humidity	10…90 % rh no condensation

Standards, guidelines and directives

CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-3/ EN 61000-6-4

Additional information

Fitting instructions	MV 505536
Wiring diagram	A04601

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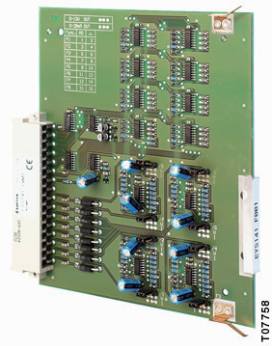
EYS141: nova106, Function card for analogue output of 0...10 V or 0...20 mA

This card is used to provide a voltage of between 0 and 10 V or a current of between 0 and 20 mA. The output, having one bridge for each function, can be encoded (bridge at U = 0...10 V; bridge at I = 0...20 mA).

Application: for remote operation of drives; for setting setpoints



Products

Type	Description	Weight (kg)
EYS141F001	Function card for analogue output	0,145

Technical data

Electrical supply

Power supply	from rack
Max. current	190 mA
Power loss, max.	approx. 2,2 W

Inputs / Outputs

Number of outputs	8
Type of outputs	
Voltage	0…10 V, 20 mA max
Current	0…20 mA, 10 V max.
Protection against extraneous voltage	600 V/1 ms

Permitted ambient conditions

Operating temperature	0…45 °C
Transport and storage temperature	–25…70 °C
Humidity	10…90 % rh no condensation

Standards, guidelines and directives

CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-4
	EN 55022 Class A

Additional information

Fitting instructions	MV 505537
Wiring diagram	A04609

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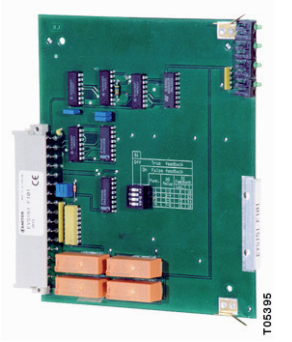
EYS151: nova106, Function card for 0-I command with feedback (FB)

This card enables the commands for 0-I to be issued and the appropriate feedback signal to be registered. The 'I' command can be fed back either real via an input or simulated via the card internally. The feedback signal for 'local' is always real; '0' must be derived from the software. The command outputs are effected via relays (the contacts of which can be loaded at 42 V, 2 A). Potential-free contacts, optocoupler or transistors with open collector can be connected to the feedback inputs.

Application: for controlling actuators, such as contactors, indicators etc.



Products

Type	Description	Weight (kg)
EYS151F001	Function card for 0-I command with feedback	0,16
EYS151F101	Function card for 0-I command with feedback with LED	0,16

Technical data

Electrical supply

Power supply	from rack
Max. current	
EYS151F001	86 mA
EYS151F101	92 mA
Power loss, max.	approx. 3 W

Inputs / Outputs

Number of inputs	4 (0-I command)
Type of inputs	Relay
Loading of outputs	42 V/2 A ≅
Number of feedback inputs	8
Type of feedback inputs	potential-free contacts
	optocoupler
	transist. (open collector)
Threshold	1 V/4 V
Max. output current	
of the feedback inputs	1,5 mA
Max permissible cable resistance	
of the feedback inputs	600 Ω
Protection against extern voltage	up to 24 V ≅

Permitted ambient conditions

Operating temperature	0…45 °C
Transport and storage temperature	–25…70 °C
Humidity	10…90 % rh no condensation

Standards, guidelines and directives

CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-3/ EN 61000-6-4

Additional information

Fitting instructions	MV 505538
Wiring diagram	A04616

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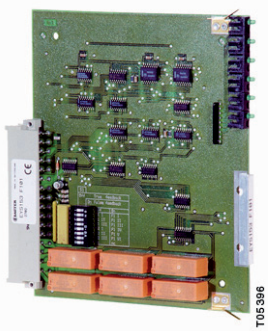
EYS153: nova106, Function card for 0-I-II-III/0-I-II-III-IV-V-VI commands

This card enables the commands for 0-I-II-III or 0-I-II-III-IV-V-VI and the appropriate feedback signal to be registered. The command levels I to III can be fed back either real via an input or simulated via the card internally. The feedback signal for 'local' is always real; '0' must be derived from the software. The command outputs are effected via relays (the contacts of which can be loaded at 42 V, 2 A). Potential-free contacts, opto-coupler or transistors with open collector can be connected to the feed-back inputs.

Application: for controlling actuators with up to six switching levels.



Products

Type	Description	Weight (kg)
EYS153F001	Function card for commands	0,18
EYS153F101	Function card for commands, with LED	0,18

Technical data

Electrical supply

Power supply	from rack
Max. current	
EYS153F001	130 mA
EYS153F101	134 mA
Power loss, max.	approx. 4,6 W

Inputs / Outputs

Number of inputs	2x 0-I-II-III
	1x 0-I-II-III-IV-V-VI
Type of outputs	Relay
Contact rating	42 V/2 A ≅
Number of feedback inputs	8
Type of feedback inputs	potential-free contacts
	optocoupler
	transistor (open collector)
Threshold	1 V/4 V
Max. output current	
of the feedback inputs	1,5 mA
Max cable resistance of	
the feedback inputs	600 Ω

Permitted ambient conditions

Operating temperature	0…45 °C
Transport and storage temperature	–25…70 °C
Humidity	10…90 % rh no condensation

Standards, guidelines and directives

CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-3/ EN 61000-6-4

Additional information

Fitting instructions	MV 505538
Wiring diagram	A04511

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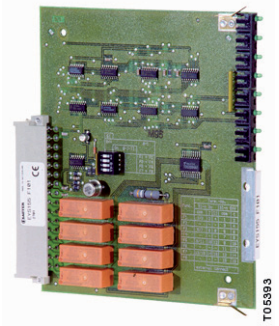
EYS155: nova106, Function card for 0-I/0-I-II commands

This card allows independent switching of up to eight single- or four double-stage actuators. The switching stage for each function can be chosen via the S1 block of switches. The digital outputs are via relays.

Application: for controlling single- and double-stage actuators; without feedback



Products

Type	Description	Weight (kg)
EYS155F001	Function card for 0-I/0-I-II commands	0,18
EYS155F101	Function card for 0-I/0-I-II commands, with LED	0,18

Technical data

Electrical supply

Power supply	from rack
Max. current	
EYS155F001	170 mA
EYS155F101	185 mA
Power loss, max.	approx. 6,2 W

Inputs / Outputs

Number of inputs	8x 0-I
	4x 0-I-II
Type of outputs	Relay
Loading of outputs	42 V/2 A ≅

Permitted ambient conditions

Operating temperature	0…45 °C
Transport and storage temperature	–25…70 °C
Humidity	10…90 % rh no condensation

Standards, guidelines and directives

CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-3/ EN 61000-6-4

Additional information

Fitting instructions	MV 505539
Wiring diagram	A04509

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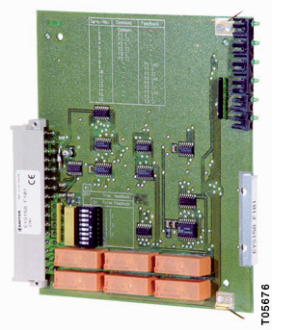
EYS158: nova106, Function card for 0-I-II command with feedback (FB)

This card allows the commands to be issued for levels 0-I-II and the corresponding feedback signal to be registered. The commands I and II can each be fed back either real via an FB input or simulated internally via the card. The feedback signal for 'local' is always received real. Command '0' must be derived from the software. The command outputs are effected via relays. Potential-free contacts, optocouplers or transistors with open collector can be connected to the inputs of the feedback sig-nals.

Application: for controlling double-stage actuators.



Products

Type	Description	Weight (kg)
EYS158F001	Function card for 0-I-II command with feedback	0,175
EYS158F101	Function card for 0-I-II command with feedback, with LED	0,175

Technical data

Electrical supply

Power supply	from rack
Max. current	
EYS158F001	150 mA
EYS158F101	163 mA
Power loss, max.	approx. 5 W

Inputs / Outputs

Number of inputs	3 (I 0-I-II command)
Type of outputs	Relay
Loading of outputs	42 V/2 A ≅
Type of feedback inputs	potential-free contacts
	optocoupler
	transistor (open collector)
Max. output current	
of the feedback inputs	1,5 mA
Max cable resistance of	
the feedback inputs	600 Ω

Permitted ambient conditions

Operating temperature	0…45 °C
Transport and storage temperature	–25…70 °C
Humidity	10…90 % rh no condensation

Standards, guidelines and directives

CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-3/ EN 61000-6-4

Additional information

Fitting instructions	MV 505539
Wiring diagram	A04618

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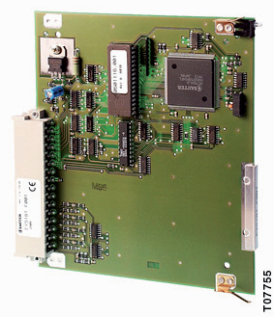
EYS181: nova106, E-max function card

The E-max (maximum demand) function enables an efficient system of energy management to be introduced. The idea behind such a system is not to exceed (over a certain period) a certain maximum level of consumption stipulated by the electricity supply company. This is attained by switching consumer groups on and off in accordance with predefined criteria.

The EYS181F001 performs the E-max function, i.e. from the registering of meter pulses to the switching off of loads via the round robin.

Application: energy management, cost management.



Products

Type	Description	Weight (kg)
EYS181F001	E-max function card	0,145

Technical data

Electrical supply

Power supply	from EYL106F001
Max. current	100 mA
Power loss, max.	approx. 1,2 W

Inputs / Outputs

Number of inputs	4 quantity counter and
	1 synchronisation.
Meter frequency, max.	15 Hz
Type of meter inputs	potential-free contacts
	optocoupler
	transistor (open collector)
Type of synchron'd inputs	Pulse (H / L)

Permitted ambient conditions

Operating temperature	0…45 °C
Transport and storage temperature	–25…70 °C
Humidity	10…90 % rh no condensation

Standards, guidelines and directives

CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-4
	EN 55022 classe A

Additional information

Fitting instructions	MV 505583
Wiring diagram	A07761

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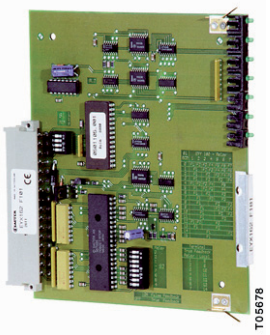
EYX162: nova106, DO driver card

The driver card forms the interface to the novaLink160 field module. It communicates with the field module and supplies it with power. The connection to the field module is effected via novaLink. The encoding of the 16 different combinations of switching levels is effected on the card.

Application: for controlling the novaLink160 field module.



Products

Type	Description	Weight (kg)
EYX162F101	DO driver card	0,17

Technical data

Electrical supply

Power supply	from rack
Max. current	220 mA
Power loss, max.	approx. 2,7 W

Inputs / Outputs

Field telegram novaLink	25 m max. (2 nF / 3 Ω)
	twisted and shielded,
	both ends to earth
Number of outputs novaLink	1x EYY160 ≙ 7x 0-I

Permitted ambient conditions

Operating temperature	0…45 °C
Transport and storage temperature	–25…70 °C
Humidity	10…90 % rh no condensation

Standards, guidelines and directives

CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-3
	EN 61000-6-4

Additional information

Fitting instructions	MV 505540
Wiring diagram	A04629

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EYY160: novaLink160, DO field module

The novaLink160 field module allows seven switching levels to be issued. Sixteen different combinations can be assigned for each function. The switching commands range from 7* 0-I to 1* 0 VI. The novaLink160 unit is employed wherever a switching power of 230 V~ is required. It is used as an 'intelligent terminal' and, therefore, reduces the time spent on wiring when fitted to a panel. The unit has no optical indicator elements or manual input elements. To activate the unit, the EYX162 driver card is required.

Application: for decentralised switching of actuators, e.g. contactors and motors, up to 250 V~, 2A

Products

Type	Description	Weight (kg)
EYY160F001	DO field module	0,22

Technical data

Electrical supply

Power supply	via novaLink
Power loss, max.	approx. 1,75 W

Inputs / Outputs

Control: driver card	EYX162F101
Field telegram novaLink	25 m max. (2 nF / 3 Ω)
	twisted and shielded,
	both ends to earth
Number of outputs	7x 0-I
Switching capacity	250 V~/2A

Permitted ambient conditions

Operating temperature	0…45 °C
Transport and storage temperature	–25…70 °C
Humidity	10…90 % rh no condensation

Standards, guidelines and directives

Environmental class	IEC 60721 3K3
CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-3/ EN 61000-6-4

Additional information

Fitting instructions	MV 505392
Wiring diagram	A04621
Dimension Drawing	M07765

Accessories

Type	Description
0367841001	Terminal cover
0374522001	Front insert, printable, comprising: 1 sheet to 6 front inserts, perforated, for EYY160F001
0367958001	Set of front inserts, not printable, comprising: 4 front inserts, single, for EYY160F001 25 front inserts, single, for EYY164F202 6 front inserts, single, for EYY165F202 10 front inserts, single, for EYY170F202 15 front inserts, single, for EYY174F101
0367961001	Set of adhesive labels comprising: 1 sheet to 20 labels for EYY160F001 9 sheets to 80 labels for EYY164F202 2 sheets to 40 labels for EYY165F202 4 sheets to 100 labels for EYY170F202 11 sheets to 64 labels for EYY174F1011
0374452001	Adhesive labels comprising: 10 sheets to 20 labels for EYY160F001

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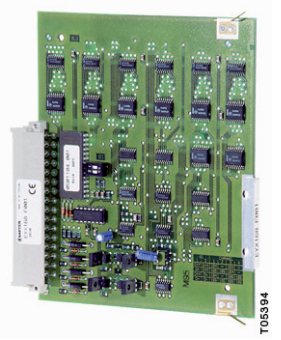
EYX168: nova106, DO driver card

The driver card forms the interface to the field modules. It uses a special field telegram to transmit switching commands and receive the feedback signal. Connection is effected via novaLink; the distance between card and field module should not exceed 100 m.

Application: for activating the moduLink164 and moduLink165 external field modules



Products

Type	Description	Weight (kg)
EYX168F001	DO driver card	0,175

Technical data

Electrical supply

Power supply	from rack
Power loss, max.	220 mA
Electrical supply	approx. 2,6 W

Execution

Factory setting	all switches set to "Off"

Inputs / Outputs

Field telegram novaLink		100 m max. (5 nF / 7,5 Ω)
		twisted and shielded,
		both ends to earth
Number of outputs	moduLink164	2x EY-FM164 ≙ 8x 0-I
	moduLink165	4x EY-FM165 ≙ 8x 0-I-II

Permitted ambient conditions

Operating temperature	0…45 °C
Transport and storage temperature	–25…70 °C
Humidity	10…90 % rh no condensation

Standards, guidelines and directives

CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-3/ EN 61000-6-4

Additional information

Fitting instructions	MV 505540
Wiring diagram	A04641

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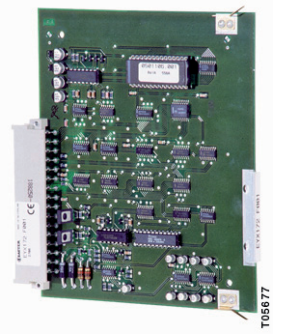
EYX172: nova106, Driver card for AO 0…10 V

The driver card forms the interface to two moduLink170 field modules. It uses a special field telegram to transmit positioning commands to, and receive feedback signals from, the external units. Connection to the field module is effected via novaLink; the minimum distance between card and unit should be 100 m.

Application: for activating the moduLink170 external field modules



Products

Type	Description	Weight (kg)
EYX172F001	Driver card for AO 0…10 V	0,17

Technical data

Electrical supply

Power supply	from rack
Power loss, max.	120 mA
Electrical supply	approx. 0,1 W

Inputs / Outputs

Field telegram novaLink	100 m max. (5 nF / 7,5 Ω)
	twisted and shielded,
	both ends to earth
Number of outputs moduLink170	2x EY-FM170 ≙ 8x 0…10 V

Permitted ambient conditions

Operating temperature	0…45 °C
Transport and storage temperature	–25…70 °C
Humidity	10…90 % rh no condensation

Standards, guidelines and directives

CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-3/ EN 61000-6-4

Additional information

Fitting instructions	MV 505541
Wiring diagram	A04676

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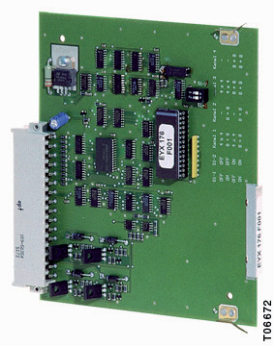
EYX176: nova106, Driver card for field module (digital input)

The driver card forms the interface to four moduLink174 field modules. It uses a special field telegram to effect the receipt of the information supplied by the field modules.
The field modules are connected via novaLink; the distance should be no more than 100 metres.

Application: for registering DI information via the external moduLink174 field modules



Products

Type	Description	Slots	Weight (kg)
EYX176F001	DI driver card	1 to 7	0.3

Technical Data

Electric supply

Connectable field module:	
moduLink174	4× EYY174F101
Number of resultant	
Digital inputs	64
Power supply	from rack
Max. current	600 mA
Power loss, max.	approx. 7.2 W
Field telegram novaLink	100 m max. (5 nF / 7.5 Ω) twisted and
	shielded both ends to earth

Permitted ambient conditions

Operating temperature	0...45 °C
Transport and storage temperature	–25...70 °C
Humidity	10...90 % rh no condensation

Standards, guidelines and directives

CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-3/ EN 61000-6-4

Additional information

Fitting instructions	MV 505541
Wiring diagram	A05962

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EYZ101: EY3600-UPS, UPS for compact AS and field modules

In the event of a mains power failure, the EY3600-UPS (uninterruptible power supply) guarantees an uninterrupted change-over to battery mode for a compact AS. At the same time, the UPS provides a back-up power supply of 24 V~ for the moduLink164, moduLink165 and moduLink170 field modules.
There are four diagnostic LEDs (Power, AS UPS, EYY UPS and Fault) and two information outputs (for battery mode and alarm).

Products

Type	Description	Weight (kg)
EYZ101F001	EY3600-UPS	0,1

Technical data

Electrical supply

Max. charge current	100 mA from 12 V/AS1 or 24 V~
Charge voltage	13,5 V
Max. charge time for 6 Ah battery	72 h
Cuts out	< 9,8 V
Back-up power supply	from 11,9 V
Information outputs	Battery mode, alarm

Permitted ambient conditions

Operating temperature	0...45 °C
Transport and storage temperature	-25...70 °C
Humidity	10...90 % rh no condensation
Accumulator specifications	Lead storage battery 12 V / 6,0 Ah

Standards, guidelines and directives

CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-3/ EN 61000-6-4

Additional information

Fitting instructions	MV 505578
Wiring diagram	A07766
Dimension drawing	M02181

Accessories

Type	Description
0367887001*	Lead storage battery12 V / 6 Ah

* Dimension drawing or wiring diagram are available under the **same** number

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EYZ260: nova260, Signal converter (Ni200/Ni1000 to 0...10 V)

The Ni200/Ni1000 to 0...10 V signal converter, which has two independent functions, enables connec-tion to the AS measuring inputs (0...10 V) of the automation stations nova210, nova215, nova220, nova225, nova230 or nova106 (EYS124F001).

Having one bridge per function, the signal converter is encodable (bridge made Ni200 to 0...10 V; bridge cut Ni1000 to 0...10 V).

To be able to obtain an accurate measurement, a clocked reference voltage of 1 V is required; this can be tapped from the AS (potentiometer voltage).

Products

Type	Description	Weight (kg)
EYZ260F001	Signal converter Ni200 / Ni1000 zu 0…10 V	0,12

Technical data

Electrical supply

Power supply	24 V~/UPS or 12 V=/AS
Power loss max.	1,8 W

Inputs / Outputs

Number of inputs		2
Activation:		
Automation station	nova210	EYL210F..
	nova215	EYL215F001
	nova220	EYL220F..
	nova225	EYL225F001
	nova106	EYS124F001
Measure area		–50…150 °C

Permitted ambient conditions

Operating temperature	0…45 °C
Transport and storage temperature	–25…70 °C
Humidity	10…90 % rh no condensation

Standards, guidelines and directives

Ambient class	IEC 60721 3K3
CE conformity as per	
EMC directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-3/ EN 61000-6-4

Additional information

Fitting instructions	MV 505557
Wiring diagram	A07588
Dimension drawing	M07764

Accessories

Type	Description
0374307001	Terminal cover
0367974001	Set of adhesive labels comprising: 2 sheets to 40 labels for EYZ260 7 sheets to 60 labels for EYZ264/25 5 sheets to 100 labels for EYZ270

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EYZ264: nova264, Field module (AUTO-0-1)

In field module (AUTO), the manual operating unit allows the 0-I switching operations that come from the AS to be passed on directly. When the slide switch is moved from automatic mode to manual operation, 0/I can be switched with higher priority at the output. Prime priority, however, is assigned to the priority function which is controlled with a potential-free contact. The required output status is encoded by means of a DIL switch provided for each function. The 'I' and 'no automatic' states are available as feedback signals for each function. The current switching status of the output function is indicated by green LEDs on the front panel. A yellow LED indicates the power supply to the equipment (Power).

Products

Type	Description	Weight (kg)
EYZ264F201	Field module	0,4

Technical data

Electrical supply

Power supply	25 V AC/DC
Power consumption	< 2 VA
Power loss max.	approx. 2 W
Number of functions	4 pieces (0-I)

Permitted ambient conditions

Operating temperature	0...45 °C
Storage and transport temerature	-25...70 °C
Humidity	10...90 % rh no condensation

Installation

Dimensions H × W × D (mm)	90 × 105 × 54
Mounting	On top-hat rail acc. to
	EN 60715 (35 mm × 7,5 mm)
Labelling	on the paper insert under
	the transparent front plate

Standards, guidelines and directives

Ambient class	IP 20
Environmental class	IEC 60721 3K3
CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-4
	EN 55022 class A

Additional information

Fitting instructions	MV 505223
Wiring diagram	A01126
Dimension drawing	M07765

Accessories

Type	Description
0367841001	Terminal cover (standard)
0367962001	Set of front inserts, not printable, comprising 10 front inserts for EYZ264 5 front inserts for EYZ265 10 front inserts for EYZ270
0367974001	Set of adhesive labels comprising 2 sheets à 40 labels for EYZ260 7 sheets à 60 labels for EYZ264/25 5 sheets à 100 labels for EYZ270
0367873006	Front insert, printable 20 sheets à 6 labels for EYZ264

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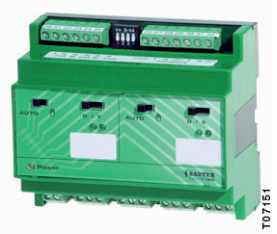
EYZ265: nova265, Field module (AUTO-0-I-II)

In automatic mode (AUTO), the manual operating unit allows the 0-I-II switching operations that come from the AS to be passed on directly. When the slide switch is moved from automatic mode to manual operation, 0/I/II can be switched with higher priority at the output. Prime priority, however, is assigned to the priority function which is controlled with a potential-free contact. The required priority output status is encoded by means of two DIL switches provided for each function. The „I“, „II“, and „manual“ states are available as feedback messages for each function. The current switching status of the output function is indicated by green LEDs on the front panel. A yellow LED indicates voltage supply to the equipment (Power).



Products

Type	Description	Weight (kg)
EYZ265F201	Field module	0.4

Technical data

Electrical supply

Power supply	24 V ≅
Power consumption	< 2 VA
Power loss, max.	approx. 2 W

Outputs

Number of outputs	2 x 0-I-II

Permitted ambient conditions

Operating temperature	0…45 °C
Transport and storage temperature	–25…70 °C
Humidity	10…90 % rh no condensation

Installation

Dimensions H x W x D (mm)	90 x 105 x 54
Weight (kg)	0.4
Mounting	on top-hat rail acc. to
	EN 60715 (35 mm x 7,5 mm)

Installation (continuation)

Labelling	on the paper insert under
	the transparent front plate

Standards, guidelines and directives

Type of protection	IP 20
Environmental class	3K3 (IEC 60721)
CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-4
	EN 55022 class A

Additional information

Fitting instructions	MV 505223
Wiring diagram	A01128
Dimension drawing	M07765

Accessories

Type	Description
0367841001	Terminal cover (standard)
0367962001	Set of front inserts, not printable, comprising 10 front inserts for EYZ264 5 front inserts for EYZ265 10 front inserts for EYZ270
0367974001	Set of adhesive labels comprising 2 sheets to 40 labels for EYZ260 7 sheets to 60 labels for EYZ264/25 5 sheets to100 labels for EYZ270
0367873007	Front insert, printable 20 sheets to 6 labels for EYZ265

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EYZ270: nova270, Field module (0...10 V DC)

In automatic mode (AUTO), the manual operating unit allows the 0…10 V switching operations that come from the AS to be passed on directly. When the slide switch is moved from automatic mode to manual operation, the voltage value set at the potentiometer can be applied with higher priority at the output. Prime priority, however, is assigned to the priority function which is controlled with a potential-free contact. The required priority output condition is set by means of a separate trimmer for each function. The „no automatic“ status is available as feedback message for each function. A yellow LED indicates voltage supply to the equipment (Power).

Products

Type	Description	Weight (kg)
EYZ270F201	Field module 0…10 V DC	0,4

Technical data

Electrical supply

Power supply	24 V ≅
Power consumption	< 2 VA
Power loss, max.	approx. 2 W

Outputs

Number of outputs	4x 0…10 V

Permitted ambient conditions

Operating temperature	0…45 °C
Transport and storage temperature	–25…70 °C
Humidity	10…90 % rh no condensation

Installation

Dimensions H x W x D (mm)	90 x 105 x 54
Weight (kg)	0,4
Mounting	on top-hat rail acc. To EN 60715
Labelling	on the paper insert under the transparent front plate

Standards, guidelines and directives

Type of protection	IP 20
Environmental class	IEC 60721 3K3
CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-3/ EN 61000-6-4

Additional information

Fitting instructions	MV 505223
Wiring diagram	A01127
Dimension drawing	M07765

Accessories

Type	Description
0367841001	Terminal cover
0367962001	Set of front inserts, not printable, comprising 10 front inserts for EYZ264 5 front inserts for EYZ265 10 front inserts for EYZ270
0367974001	Set of adhesive labels comprising 2 sheets to 40 labels for EYZ260 7 sheets to 60 labels for EYZ264/25 5 sheets to 100 labels for EYZ270
0367873008	Front insert, printable 20 sheets to 6 labels for EYZ270

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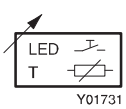
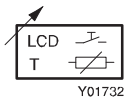
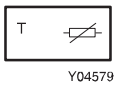
EYB250…256: ecos, Room operating unit for individual-room controllers

Used as a temperature sensor and for operating an individual-room controller (ecos EYE200 to EYE206, as well as EY-RC208,209).

Housing (76 x 76 mm) of fire-retardant thermoplastic, pure white (RAL 9010). Depending on the type: with adjuster for setpoint correction, with a button and 3 LEDs for 3 room-occupancy levels, with a button and 4 LEDs for 4 fan speeds or with 4 buttons and LCD for setpoint correction, display of actual value, room occupancy, fan speeds, window contacts and dew-point alarm. Terminals 3 × 1,5 mm². Cable inlet at rear. Standard version: with black baseplate.







Products

Type	Setpoint correction	Room occupancy	Ventilator speeds	Display	Supply	Weight (kg)
EYB250F201	–	–	–	–	from ecos 2	0.1
EYB251F201	specific ± 2 K *	–	–	–	from ecos 2	0.1
EYB252F201	specific ± 2 K *	0 – ½ – 1	–	3 LED	from ecos 2	0.1
EYB253F201	specific ± 2 K *	–	auto-1-2-3	4 LED	from ecos 2	0.1
EYB254F201	specific ± 2 K *	0 – ½ – 1	auto-1-2-3	7 LED	from ecos 2	0.1
EYB256F101	specific ± 2 K *	0 – 1	0-auto-1-2-3	LCD	from ecos 2	0.1

*) parameterisable by linear value correction MFA10

Variants (as F ..1 but with white baseplate)

EYB250F202
EYB251F202
EYB252F202
EYB253F202
EYB254F202
EYB256F102

Technical data

Electrical supply

Power supply	from ecos 2

Execution

Integrated temperature sensor	
Measuring range	0…40 °C
Resolution	0,1 K
Time constant	15 min.
Funcitonality:	
Range displayed. (LCD)	10…35 °C
Setpoint indicator	0…10 V = 16…25,5°C (via terminal 4)
Setpoint correction	variable
Resolution / Measuring range	0,1 K / ≤ 0,1 K
Connection	
Cable	3-wire (4-wire)
max. length of cable	100 m
LED for room occupancy	0 yellow; ½-1 green
LED for fan speeds	0 yellow; 3-2-1 green
Resolution / Measuring range	0,1 K / ≤ 0,1 K

Permitted ambient conditions

Operating temperature	0…45 °C
Humidity	< 85 % rh no condensation

Standards, guidelines and directives

Type of protection	IP 30 (EN 60529)
Protection class	III
Ambient class	3K3 (IEC 60721)
CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-3/ EN 61000-6-4

Additional information

Fitting instructions	MV 505448
EYB256	MV 505741
Wiring diagram	A07045 / A13382
Dimension drawing	M07634
Material declaration	MD 94.250

For accessories see next page >>>

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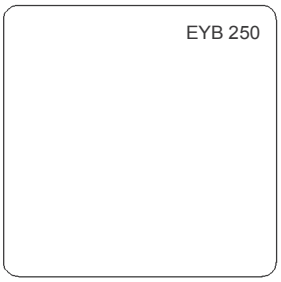
Accessories

Type	Description
0303124000*	Recessed junction box
0313347001*	Intermediate cover plate (RAL 9010)

*) Dimension drawing or wiring diagram are available under the **same** number

Front view



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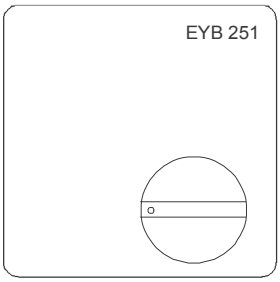

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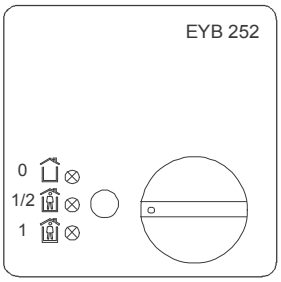

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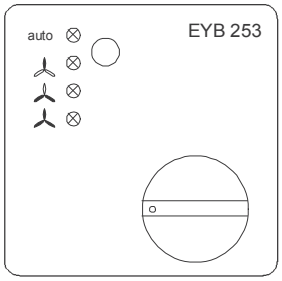

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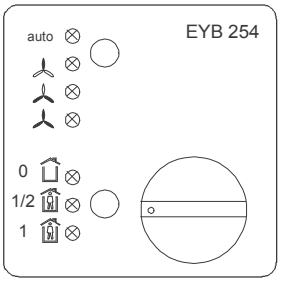

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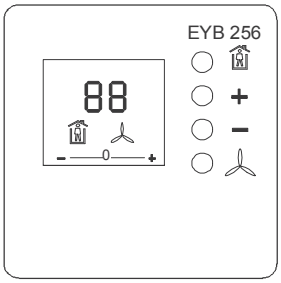

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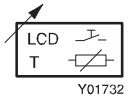
EYB270: ecos, Room operating panel for intelligent unitary controllers

For use as a temperature sensor and for operating an intelligent unitary controller of the type ecos EYE 200…206, as well as EY-RC208,209. Front plate (220 x 82 mm) of aluminium, with 12 buttons and clear LCD showing setpoint correction, display of actual value, room occupancy, fan speeds, window contacts and dew-point alert. Plug-in cable terminals (3 × 1,5 mm²). The button symbols can be adapted to the project by using insertable labels. The F101 variant has a yellow, permanently-lit LED to illuminate the lighting buttons, plus an additional cable terminal for the LCD setpoint indicator.



Products

Type	Continuous LED	Setpoint indicator	Room occupancy	Fan speeds	Power	Weight (kg)
EYB270F101	yes	yes	0 / 1	0-auto-1-2-3	via EYE	0,1

Technical data

Electrical supply

Power supply	from ecos 2

Execution

Integrated temperature sensor	
Measuring range	0…40 °C
Time constant	13 min.
Functionality	
Temperature sensor. (LCD)	10…35 °C
Setpoint indication (LCD)	0…10 V = 16…25,5°C (via terminal4)
Setpoint correction	variable
Resolution indication / measuring	0,1 K / ≤ 0,1 K
Connection	
Cable	3-wire (4-wire)
Max. length of cable	100 m

Permitted ambient conditions

Operating temperature	0…45 °C
Humidity	< 85 % rh no condensation

Standards, guidelines and directives

Type of protection	IP 30 (EN 60529)
Protection class	III
Environmental class	IEC 60721 3K3
CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-3/ EN 61000-6-4

Additional information

Fitting instructions	MV 505660
Wiring diagram	A10382
Dimension drawing	M09475

Accessories

Type	Description
0382126001*	Recessed junction box (three-way)

*) Dimension drawing or wiring diagram are available under the **same** number

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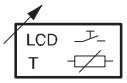
EYB271: ecos, Room operating panel for intelligent unitary controllers

Used as a temperature sensor and for operating one of the ecos EYE200…206, as well as EY-RC208,209 intelligent unitary controllers. Display of actual value or setpoint. buttons for: setpoint correction; presence; fan control; switching the lighting circuits; and controlling the window blinds.

Front plate (152 x 82 mm) of aluminium with up to 10 buttons and LCD for: setpoint correction; actual value; room occupancy; ventilator speeds; window contacts; and dew-point warning. Plug-in connection terminals for wires of up to 1,5 mm² (rigid) or 1,0 mm² (flexible). The key symbols can be adapted to a particular project by using label inserts. LED can be activated for annotating the light switches. Connection terminal for setpoint indicator in the display. Versions with aluminium buttons (F7 . 2D) available.



Products

Type	Setpoint correct.	Room occupancy	Fan speeds	Switch contacts	Power	Weight (kg)
EYB271F712D	typical ± 3 K *	No	No	–	via ecos 2	0.12
EYB271F722D	typical ± 3 K *	0/1	0-auto-1-2-3	–	via ecos 2	0.12
EYB271F732D	typical ± 3 K *	0/1	0-auto-1-2-3	2	via ecos 2	0.12
EYB271F742D	typical ± 3 K *	0/1	0-auto-1-2-3	4	via ecos 2	0.12
EYB271F752D	typical ± 3 K *	0/1	0-auto-1-2-3	6	via ecos 2	0.12

*) parameterised by linear value correction MFA10

Technical data

Electrical supply

Power supply	from ecos 2

Execution

Time constant	13 min.
Functionality	
Temperature sensor (LCD)	10…35 °C
Setpoint indication (LCD)	0…10 V = 16…25,5°C (via terminals)
Setpoint correction	variable
Resolution indication / measuring	0,1 K / ≤ 0,1 K

Permitted ambient conditions

Operating temperature	0…45 °C
Humidity	< 85 %rF no condensation

Execution

Connection	
Cable	3 (4) / 7-wire
Max. length of cable	100 m
Switch contact (via X2/.)	
Switching power	1…24 V
Switching current	100 mA
Switch raiting max.	1 W
(ohmic load)	

For more technical data and documentation see next page >>>

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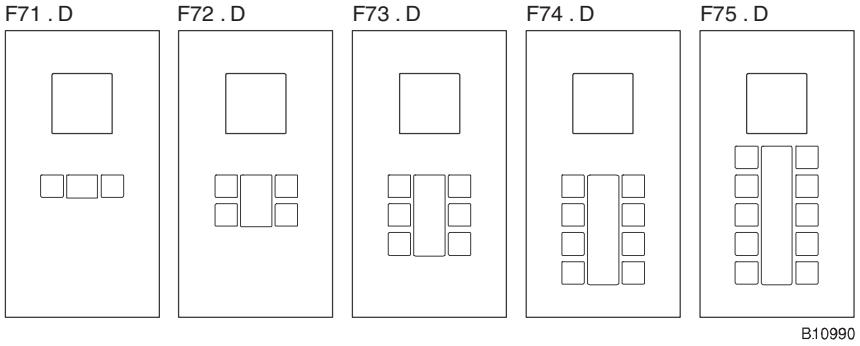
Technical data (continuation)

Standards, guidelines, directives	
Type of protection	IP 30 (EN 60529)
Protection class	III
Environmental class	3K3 (IEC 60721)
CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-3/ EN 61000-6-4

Additional information	
Fitting instructions	MV 506096
Wiring diagram	A10461
Dimensions drawing	M10464

Front view



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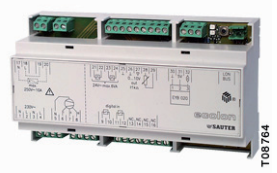
EYR020: ecolon, DDC Individual-room controller

For temperature control of individual rooms according to occupancy. For activating thermal drives (for heating/cooling) and a ventilator. Using the EYB020 operating unit, every function can be selected or viewed from the room.
Functions: window contacts, presence signal, ventilator control, dew-point monitoring. Suitable for connecting to a building management system via LON data interface. Compact unit for fitting in rows (DIN 43880) onto 35mm top-hat rail as per EN 60715. Housing of fire-retardant thermoplastic, grey (RAL 7035). Terminals for up to 2,5 mm².



Products

Type	Description	Weight (kg)
EYR020F001	DDC individual-room controller with communication capability	0,6

Technical data

Electrical supply

Power supply	230 V~ ± 10%, 50/60 Hz
Power consumption	12 VA
Network variable	
As per LONMARK	#8020 FCU
Customised	on request

Inputs / Outputs

for window contacts	ON / OFF
for occupancy detector	ON / OFF
or dew-point monitor	
for temperature sensor 1)	NTC 10
for operating unit EYB020	Temperature sensor
	Setpoint correction +/–
	Presence button
Triac switched output 2)	2x pulse-pauses, period 4 min.
	for heating / cooling (24 V~;1A)
	(24 V AC max. 1A)
Relay switched output	3x contacts (250 V~, 2A)
	1x contact (250 V~, 10A)
Control signal 3)	0-10 V optional

Permitted ambient conditions

Operating temperature	0…45 °C
Humidity	< 85 % rh no condensation

Standards, guidelines and directives

Ambient class	IP 20
CE conformity as per	
Directive 2006/95/EC	EN 60730
EMC Directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-3
	EN 61000-6-4

Additional information

Wiring diagram	MV 505643
Dimension drawing	A07863
Fitting instructions	M08714

1) Optional instead of a room operating unit

2) The transformer integrated in the unit supplies 6 VA for operating a thermal drive for either a heating or a cooling valve. In conjunction with external auxiliary energy supply (24 V a.c.), four thermal drives can be operated (4 x heating, 4 x cooling, but not simultaneously).

3) To external ventilator control via power supply unit

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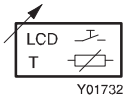
EYB017…020: ecolon, Room operating unit

For use as a temperature sensor for the EYR020 room-temperature controller with communication capability. For setting the setpoint correction, operating mode and ventilator speed. Housing (76 x 76 mm) of fire-retardant thermoplastic, pure white (RAL 9010). Black baseplate of thermoplastic, with snap-on mechanism for the housing. Presence button for choosing the operating mode: Presence and Stand-by. Push-button for 3-speed ventilator control: 0-auto-1-2-3. Two buttons (+/–) for setpoint correction, with parameterisable range of influence. LCD with symbols for anti-frost, window contacts and dew point. Terminals 3 x 1,5 mm². Cable inlet from rear.



Products

Type	Description	Power	Weight (kg)
EYB017F001	Buttons: + / –	Via EYR020	0,1
EYB018F001	Buttons: +, –, Ventilator	Via EYR020	0,1
EYB019F001	Buttons: +, –, Presence	Via EYR020	0,1
EYB020F001	Buttons: +, –, Presence, Ventilator	Via EYR020	0,1

Technical data

Display

Resolution	0,1 K
Setting range for setpoint correction:-	
Basic setting	± 2,5 K
Max. range	± 3 K
Range of measurement and display	10...35 °C
Time constant	15 min

Permitted ambient conditions

Operating temperature	0...45 °C
Humidity	< 85 % rh no condensation

Standards, guidelines and directives

Type of protection	IP 30
Protection class	III
CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-3/ EN 61000-6-4

Additional information

Fitting instructions	MV 505642
Wiring diagram	A10003
Dimension drawing	M07634

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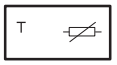
EYB021: ecolon, Room operating unit for individual-room controllers

Used as a temperature sensor and for operating one of the ecolon EYR020.
Display of actual value, buttons for: setpoint correction; presence; fan control; switching the lighting circuits; and controlling the window blinds.
Front plate (152 x 82 mm) of aluminium with up to 10 buttons and LCD for: setpoint correction; actual value; room occupancy; ventilator speeds; window contacts; and dew-point warning. Plug-in connection terminals for wires of up to 1,5 mm² (rigid) or 1,0 mm² (flexible). The key symbols can be adapted to a particular project by using label inserts. LED can be activated for annotating the light switches. Connection terminal for setpoint indicator in the display.



Y04579

Products

Type	Description	Power	Weight (kg)
Versions with aluminium buttons F7 . 2 D			
EYB021F712D	Buttons: +/–	via EYR	0,12
EYB021F722D	Buttons: +, –, Presence, Ventilator	via EYR	0,12
EYB021F732D	Buttons: +/–/ Presence, Ventilator /2 pot. free Buttons	via EYR	0,12
EYB021F742D	Buttons: +/–/ Presence, Ventilator /4 pot. free Buttons	via EYR	0,12
EYB021F752D	Buttons: +/–/ Presence, Ventilator /6 pot. free Buttons	via EYR	0,12

Technical data

Display

Resolution	0,1 K
Setting range of setpoint correction	
Basic setting	± 2,5 K
max. range	± 3 K
Setting- and display-range	10...35 °C
Time constant	15 min
Switch contact (via X2/. X3/.)	
Switching power	1...24 V
Switching current	100 mA
Switch rating max	1 W
(ohmic load)	

Permitted ambient conditions

Operating temperature	0...45 °C
Humidity	< 85 % rh no condensation

Standards, guidelines and directives

Type of protection	IP 30
Protection class	III
CE conformity as per	
EMC directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-3/ EN 61000-6-4

Additional information

Fitting instructions	MV 506096
Wiring diagram	A10466
Dimension drawing	M10464

Accessories

Type	Description
Variants as F7 . 2, but with membrane keypad	
EYB021F711D	
EYB021F721D	
EYB021F731D	
EYB021F741D	
EYB021F751D	

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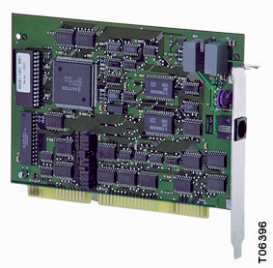
EYS290: novaNet290, ISA bus controller

The novaNet290 controller is used for coupling a PC to the EY3600 novaNet, for which it requires an ISA-bus slot. The telegrams are exchanged via a dual-port RAM between novaNet and the superior visualisation and management level. The RAM also serves as a buffer and enables telegrams to be stored temporarily until they are ready for processing. A watchdog monitors the status of the controller and resets it in the event of a malfunction. Connection to the novaNet is effected via an RJ-11 (6/4) connector.



Products

Type	Description	Weight (kg)
EYS290F001	ISA bus controller	0,15

Technical data

Electrical supply

Power supply	from ISA-Bus: +5 V / 12 V
Max. power consumption	4 VA ab +5 V-supply
Power loss max.	approx. 4 W

Interfaces, communication

AS-network/novaNet	1× RJ-11 socket (6/4)

Execution

Factory setting of jumper	Address C8000

Permitted ambient conditions

Operating temperature	0...45 °C
Transport and storage temperature	–25...70 °C
Humidity	10...90 % rh no condensation

Standards, guidelines and dirctives

Type of protection	I
CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-3/ EN 61000-6-4
	EN 55024

Additional information

Dimension drawing	M04893

Accessories

Type	Description
0367862001	Connecting cable PC-AS 1,5 m
0367862002	Connecting cable PC-AS 2,90 m
0367862003	Connecting cable PC-AS 6 m

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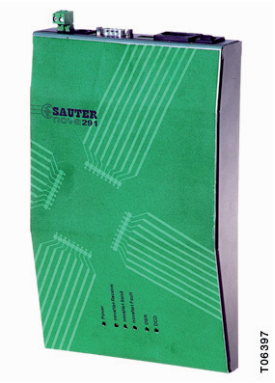
EYZ291: novaNet291, Router

The novaNet router EYZ291F001 is used to link the novaNet EY3600 bus to a (notebook) PC via the COM interface. The link is made either direct to the PC-COM interface, or via a dialling modem or any other switched or unswitched pair of devices that are RS232 compatible (ISDN adaptor, line driver, converter for optical fibre, dedicated-circuit modem, radio modem etc.).
The novaNet router has 1 MB of buffer for the link of the novaNet and the RS232 interface. Dialling is possible from above (remote access) and below (remote monitoring, i.e. automatic reporting of relevant events).



Products

Type	Description	Power supply	Weight (kg) (lb)
EYZ291F001	novaNet-router	230 V~	0,99 (2,2)
EYZ291F005	novaNet-router UL- listed	115 V~	0,99 (2,2)

Technical data

Electrical supply

Power supply	
EYZ291F001	230 V~, 50/60 Hz
EYZ291F005	115 V~, 50/60 Hz
Max. current	10 VA
novaNet	1x a/b terminals
	1x RJ-11 socket
COM interface	DB9 plug as per DTE

Permitted ambient conditions

Operating temperature	0...45 °C (32...113°F)
Transport and storage temperature	-25...70 °C (-13...158°F)
Humidity	10...90 % rh no condensation

Standards, guidelines and directives

CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-3/ EN 61000-6-4
Agency USA/Canada	UL listed: UL 60950
EYZ291F005	CSA certified: C22.2 No 60950

Additional information

Fitting instructions	MV 505463
Wiring diagram	A06705
Dimension drawing	M06707

Accessories

Type	Description
0367862001	Connecting cable novaNet291 – AS 1,5 m (4,9 ft)
0367862002	Connecting cable novaNet291 – AS 2,9 m (9,5 ft)
0367862003	Connecting cable novaNet291 – AS 6 m (19,7 ft)
0386301001	Connecting cable EYZ291 – PC 3 m (9.8 ft)

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YYO300: novaNet291, OPC Server

The novaNet OPC Server for EY3600 is a driver with the standardised OPC interface (OPC = OLE for Process Control) for integrating Sauter EY3600 automation stations (AS) into a visualisation program (SCADA, HMI) with OPC client functionality.
The OPC server is designed in accordance with the OPC Data Access 2.0 (OPC DA 2.0) specifications. Data exchange – e.g. for status changes, switching commands, measured values, setpoints and HDB inquiries – is carried out via novaNet291 router with automation stations on the novaNet. Connection is effected either with the novaNet291 router direct at the serial port (EIA-232) or via modem for novaNet island mode. The driver software also includes an ActiveX component which enables the EY3600 AS time programmes to be visualised and parameterised easily, and can be integrated into the visualisation software.

Products

Type	Description	Languages
YYO300F010	novaNet OPC Server for EY3600	d, e, f

Accessories

Type	Description
EYZ291F001	novaNet291 Router; see PDS 96.691

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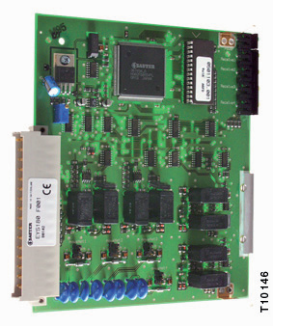
EYS180: novaNet180, Repeater

The novaNet180 repeater is used to expand the novaNet. The repeater is used whenever large distances or a high number of AS/PC network subscribers have to be connected to a network. It is fully 'transparent' and lets all telegrams through, regardless of the address or the direction. If a telegram arrives at one of the channels, it is forwarded to the three other channels. It has four channels with equal authorisation, three of which can also be used to transmit via optical fibre.



Products

Type	Description	Model	Weight (kg)
EYS180F001	novaNet repeater	B	0,16

Technical data

Electrical supply

Power supply	from EYL106 or EYI103
Max. current	400 mA
Rack capacity	
EYU108	3× EYS 180
EYU109	7× EYS 180
Average delay	approx. 20 µs for novaNet
	approx. 25 µs for LWL
novaNet	2-wire, twisted and shielded
Total capacitance	200 nF
Total resistance	300 Ω

Permitted ambient conditions

Operating temperature	0...45 °C
Transport and storage temperature	-25...70 °C
Humidity	10...90 % rh no condensation

Standards, guidelines and directives

CE conformity as per	
EMC directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-4
	EN 55022 class A

Additional information

Fitting instructions	MV 505542
Wiring diagram	A05959

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EYZ484: Current loop-/DL-converter

Current-loop converter: For maintaining the required transmission speed (max. 19200 baud with a line of 50 pF/m) over large distances to external peripherals. Areas of use (max. 4 km): For operating stations of EY2400-ProVi+; for EY2400-DA programs or printers that are remote from the data centre. DL converter: For running a dataline network with up to 100 substations (200 nF/300 Ω). Areas of use: For parameterising substations (islands) via DL (essential for EY2400-ecos/ecu).

Products

Type	Description	Power	Weight (kg)
EYZ484F001	Current-lLoop-/DL-converter	230 V~	0,4

Technical data

Electrical supply

Power supply	230 V 50/60 Hz
Power consumption	5 VA
V.24 distance	max. 15 m
EY2400 – data line	max. 4 m
Current-loop distance	4 km

Installation

Dimensions W × H × D (mm)	103 × 178,5 × 43

Permitted ambient conditions

Operating temperature	0...45 °C
Transport and storage temperature	–25...70 °C
Humidity	10...90 % rh no condensation

Standards, guidelines and directives

Type of protection	IP 20

Additional information

Fitting instructions	MV 505258
Wiring diagram	A02182
Dimension drawing	M02181

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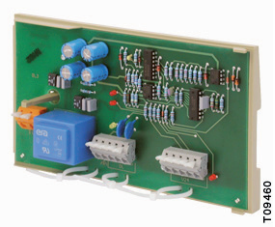
EYZ485: DL-Converter for V.24

The EYZ485 enables communication between a PC and a group of EY2400 substations via the serial PC port (e.g. for process visualisation). Communication is monitored by a handshake signal. The housing is of fire-retardant material.
DL converter: For running a dataline network with up to 100 substations (200 nF/300 Ω). Areas of use: For parameterising substations (islands) via DL (essential for EY2400-ecos/ecu).



Products

Type	Description	Weight (kg)
EYZ485F001	V.24 / EY2400 DL converter	0,4

Technical data

Electrical supply

Power supply	230 V~ , 50/60 Hz
Power consumption	5 VA
V.24 line length	max. 15 m
EY2400 – size of data line	max. 300 Ω / 200nF (4 km)

Installation

Dimensions H × W × D (mm)	103 × 178,5 × 43

Permitted ambient conditions

Operating temperature	0...45 °C
Storage and transport temperature	-25...70 °C
Humidity	10...90% rh no condensation

Standards, guidelines and directives

Type of protection	IP 20

Additional information

Fitting instructions	MV 505657
Wiring diagram	A09440
Dimension drawing	M02181

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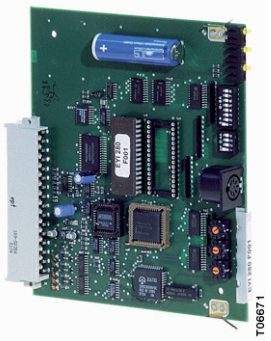
EYI280, 287: novaCom, Communication solution for non-Sauter systems

The novaCom enables non-Sauter automation systems to be linked to Sauter's EY3600 building management system either as a point-to-point link or as a bus system.
The novaCom is a combined hardware and firmware solution which does not need a PC with attendant software in order to run it. The transfers of the addresses are parameterised. The virtual EY3600 automation stations (AS) of the novaCom can be programmed with communication, DDC/PLC or time-program tasks.
Due to the modularity, configurations of between 504 and 4032 addresses are possible. If more addresses are needed, several novaComs can be run in the same novaNet, though the non-Sauter bus standards have to be taken into account.



Products

Type	Description
EYI280F010	Communications Interface Siemens 3964R/RK512
EYI280F020	Communications Interface Modbus RTU
EYI280F030	Communications Interface EIB (Instabus)
EYI280F040	Communications Interface Securiton (SecuriLan)
EYI280F050	Communications Interface ESSER (BMZ 8007/8008)
EYI280F060	Communications Interface Toshiba (Dataport 2)
EYI280F070	Communications Interface Toshiba (Dataport 2)
EYI280F090	Communications Interface CIB 8000
EYI280F100	Communications Interface Cerberus
EYI287F010	EY2400 gateway carte

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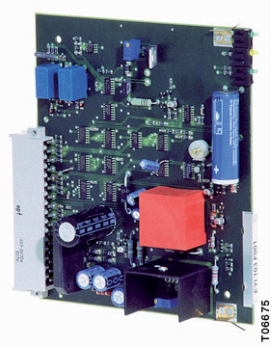
EYI103: novaCom, Power-supply and UPS card

This card provides all the power supplies, charges the back-up accumulator and ensures uninterrupted change-over to the back-up accumulator in the event of a power failure. At the same time, it provides the addressing logic for the memory and AS cards and the central real-time clock.



Products

Type	Description	Weight (kg)
EYI103F001	Power-supply and UPS card	0,25

Technical data

Electrical supply

Power supply	from rack
Max.charge current	150 mA
Max. current	150 mA
Accumulator specifications	12 V / 6,0 Ah lead battery

Permitted ambient conditions

Operating temperature	0...45 °C
Transport and storage temperature	-25...70 °C
Humidity	10...90 % rh no condensation

Standards, guidelines and directives

CE conformity as per	
EMC directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-3/ EN 61000-6-4

Additional information

Fitting instructions	MV 505500
Wiring diagram	A06764
Included in delivery of plug-in card	Battery fixing bracket
	Battery power cable

Accessories

Type	Description
0367887001*	12 V / 6 Ah lead battery

*) Dimension drawing or wiring diagram are available under the same number

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EYI280: novaCom, Communications interface

The communication interface card organises the telegram traffic with the non-Sauter system and transfers the values to one of the AS memory cards in accordance with a parameterised list.
The card has a microprocessor, one EPROM with the microprogram (which is dependent on the non-Sauter protocol) and a second for the user data (transfer table).

Products

Type	Description	Weight (kg)
EYI280F010	Communication interface Siemens 3964R/RK512	0,15
EYI280F020	Communication interface Modbus RTU	0,15
EYI280F030	Communication interface EIB (Instabus)	0,15
EYI280F040	Communication interface Securiton (SecuriLan)	0,15
EYI280F050	Communication interface ESSER (BMZ 8007/8008)	0,15
EYI280F060	Communication interface Toshiba (Dataport 2)	0,15
EYI280F070	Communication interface Zumtobel (Luxmate)	0,15
EYI280F090	Communication interface CIB 8000	0,15
EYI280F100	Communication interface Cerberus	0,15

Technical data

Electrical supply

Power supply	from rack
Max. current	150 mA

Permitted ambient conditions

Operating temperature	0...45 °C
Transport and storage temperature	–25...70 °C
Humidity	10...90 % rh no condensation

Standards, guidelines and directives

CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-3/ EN 61000-6-4

Additional information

Fitting instructions	MV 505501

Accessories

Type	Description
0367883002	5 EPROMs (empty) for EPROM protocol and EPROM user data

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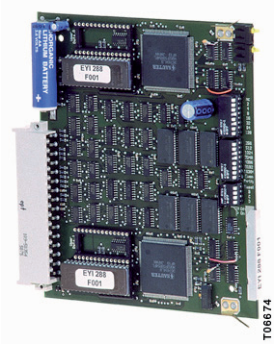
EYI288: novaCom, AS memory card

Each card has two ‘virtual’ EY3600 automation stations. The RAM range from MFA 0...256 is available for the transfer addresses. Subtracting the service addresses, 504 addresses per card can therefore be used. All MFAs not used as ‘transfer addresses’ can be employed for regulation and control functions. The functions of the HDB and of the time program can be used to the full.



Products

Type	Description	Weight (kg)
EYI288F001	AS memory card	0,2

Technical data

Electrical supply

Power supply	from rack
Max. current	150 mA

Permitted ambient conditions

Operating temperature	0…45 °C
Transport and storage temperature	-25...70 °C
Humidity	10...90 % rh no condensation

Standards, guidelines and directives

CE conformity as per	
EMC Directive 2004/108/EC	EN 61000-6-1/ EN 61000-6-2
	EN 61000-6-3/ EN 61000-6-4

Additional information

Fitting instructions	MV 505509
Wiring diagram	A06760

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Software management level

YZP410...431	novaPro Open Suite	PDS99.410
YZP510...514	novaPro Web	PDS99.420
YZP401	novaPro32	PDS99.401
EMS100, 200	Energy Management Solution	PDS99.600
EDL500	Energy Data Logger for EMS	PDS96.800
YZP450	novaPro Ebal	PDS99.450

CASE (Computer-Aided Sauter Engineering)

GZS100	CASE Suite	PDS90.900

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YZP410…431: novaPro Open Suite

Areas of application

Management level for complex installations and system integration. Enables horizontal integration of various different sub-processes in a building, provides an excellent window to the technical processes and makes information available – locally or worldwide – using the web technology that is included in the basic package.

Features

- More than 100 drivers for linking up to non-Sauter systems
- Linking to databases via ODBC, DDE, SQL, OPC
- Thanks to scalability and modularity, adaptable to the particular requirements of a plant
- Extended alarm management facility permits reporting of events via SMS, e-mail, fax or voice-mail
- Using the integrated time planner, it is possible to organise the duty personnel who are called out when an alarm occurs

Technical description

- Visualisation
- Scheduler
- Driver for EY3600 novaNet
- 5 WEB-Clients
- Report generator
- PLC functionality
- OPC-Server and OPC-Client

Products

Type	Description
YZP410F001	Basic package including 500 addresses
YZP410F101	Basic package including 2000 addresses
YZP410F201	Basic package including 5000 addresses
YZP410F301	Basic package including 65000 addresses

Options

Type	Description
YZP416F101	EY2400 driver
YZP416F201	EY3600 driver for Wizcon included in YZP 410 F . . .
YZP416F302	Driver, Johnson Controls System 91, N2 protocol
YZP416F303	Driver, Landis & Gyr PRV1 controller
YZP416F304	Driver, Landis & Gyr PRV2 controller
YZP416F307	OPC server, Lonworks throught LNS database
YZP416F308	OPC server, Lonworks native LNS/LCA
YZP416F311	Driver native BACnet (vpiwnbcn.dll)
YZP416F312	Driver Siemens SIMATIC S5 / S7, TCP/IP (vpiwnstp)
YZP417F101	Access for 10 web clients
YZP417F201	Access for 20 web clients
YZP417F301	Access for 100 web clients
YZP418F001	AAM (advanced alarm module) [1)]
YZP418F101	TTS (text to speech; voice-mail supplement to YZP 418 F001)
YZP419F101	Upgrade from 500 to 2000 addresses
YZP419F201	Upgrade from 2000 to 5000 addresses
YZP419F301	Upgrade from 5000 to 65000 addresses
YZP420F003	Version update: previous version to latest version
YZP420F004	Version update: older version to latest version
YZP420F999	novaPro Open Suite: latest CD
YZP421F001	novaScheduler Enterprise Edition

1) Alarms can be sent as SMS, e-mail or fax. Time planner for organising duty personnel

More options and accessories see next page >>>

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Options (continuation)

Type	Description
YZP421F002	novaPLC Upgrade from 500 to 65000 addresses
YZP422F001	Exchange parallel dongle by USB
YZP423F001	XL Report
YZP425F001	eToken PKI Client licence
YZP425F002	eToken USB 32K
YZP425F003	eToken USB 64K
YZP426F001	Biometry PID Enrolment licence
YZP426F002	Biometry PID Verification licence
YZP427F001	FPS Single Flat Silicon USB
YZP427F002	FPS Single Flat Optical USB Desktop
YZP427F003	FPS Single Flat Optical USB Kiosk
YZP427F004	FPS Single Flat Optical Ethernet
YZP427F005	FPS Single Flat Optical FBI USB
YZP427F006	FPS Single Flat/Rolled Optical FBI USB
YZP428F001	WizLogger
YZP429F001	WizAudit
YZP430F001	LDAPE Enrolment license
YZP430F002	LDAPV Verification license
YZP431F001	License PDA per web client (JVM)

Accessories

Type	Description
EYZ291	**novaNet 291 novaNet-Router**; see PDS 96.691
EYZ485	V.24/EY2400 DL converter; see PDS 96.210

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YZP510…514: novaPro Web

How energy efficiency is improved

The management level provides you with an overview of energy and media consumption and enables you to introduce targeted optimisation measures. The effectiveness of introduced measures is immediately verifiable thanks to historical data logging

Areas of application

Visualisation, control and optimisation of technical plant, for instance in building technology.

Features

- Management level for visualising and controlling complex MSR building technology plant (HVAC)
- Native BACnet client with object-oriented data structures
- Visualisation and operation via dynamic plant images or lists
- Plant images presented in tree structure for speedy navigation
- Powerful alarm management with variable alarm forwarding via SMS, e-mail, fax, voicemail
- Automatic trend curve definition in plant images and/or plant lists
- Dynamic plant list updating
- Alarm monitoring with entries in an event journal and operation protocol with alarm logging to alarm printer or file
- Hierarchical access protection
- Logging and filing of historical data with visualisation in trend curves
- Audit Trail with historical logging of all system-relevant interventions
- Centralised time switching and trend data logging for optimum energy management
- Product information on the monitored aggregates (spare parts details, data sheets, etc.) available online from the system

Technical description

- USB Dongle incl. 500 data points
- Web-Client, data point visualisation
- Storage of historical data, trend
- Event-Viewer, Pop-Up
- Sound, List-Viewer
- User management, data backup
- Direct printing, filter functions
- Timer programs, calendar, formula package
- Cyclical protocols, BACnet- Client
- OPC-Client, novaNet connection
- Maintenance messaging

Products

Type	Description
YZP510F010	novaPro Web; Basic package, Light, USB dongle incl.200 data points
YZP510F020	novaPro Web; Basic package, USB dongle, incl. 500 data points
YZP510F030	novaPro Web; Basic package, USB dongle, no editors, incl. 500 data points

Technical data

Hardware

Processor	Pentium III 1,8 GHz
	(recommended: 3 GHz or higher)
PC memory	256 MB RAM (512 MB recommended)
	for Vista: minimum 1 GB
Hard drive	at least 1,8 GB (depending on plant
	size; 9 GB recommended)
Graphic card memory	at least 32 MB
Monitor resolution	at least 800 x 600 Pixel (SVGA)
Graphics	VGA, SVGA and any other graphic card
	that supports the desktop of the
	operating system. Colour depth should
	be at least 256 colours
CD drive	for installation
Interfaces	1 mouse port
	2 serial interfaces (RS-232)
	1 parallel interface LPT for printer
	1 network connection
	1 USB port for dongle

Software

Operating system	Client: Microsoft Windows 2000,
	Windows XP, Windows Vista
	with current Servicepack, Server:
	Windows 2003 with current
	service pack
Web server	Internet Information Server
	(Microsoft IIS) Vers. 5.0. . IIS V7
	required for VISTA
Browser	any browser incorporating
	SUN JAVA plug-in in version
	1.5.0.60 or higher
Microsoft Internet Explorer	minimum Version 6.0 with
	current service pack

Options and accessories see next page >>>

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Options

Type	Description
YZP511F010	novaPro Web, 1 additional web client
YZP511F020	novaPro Web, Data point expansion by 100 addresses
YZP511F030	novaPro Web, Data point expansion by 1000 addresses
YZP511F040	novaPro Web, Data point expansion by 10000 addresses
YZP512F010	novaPro Web, Update to actual Version
YZP512F020	novaPro Web, Dongle, Change after warranty
YZP512F030	novaPro Web, License change (if no YZP510F…)
YZP512F999	novaPro Web, DVD actual
YZP513F010	novaPro Web, Data provision in acc.with HBGA 3.0
YZP513F020	novaPro Web, FDA audit trail
YZP513F030	novaPro Web, Event dispatcher (SMS, voice, fax, e-mail)
YZP513F040	novaPro Web, Reports in acc. with HBGA 3.0
YZP514F010	novaPro Web , Process link novaNet
YZP514F020	novaPro Web, Process link EY2400
YZP514F030	novaPro Web, Process link OPC (Client)
YZP514F040	novaPro Web, Process link MBus (Master)
YZP514F050	novaPro Web, Process link Modbus IP / RTU
YZP514F060	novaPro Web, Process link BACnet (Client)

Accessories

Type	Description
	Router
EYZ291F001	novaNet291; novaNet-Router
	DL-Converter
EYZ485F001	V.24/EY2400 DL-Converter
	Interface
EY-BU292F001	novaNet Ethernet-Interface for switch cabinet installation
EY-BU292F002	novaNet Ethernet-Interface as a table-top model

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YZP401: novaPro32

Usage areas

EY3600 novaPro32 is a Sauter visualisation software, tailor-made for the EY3600 nova- and EY-modulo 2 stations (novaNet), providing a maximum of cost efficiency.

Characteristics

- Comfortable operation thanks to the intuitive user surface
- Communication of alarms and reporting
- Dynamic address lists
- Linking of AS networks via dial-up connections (Routel islands)
- Networking of operation stations on IT networks
- Efficient project engineering through high integration with CASE-FBD or CASE Suite

Technical description

Portrayal and management of addresses (no address limitation) using:-

- Images in BMP, EMF, (WMF import)
- Address list
- Alarm list
- Protocols
- Log book
- Parameterising AS calendar/time programmes
- HDB/trend visualisation
- HDB server (export, archive)
- Password protection
- Remote access via modem etc.
- Network capability
- Remote monitoring (Routel)
- PC time programme (Scheduler)
- AS monitoring
- Alarms issued to line printer, files, e-mail etc.
- Alarms forwarded via various means of communication using the ‘Alert’ auxiliary program

Products

Type	Description	Language
YZP401F001	novaPro32 (for CASE FBD)	d; e; f
YZP401F601	novaPro32 for CASE Suite	d; e; f
YZP401F611	novaPro32 for CS Upgrade diskette to dongle licence	d; e; f
YZP401F699	novaPro32 for CASE Suite current CD (without licence)	d; e; f
GZF500F999	Current CD (without licence), novaPro32 (for CASE FDB)	d; e; f
Order information see PDS		

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EMS100, 200: Energy Management Solution

How energy efficiency is improved

SAUTER EMS puts you in the picture, enabling you to initiate the right measures without delay and keep energy consumption under control with active SAUTER EMS.

Areas of application

SAUTER EMS is a professional energy data management solution which can be installed as a hosting solution or locally as a non-hosting or system solution. SAUTER EMS enables central management of the main key energy figures for your plants and buildings. This system also supplies comparisons with key figures for similar objects (benchmarks). The measured data are analysed and presented in the form of standardised reports, or via the web portal that is integrated into the SAUTER EMS server. This web portal gives you an overview of all relevant energy data.

Features

- SAUTER EMS enables the central management and analysis of measurement data, key characteristics and reference variables.
- Measured data can be read in automatically via one or more SDCs (Software Data Connectors), or they can be entered manually via the web.
- Systems without a BMS can be integrated into the EMS via one or more EDL hardware modules (EDL = Energy Data Logger).
- Measurement data are analysed and presented in the form of predefined standard reports.
- As an option, the SAUTER EMS server enables seamless integration into facility management systems.
- Allocation of consumption and costs to internal cost centres and third-party tenants
- Optional connection of maintenance, CAFM and accounting systems
- Data acquisition, validation and automatic aggregation to daily, weekly, monthly and yearly values
- Time-dependent reference variables such as areas, operating and opening times, etc. are possible.
- Measured data, reference variables and key figures can be shown as time series in charts for any desired periods.
- Web-based graphic display of energy consumption including the basis for generating the Energy Performance Certificate
- Web-based graphic energy consumption comparisons with standardised benchmarks
- Alarm management
- As an option, reports can created directly via the report module integrated in the SAUTER EMS server or through other commercially available reporting tools.

Technical description

- Alarm management
- Data point management
- Management of measurement data
- Aggregation of measurement data (compression)
- Presentation of measured values
- Benchmarking
- Standard reporting (monthly/annual energy report)
- User administration (one client)
- Data export
- Configurable heating degree days
- One software data connector (SDC) for novaPro Open or EDL
- Five users (of which one user is for Service; when license is purchased)
- One user (for hosting solutions)
- Ten addresses for data acquisition
- With the hosting solution, the software maintenance contract is included in the licence costs
- With the EMS 420 F001 system solution, the software maintenance contract should be separately arranged. Duration: at least three years; this is then extended automatically every year by one year.

Products

Type	Description
EMS100F001	Basic system package including 10 addresses, 5 users (1 dedicated user for service) and 1 SDC for novaPro Open
EMS100F002	Basic system package including 10 addresses, 5 users (1 dedicated user for service) and 1 SDC for EDL
EMS100F003	Basic system package including 10 addresses, 5 users (1 dedicated user for service) and 1 SDC for novaPro
EMS100F004	Basic system package including 10 addresses, 5 users (1 dedicated user for service) and 1 SDC for novaPro 32
EMS200F001	Basic hosting package including 10 addresses, 1 user and 1 SDC for novaPro Open
EMS200F002	Basic hosting package including 10 addresses, 1 user and 1 SDC for EDL
EMS200F003	Basic hosting package including 10 addresses, 1 user and 1 SDC for novaPro
EMS200F004	Basic hosting package including 10 addresses, 1 user and 1 SDC for novaPro 32

Technical data, options and accessories see next page >>>

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Technical data

Hardware	
Processor	Dual Core CPU 32/64bit, x86, x64 compatible
Cycle frequency	> 2 GHz
Operational memory	min. 3GB RAM; 2GB free for VMware
Memory capacity	20 GB free disk space

Software	
Operating system [1]	MS Windows XP (Professional or better), MS Windows XP (Business o better), MS Windows Server 2003 r (Standard or better), MS Windows Server 2008 (Standard or better)

1) The SAUTER EMS server is supplied as a virtual machine (VMware).

Options

Type	Description
EMS110F999	Current software on DVD
EMS110F001	(Sys) each with 10 EMS data points from 11 to 30 DP
EMS110F002	(Sys) each with 10 EMS data points from 31 to 100 DP
EMS110F003	(Sys) each with 10 EMS data points from 101 to 200 DP
EMS110F004	(Sys) each with 100 EMS data points from 201 to 1000 DP
EMS110F005	(Sys) each with 200 EMS data points from 1001 to 2000 DP
EMS110F006	(Sys) each with 500 EMS data points from 2001 to 6000 DP
EMS110F007	(Sys) each with 1000 EMS data points from 6001 to 10000 DP
EMS120F001	(Sys) each with 5 additional users (local users on EMS server)
EMS140F001	(Sys) SDC for novaPro Open
EMS140F003	(Sys) SDC for novaPro 32
EMS140F004	(Sys) SDC for novaPro
EMS140F006	(Sys) SDC for OPC Server (OPC V2 DA)
EMS140F008	(Sys) SDC for ASCII file
EMS140F009	(Sys) SDC for EDL
EMS210F001	(Host) each with 10 EMS data points from 11 to 30 DP
EMS210F002	(Host) each with 10 EMS data points from 31 to 100 DP
EMS210F003	(Host) each with 10 EMS data points from 101 to 200 DP
EMS210F004	(Host) each with 100 EMS data points from 201 to 1000 DP
EMS210F005	(Host) each with 200 EMS data points from 1001 to 2000 DP
EMS210F006	(Host) each with 500 EMS data points from 2001 to 6000 DP
EMS210F007	(Host) each with 1000 EMS data points from 6001 to 50000 DP
EMS220F001	(Host) 1 additional user (user access on host)
EMS240F001	(Host) SDC for novaPro Open
EMS240F003	(Host) SDC for novaPro 32
EMS240F004	(Host) SDC for novaPro
EMS240F006	(Host) SDC for OPC Server (OPC V2 DA)
EMS240F008	(Host) SDC for ASCII file
EMS240F009	(Host) SDC for EDL
EMS410F001	Option for generating customised reports (license)
EMS420F001	(Sys) software maintenance contract (18% p.a.)

Accessories

Type	Description
EDL500F001	Energy Data Logger including 10 DP for data capture and drivers for BACnet/IP, M-Bus and Modbus (TCP/IP)

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EDL500: Energy Data Logger for EMS

How energy efficiency is improved

The SAUTER EMS hardware module allows you to sound out your energy consumers. The Energy Data Logger collects data from your plant and sends it to the EMS Server. This enables you to keep an eye on your energy consumers at all times, even if you do not operate a building management system (BMS).

Areas of application

SAUTER EDL provides the option to connect systems to an EMS server without a BMS, therefore enabling full utilisation of all the benefits of the SAUTER EMS. SAUTER EMS is a professional energy data management solution which can be installed as a hosting solution or also locally as a non-hosting or system solution. The SAUTER EDL has a broad range of integrated drivers for connecting your system, whereby the drivers for BACnet/IP, Modbus (TCP/IP) and M-Bus are included in the basic package. A converter (EIA-232 -> M-Bus) is needed for the M-Bus.

Features

- No moving parts
- No fan
- Flash card as a storage medium

Technical description

- Power supply: 9…36 V= / 3 A from the terminal block connector via screwed Phoenix terminals.
  (N.B.: The power supply unit is not supplied with the EDL500.)

Products

Type	Description
EDL500F001	Energy Data Logger including 10 DP for data capture and drivers for BACnet/IP, M-Bus and Modbus (TCP/IP)

Technical data

Electrical supply

Power supply	9…36 V=
Power consumption	3 A

Interfaces, communication

Ethernet	Dual 10/100 Base-T RTL8100C
COM	2x EIA-232
Display	CRT integrated in Geode® LX800
USB	2x USB 2.0 supported
Extension	1x PC/104 module socket

System requirements

Processor	AMD® Geode® LX800 500MHz
System chipset	AMD® CS5536
System memory speed	DDR 333 MHz or 400 MHz
System memory type	1 x 200-pin SO-DIMM SDRAM
	socket supports up to 1 GB

Permitted ambient conditions

Operating temperature	0…50 °C
Humidity	10…90% rh
	no condensation

Installation

Dimensions W x H x D (mm)	200 x 60 x 163
Weight net/gross (kg)	1.8/2.2

Standards, guidelines and directives

EMC	FCC Class A, CE

Additional information

Dimension drawing	M11420
Wiring diagram	A10580

Options

Type	Description
EDL510F001	Each with 10 EDL data points from 11 to 30 DP
EDL510F002	Each with 10 EDL data points from 31 to 100 DP
EDL510F003	Each with 10 EDL data points from 101 to 200 DP
EDL510F004	Each with 100 EDL data points from 201 to 1000 DP
EDL510F005	Each with 200 EDL data points from 1001 to 2000 DP
EDL510F006	Each with 500 EDL data points from 2001 to 6000 DP
EDL540F001	Driver for KNXnet /IP (EIBnet/IP)
EDL540F002	Driver for Danfoss

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YZP450: novaPro EBal

novaPro EBal has been designed to assist the efficient monitoring, logging and control of energy and media consumption in a building thus permitting charges to the consumer to be optimised.
Access to all energy-related information arising from one or more buildings is accomplished via a simple, proprietary interface at all times, wherever you are. The web browser is not subject to any license fee. Meaningful logs listing the energy and media consumption together with the associated charges can be consulted any time, any place. Apart from the diverse consumption logs in standard format, emission reports displaying current emission data in the form of CO_2, NO, SO_2 figures can also be generated. Thanks to the intuitive, browser-based operation very little in the way of training costs are involved.

Products

Type	Description
Licenses for unlimited use:	
YZP450F010	novaPro EBal with up to 50 external variables
YZP450F020	novaPro EBal with up to 200 external variables
YZP450F030	novaPro EBal with more than 200 external variables
YZP450F050	Upgrade from 50 to 200 external variables, no time constraints
YZP450F051	Upgrade from 200 to more than 200 external variables, no time constraints
Licenses with an annual usage fee:	
YZP450F110	novaPro EBal with up to 50 external variables – 1st year
YZP450F111	novaPro EBal with up to 50 external variables – subsequent year
YZP450F120	novaPro EBal with up to 200 external variables – 1st year
YZP450F121	novaPro EBal with up to 200 external variables – subsequent year
YZP450F130	novaPro EBal with more than 200 external variables – 1st year
YZP450F131	novaPro EBal with more than 200 external variables – subsequent year
YZP450F150	Upgrade from 50 to 200 external variables
YZP450F151	Upgrade from 200 to more than 200 variables
YZP450F201	Licence transfer to a new PC
YZP450F999	novaPro Ebal CD with licence for demonstration purposes

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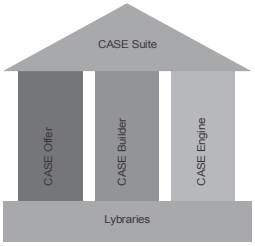

SAUTER CASE Suite

Case Offer

Case Offer

- Das Programm zur Erstellung von Angeboten und Preiskalkulation.
- The program for drawing up offers and calculating prices.
- Le programme pour calculer les prix et établir l‘offre.
- Il programma per la stesura di offerte e il calcolo dei prezzi.
- El programa para calcular precios y presentar ofertas.
- Programma voor het opstellen van offertes en prijscalculatie.

Case Builder

Case Builder

- Das Programm zur Ausführungsplanung und Dokumentation der Anlagentechnik.
- The program for creating the ? nal design and the documentation in plant engineering.
- Le programme pour plani? er la réalisation et documenter l‘équipement technique.
- Il programma per la pianificazione esecutiva e la documentazione impiantistica.
- El programa para planificar la ejecución y preparar la documentación técnica de la instalación.
- Programma voor uitvoeringsplanning en documentatie van de installatietechniek.

Case Engine

Case Engine

- Strukturierte graphische Programmierung der Automationsstationen.
- Structured graphical programming of the automation stations.
- Programmation structurée et graphique des unités de gestion locales.
- Programmazione grafica strutturata delle stazioni di automatizzazione.
- Programación gráfica estructurada de las estaciones de automatización
- Gestructureerde grafische programmering van de automatiseringstations.

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GZS100: CASE Suite

CASE Suite is the common platform for all CASE programs (CASE Offer, CASE Builder, CASE En-gine and CASE Tools). The software bundle supports the entire work processes in a project – from the sales phase through the engineering phase to the commissioning and servicing phases of building management systems and conventional control systems. Any data that are entered using a CASE Suite program – such as own and alien materials, services, data points, resources and their functions – are automatically made available to all CASE programs for further use.

CASE Suite is based on the Microsoft operating systems Windows XP.

Products

Type	Description
GZS100F001	CASE Suite licence Enterprise (all programs)
GZS100F002	CASE Suite licence Sales (Offer and Builder)
GZS100F101	CASE Suite licence update Enterprise (new functionality)
GZS100F102	CASE Suite licence update Sales (new functionality)
GZS100F201	CASE Suite licence upgrade Sales-Enterprise
GZS100F599	CASE Tools CD, latest version (CASE TPC, CASE HWC, CASE Sun, novaNet292 SW, ...)
GZS100F699	CASE Suite CD, latest version

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Systems

Components

Services

Facility Management

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